Cl **00** *SC* *P* *L* # **10004**

Shimon Muller

Comment Type **E** *Comment Status* **X**

All the new clauses for 10-GE should use the term "802.3 MAC" rather than "CSMA/CD MAC".

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **00** *SC* *P* *L* # **49002**

clause 48, 49 comment resolution

Comment Type **E** *Comment Status* **A**

Change name of Pulse

SuggestedRemedy

Change Pulse ordered set to Sequence ordered set.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **00** *SC* **46.1.1** *P* **216** *L* **53** # **36**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

Inconsistent case on "sublayer". In the definitions and in clause 4, the RS is called the "Reconciliation Sublayer". Here and in many other places, both in this clause and in others, the RS is called the "Reconciliation sublayer". This seems to be very inconsistent

SuggestedRemedy

Replace "Reconciliation sublayer" with "Reconciliation Sublayer" both here and in all other instances throughout the document

Proposed Response *Response Status* **C**

ACCEPT. This is best defered to the Editor-in-Chief if it also includes other clauses.

Search clause 46 and make usage of sublayer consistent with style chosen for the project.

Cl **00** *SC* **46.1.3** *P* **217** *L* **27** # **1362**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

change "Sonet STS-192c" to be "SONET OC-192c/SDH VC-4-64c"

SuggestedRemedy

Fix.If STS is going to be used instead of OC, we should ensure we are consistent throughout the draft.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See resolution to #853.

Cl **00** *SC* **46.1.3** *P* **217** *L* **27** # **853**

Tom Mathey Independent

Comment Type **E** *Comment Status* **A**

In other places, text Sonet is SONET (in Caps)

SuggestedRemedy

Change text Sonet to SONET

Proposed Response *Response Status* **C**

ACCEPT. See #1362.

Cl **00** *SC* **46.2.4.3** *P* **221** *L* **45** # **712**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

802.3 uses both "de-assert" and "deassert" in many cases using both spellings in the same clause. My minimalist preference would be to drop the hyphen.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Search clause for "deassert" and replace with "de-assert" which is the correct spelling.

Cl **00** *SC* **46.2.4.4** *P* **223** *L* **1** # **1240**

Rich Taborek nSerial Corporation

Comment Type **E** *Comment Status* **A**

code group should have a hyphen between code and group

SuggestedRemedy

Globally change all code group to code-group. Globally applies to all 10G clauses.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. To be applied to clauses within the scope of 802.3ae.

Cl **00** *SC* **47.1** *P* **234** *L* **6** # **48**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

There are many inconsistencies throughout all the clauses regarding how this common figure is referenced.

SuggestedRemedy

Recommend a template from the chief editor that all clause editors use to reference this common figure at the start of each clause.

Proposed Response *Response Status* **C**

ACCEPT. Requires action by Chief Editor

Rejected by the Editor-in-chief. Commenter is recommended to be more specific in his suggested remedy. :-)

Cl **00** *SC* **50.1** *P* **310** *L* **4** # **1395**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A** *Low*

should we be using STS or OC... need consistency here

SuggestedRemedy

fix

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

"STS" is generally used to refer to the logical frame format while "OC" (Optical Carrier) includes the optical characteristics as well. Recommend that all instances of "OC" be replaced with "STS", as 802.3ae does not make use of SONET optical specifications. There are no instances of "OC" in Clause 50.

Cl **00** *SC* **all** *P* *L* # **1412**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

removal of empty pages

SuggestedRemedy

delete empty pages

Proposed Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1.1** *P* **2** *L* **5** # **778**

Furlong, Darrell R Aura Networks

Comment Type **E** *Comment Status* **A**

It is my understanding that the CSMA/CD protocol will only be used for local area network applications. For MAN or WAN applications the link will be Full Duplex only. While this has never been discussed in the meetings the distance limitations of the CSMA/CD protocol are to sever at 1G and 10G. I am also concerned about someone accidentally operating a MAN link with CSMA/CD enabled.

SuggestedRemedy

State, that the IEEE 802.3 MAC frame is used for both LAN and MAN applications and not the CSMA/CD protocol.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This comment has been upgraded to technical by the editor.

Replace "CSMA/CD as the access method" with "the 802.3/Ethernet frame format for data communication".

Cl **01** *SC* **1.1** *P* **2** *L* **6** # **1092**

Jonathan Thatcher World Wide Packets

Comment Type **T** *Comment Status* **A**

Note: this is the first instance. The entire document needs to be scrubbed for ambiguous usage of CSMA/CD.

Using words, "employing CSMA/CD as the access method." seems rediculous since 10 Gig does not use the CSMA/CD access method. We need a way to differentiate 802.3 other than using CSMA/CD exclusively.

SuggestedRemedy

For 10 gigabit Ethernet, refer to the MAC and the access method as the IEEE 802.3 MAC and the IEEE 802.3 access method.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

It probably makes sense to change this term in the Overview to the standard. See resolution to comment #778.

However, doing the same for the remaining 1552 pages of the existing standard is too much service to humanity, and should be handled through the maintenance process. The commenter is encouraged to identify all the specific instances where this change is required, and submit an appropriate maintenance comment to the 802.3 chair/vice-chair.

The editor will generate a comment against all the new clauses to use the term "802.3 MAC" rather than the "CSMA/CD MAC".

Cl **01** *SC* **1.1** *P* **2** *L* **6** # **1**

Brown, Benjamin J — AMCC

Comment Type **T** *Comment Status* **R**

Why isn't WANs included along with LANs and MANs?

SuggestedRemedy

Replace "(LANs and MANs)" with "(LANs, MANs and WANs)"

Proposed Response *Response Status* **C**

REJECT.

The proposed remedy was used in the first draft of the document (D1.0), but was changed as a result of the initial Task Force review for the following reasons:
- It implies that 802.3 is a WAN standard, which most people believe it is not.
- It violates the charter of IEEE 802, which is a LAN/MAN standards organization (this is what LMSC stands for).

However, in clause 4, when discussing the features that are related to operation in a WAN environment, the term "WAN-compatible applications of this standard" is used.

Cl **01** *SC* **1.1.1.1** *P* **2** *L* **20** # **1093**

Jonathan Thatcher — World Wide Packets

Comment Type **E** *Comment Status* **A**

Half duplex operation can not be used with all media types. Example: POF.

SuggestedRemedy

Change wording to: "Half duplex operation can be used with media types and in configurations prescribed in clauses <fill in references>."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the sentence to read as follows:
"Half duplex operation can be used with certain media types and configurations as defined in this standard"

Cl **01** *SC* **1.1.2** *P* **2** *L* **43** # **1324**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

The rightmost MEDIUM box is different than that found in 802.3:2000. The left side of the box should be square to be compatible with what previously exists in 802.3.

SuggestedRemedy

Correct the MEDIUM box to be the same as 802.3:2000.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1.1.2** *P* **2** *L* **46-48** # **1038**

Robert Grow — Intel

Comment Type **E** *Comment Status* **A**

The expansion of acronyms is in random order. Though there may be historical reasons for this (i.e., higher layers to lower layers when there was one protocol stack) there is no descernable reason for order in the current pictures.

SuggestedRemedy

Put in alphabetical order

Proposed Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1.1.2** *P* **2** *L* **53** # **1325**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

Change figure title to be more relevant to the standard.

SuggestedRemedy

Change title to "802.3 standard relationship to..."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1.1.2** *P* **3** *L* **30** # **761**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

We do not normally use "10GBASE" without following it with a hyphen and something to identify phy technology. Either replace it with "10Gb/s Ethernet" or make the phrase "10GBASE-R and 10GBASE-W PMA sublayers" since it is not used for 10GBASE-X.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #1326.

Cl **01** *SC* **1.1.2.2** *P* **3** *L* **24, 30** # **1031**

Robert Grow Intel

Comment Type **E** *Comment Status* **A**

Inconsistent capitilization

SuggestedRemedy

Search document for occurances of "ten gigabit" and varieties and make consistent. I believe the correct style is 10 Gigabit in a name, and 10 gigabit in text.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The comment has merit for the rest of the document, but not in the instances specified. The capitalization used here is intended to highlight the acronyms that follow the name.

Cl **01** *SC* **1.1.2.2** *P* **3** *L* **30** # **1326**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

XSBI is not provided by all 10GBASE PMA sublayers.

SuggestedRemedy

Change first sentence of definition to read: "The XSBI is provided as a physical instantiation of the PMA service interface for 10GBASE-R and 10GBASE-W PHYs."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1.1.4** *P* **3** *L* **43** # **1094**

Jonathan Thatcher World Wide Packets

Comment Type **T** *Comment Status* **A**

Paragraph is unnecessarily limiting

SuggestedRemedy

Replace with, "This standard is not directed toward or limited to any specific environment or application. It is expected that over time, new and ever-more-interesting applications for this technology will be discovered."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This paragraph can, and probably should, be written better. However, the suggested remedy sounds too poetic.

Cl **01** *SC* **1.1.4** *P* **3** *L* **49** # **2**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **R**

Should include Wide Area Networks

SuggestedRemedy

Replace "Local and Metropolitan Area Networks" with "Local, Metropolitan and Wide Area Networks"

Proposed Response *Response Status* **C**

REJECT.

See resolution to comment #1.
Also, see the text in the parenthesis on line 49.

Cl **01** *SC* **1.3** *P* **4** *L* **31** # **1032**

Robert Grow Intel

Comment Type **E** *Comment Status* **A**

Obsolete reference to SSTL document

SuggestedRemedy

Delete it

Proposed Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1.4** *P* **4** *L* **43** # **1095**

Jonathan Thatcher World Wide Packets

Comment Type **T** *Comment Status* **A**

What in the world does "even (odd) parity" mean?

SuggestedRemedy

Please clarify

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Means that either even or odd parity can be used.
Add "or" in parenthesis.

Cl **01** *SC* **1.4** *P* **4** *L* **49** # **1033**
Robert Grow Intel

Comment Type **E** *Comment Status* **A**
Typo

SuggestedRemedy
Change "capacithy" to "capacity"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **01** *SC* **1.4** *P* **4** *L* **49** # **1327**
Booth, Brad Intel

Comment Type **E** *Comment Status* **A**
spelling mistake

SuggestedRemedy
change "capacithy" to "capacity"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **01** *SC* **1.4** *P* **4** *L* **49** # **3**
Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**
Spelling mistake

SuggestedRemedy
Replace "capacithy" with "capacity"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **01** *SC* **1.4** *P* **4** *L* **49** # **468**
Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**
Capacithy should be capacity.

SuggestedRemedy

Proposed Response *Response Status* **C**
ACCEPT.

Cl **01** *SC* **1.4** *P* **4** *L* **49** # **1096**
Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **A**
capacithy

SuggestedRemedy
capacity :-)

Proposed Response *Response Status* **C**
ACCEPT.

Cl **01** *SC* **1.4** *P* **5** *L* **10** # **469**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Scrambler definition is written such that it is fairly specific to the scrambler in clause 50 (it singles out frame-synchronous scramblers) but clause 49 and earlier parts of 802.3 include scramblers. If we are going to define "frame-synchronous scrambler" then we should also define side-stream scrambler and self-synchronizing scrambler. Also, the description of a frame-synchronous scrambler does not seem to cover the essential point and is not clear. It would be more clear and accurate to say that a frame-synchronous scrambler is a side-stream scrambler that begins each frame in a known state. Also, it is perhaps a problem that the particular frame intended here is a Sonet frame, but outside the context of clause 50, frame is likely to be understood as Ethernet frame.

SuggestedRemedy

Either delete the second sentence or add sentences describing side-stream scrambler and self-synchronizing scrambler and replace the second sentence with "A frame-synchronous scrambler is a side-stream scrambler that begins each frame in a known state." For the other two the following could be used, "A self-synchronous scrambler is one in which the current state of the scrambler is the prior n bits of the scrambled output. Therefore, the descrambler can acquire the correct state directly from the received stream. A side-stream scrambler is one in which the current state of the scrambler is dependent only on the prior state of the scrambler and not on the transmitted data. The descrambler must acquire state either by searching for a state that decodes a known pattern or by agreement to start at a known state in synchronization with the scrambler." 802.3 already has a separate definition for side-stream scrambler which is written so that it is fairly specific to the way that technique is used in 100BASE-T2 and 1000BASE-T so that definition should be harmonized.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete 1.4.233.
Change the new "1.4.xxx Scrambler" definition to read as follows:
"1.4.xxx Scrambler: A randomizing mechanism that is used to eliminate long strings of consecutive identical transmitted symbols, and avoid the presence of spectral lines in the signal spectrum without changing the data rate.
A self-synchronous scrambler is one in which the current state of the scrambler is the prior n bits of the scrambled output. Therefore, the de-scrambler can acquire the correct state directly from the received stream.
A side-stream scrambler is one in which the current state of the scrambler is dependent only on the prior state of the scrambler and not on the transmitted data. Therefore, the de-scrambler must acquire state either by searching for a state that decodes a known pattern or by agreement to start at a known state in synchronization with the scrambler.
A frame-synchronous scrambler is a side-stream scrambler that begins each frame in a known state."

Cl **01** *SC* **1.4** *P* **5** *L* **13** # **815**

Tom Mathey — Independent

Comment Type **E** *Comment Status* **A**

corect spelling of copes

SuggestedRemedy

Replace copes with copies

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See resolution to comment #469.

Cl **01** *SC* **1.4** *P* **5** *L* **13** # **4**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

Spelling mistake

SuggestedRemedy

Replace "copes" with "copies"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See resolution to comment #469.

Cl **01** *SC* **1.4** *P* **5** *L* **13** # **1034**

Robert Grow — Intel

Comment Type **E** *Comment Status* **A**

Typo

SuggestedRemedy

Change "copes" to "copies"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See resolution to comment #469.

Cl **01** *SC* **1.4** *P* **5** *L* **13** # **1328**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

spelling mistake

SuggestedRemedy

change "copes" to "copies"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See resolution to comment #469.

Cl **01** *SC* **1.5** *P* **5** *L* **38** # **1035**

Robert Grow — Intel

Comment Type **E** *Comment Status* **A**

Capitilization of the acronym expansions in this subclaue is inconsistent with the dominant style of IEEE 802.3, 2000, subclause 1.5.

SuggestedRemedy

Use lower case for everything in the expansion except for acronyms (e.g., MDIO manageable device).

Proposed Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1.5** *P* **5** *L* **40** # **470**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

BER, EMI (line 42) and RS (page 6 line 4) are already in 802.3.

SuggestedRemedy

Delete them from the draft.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1.5** *P* **5** *L* **42** # **1036**

Robert Grow — Intel

Comment Type **E** *Comment Status* **A**

EMI is already in the standard

SuggestedRemedy

Delete

Proposed Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1.5** *P* **5** *L* **51** # **418**

Dawe, Piers — Agilent

Comment Type **E** *Comment Status* **A**

OMA is new to 802.3

SuggestedRemedy

Add OMA to Abbreviations list

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

OMA is already in the Abbreviations list. However, it is probably a good idea to also have a definition for it. The commenter in encouraged to provide one.

Cl **01** *SC* **1.5** *P* **6** *L* # **816**

Tom Mathey — Independent

Comment Type **E** *Comment Status* **A**

add SFI-4 to list

SuggestedRemedy

Add abbreviation for SFI-4 to list

Proposed Response *Response Status* **C**

ACCEPT.

Get the meaning of this abbreviation from the editor of Clause 49.

Cl **01** *SC* **1.5** *P* **6** *L* # **817**

Tom Mathey — Independent

Comment Type **T** *Comment Status* **A**

add SUPI to list

SuggestedRemedy

Add abbreviation for SUPI to list, or completely remove all refeences to SUPI from text.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

SUPI is not a defined interface in this standard. All references to it should be removed. There is no action required in this clause. The editor will open 3 new comments against clauses 50 and 54.

Cl **01** *SC* **1.5** *P* **6** *L* **4** # **1037**

Robert Grow Intel

Comment Type **E** *Comment Status* **A**

RS is already in the standard

SuggestedRemedy

Delete

Proposed Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **multiple** *P* *L* # **1318**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

change sub-clause to subclause

SuggestedRemedy

fix

Proposed Response *Response Status* **C**

ACCEPT.

Cl **02** *SC* **2.3.1.2** *P* **8** *L* **25** # **471**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

This change moves the 802.3 description of MAC service interface a bit closer to the 802.1D discription, but stops far short of harmonizing them. The parameter list for M_UNITDATA.request includes the following which are not in the MA_DATA.request: frame_type, m_action, user_priority, and access_priority. The MA_DATA.request includes the following which is not in the M_UNITDATA.request: service_class. Also, some parameters have different names in the two: mac_service_data_unit vs. m_sdu, frame_check_sequence vs. fcs. Of the missing parameters, frame_type and m_action have only one valid value for 802.3. The parameters frame_type, m_action and frame_check sequence are part of the M_UNITDATA.request which is used by the switch relay but are not part of the MA_UNITDATA.request which is used by end nodes.

SuggestedRemedy

Either add the missing parameters or add an explanation of how to map from the M_UNITDATA.request to the MA_DATA request. Also add an explanation for mapping from MA_UNITDATA.request to MA_DATA request. It would be better to change m_sdu and fcs to the expanded names so that they have the same name as in the other primatives. We might as well change service_class to user_priority and access_priority. Since we don't do anything with it anyway there is no reason to have a different name for it. Then the explanation could be "For M_UNITDATA.request, the parameters frame_type and m_action are dropped because they are not relavent to 802.3 operation. For MA_UNITDATA.request, the frame_check_sequence parameter is not present."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the service primitive definition as per suggested remedy, with the exception of the service_class parameter in MA_DATA.request. Since this parameter is currently not used, nor is it likely to be used in the future, renaming it just to say that it is not used doesn't make sense. It would be better that we drop it completely.
Therefore, the specific changes to MA_DATA.request will be as follows:
* Change "m_sdu" to "mac_service_data_unit" here and everywhere else.
* Change "fcs" to "frame_check_sequence" here and everywhere else.
* Delete "service_class".
* Describe the mapping between MA_UNITDATA.request (ISO/IEC 15802-1) and MA_DATA.request:
  - "user_priority" not relevant for 802.3 operation.
  - "access_priority" not relevant for 802.3 operation.
  - "frame_check_sequence" not present in MA_UNITDATA.request.
* Describe the mapping between M_UNITDATA.request (802.1D) and MA_DATA.request:
  - "frame_type" not relevant for 802.3 operation.
  - "mac_action" not relevant for 802.3 operation.
  - "user_priority" not relevant for 802.3 operation.
  - "access_priority" not relevant for 802.3 operation.

Cl **02** *SC* **2.3.2.2** *P* **9** *L* **7** # **472**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

See my comment on 2.3.2.1. The parameters for MA_DATA.indication do not match the MA_UNITDATA.indication and M_UNITDATA.indication in the same ways as the requests did not match except that the access_priority parameter is not present in the indication. Also, the MA_DATA.indication includes a parameter reception_status that the other indications do not have. Since the MAC clients only expect good frames at the service interface, this parameter should be deleted.

SuggestedRemedy

Delete the reception_status parameter.Also add an explanation such as:
For M_UNITDATA.request, the parameters frame_type and m_action are always given the values user_data_frame and request_with_no_response, respectively. For MA_UNITDATA.request, the frame_check_sequence parameter is not present. The parameter user_priority is assigned the default value for the port.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the service primitive definition as per suggested remedy, with the exception of deleting the "reception_status" parameter (see comment #476).
The specific changes to MA_DATA.indication will be as follows:
* Change "m_sdu" to "mac_service_data_unit" here and everywhere else.
* Change "fcs" to "frame_check_sequence" here and everywhere else.
* Describe mapping between MA_DATA.indication and MA_UNITDATA.indication (ISO/IEC 15802-1):
  - "user_priority" not relevant for 802.3 operation and is assumed to always have the default value assigned for the port.
  - "frame_check_sequence" not present in MA_UNITDATA.indicate.
  - "reception_status" is not mapped to any parameter and is ignored by an 802.1-compliant MAC client.
* Describe mapping between MA_DATA.indication and M_UNITDATA.indication (802.1D):
  - "frame_type" not relevant for 802.3 operation and is assumed to always have the value of "user_data_frame".
  - "mac_action" not relevant for 802.3 operation and is assumed to always have the value of "request_with_no_response".
  - "user_priority" not relevant for 802.3 operation and is assumed to always have the default value assigned for the port.
  - "reception_status" is not mapped to any parameter and is ignored by a 802.1D-compliant MAC client.

Cl **02** *SC* **multiple** *P* *L* # **1319**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

change sub-clause to subclause

SuggestedRemedy

fix

Proposed Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.1.2.1.1** *P* **12** *L* **24** # **474**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

The statement on CRC could be read as requiring all MACs to support bypassing CRC generation. That should be an optional feature.

SuggestedRemedy

change "if present" to "if present and supported" or replace the sentence with, "If the MAC supports client-supplied frame check sequence values, then it shall use the client-supplied value when present. When client-supplied frame check sequence values are not supported or are not supplied, then the MAC shall compute the value."

Proposed Response *Response Status* **C**

ACCEPT.

Accepting the second remedy.

Cl **04** *SC* **4.1.2.1.2** *P* **13** *L* **17** # **476**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

This paragraph seems very inconsistant. It says that the status can be reception_complete or frame_too_long. There are a other status values that are ignored: frameCheckError, lengthError and alignmentError and the two status values that are covered seem to be called receiveOK and frameTooLong elsewhere. More seriously, the MAC passes up bad packets with a status indicating they are bad, but the MAC receive primatives elsewhere do not include a receive status and seem to count on only good packets being passed up.

SuggestedRemedy

If we are going to keep 802.3 written so bad packets are passed to the service interface, put all the status values in this paragraph and correct the names. In that case, when describing the 802.3 service interface in 2.3 and 4.3.2, we should at least note the discrepancy between the two sides of the interface.The alternative is to take on the "service to humanity" of changing the MAC definition so that bad frames are not passed up. The easiest way to do this would be to say in 4.3.2 that ReceiveFrame only produces a MA_DATA.indicate when the ReceiveStatus=receiveOK.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This paragraph is flawed and should be fixed as additional "service to humanity". However, changing the MAC to not pass bad frames goes too far in that respect. Although, 802.1/802.1D compliant implementations do not accept bad frames, there is no harm in allowing the MAC to pass them up to a different MAC client. There are many MAC implementations that take advantage of this feature, such as network probes.

Cl **04** *SC* **4.1.4** *P* **13** *L* **42** # **818**

Tom Mathey — Independent

Comment Type **T** *Comment Status* **A**

To list of bullet ites at the end of sub-clause 4.1.4, add following new text of “(if not provided by the MAC client) “ cribbed from p16 line 31
WAS text
d) Appends proper FCS value to outgoing frames and verifies full octet boundary alignment
k) Appends preamble,Start Frame Delimiter,DA,SA,Length/Type field,and FCS to all frames,and inserts PAD field for frames whose data length is less than a minimum value

SuggestedRemedy

IS text
d) Appends proper FCS (if not provided by the MAC client) value to outgoing frames and verifies full octet boundary alignment
k)Appends preamble,Start Frame Delimiter,DA,SA,Length/Type field,and FCS (if not provided by the MAC client) to all frames,and inserts PAD field for frames whose data length is less than a minimum value

Proposed Response *Response Status* **Z**

ACCEPT IN PRINCIPLE.

Accept suggested remedy as modified by comment #477.

This comment was withdrawn by the commenter after performing further review.

Cl **04** *SC* **4.2.3.1.1** *P* **16** *L* **46** # **477**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

This says it is optional to for the layer above to provide the FCS, but does not say it is optional for the MAC to accept the FCS and bypass its own calculation. Also, at the end of the paragraph "after appending the padding field, if necessary" is unnecessary since the PASCAL shows when the CRC calculation is done (page 24, line 21).

SuggestedRemedy

Add after "argument to the MAC sublayer.", "It is optional for a MAC to support provision of the frame check sequence in such an argument." On line 48 following "MAC client", add "or is not supported by the MAC".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.2.3.1.2** *P* **17** *L* **5** # **478**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Maybe we should leave this as part of 802.3's quirky charm, but it seems strange that we have this subclause to hold one sentence about FCS generation when 4.2.3.1.1 already had a sentence about FCS. It seems even stranger now that 4.2.3.1.1 has three sentences on FCS.

SuggestedRemedy

Delete the headings for 4.2.3.1.1 and 4.2.3.1.2 and join their bodies into one paragraph under 4.2.3.1.

Proposed Response *Response Status* **C**

ACCEPT.

Search in 802.3-2000 for references to the changed subclause numbers.

Cl **04** *SC* **4.2.3.1.2** *P* **17** *L* **5** # **819**

Tom Mathey — Independent

Comment Type **E** *Comment Status* **A**

Insure that 10 Gig does not change the proper reference of 3.2.8 as corrected in present maintenance ballot.

SuggestedRemedy

Keep maintenance change to 3.2.8 vs present 3.8.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See resolution to comment #478.

Cl **04** *SC* **4.2.3.2.2** *P* **17** *L* **22** # **479**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **R**

This paragraph seems specific to WAN adaptation at 10 Gbit/s. If we someday did a 100 Mbit/s to OC-3 for instance, such IPG extension would not be necessary. Therefore, it would help to provide our readers a clue that this only applies to 10 Gbit/s operation.

SuggestedRemedy

After "WAN-compatible applications", add "at 10 Gbit/s".

Proposed Response *Response Status* **C**

REJECT.

This comment has been upgraded to technical by the editor.

In this paragraph the operating speed has intentionally been left out, so that this functionality is specified in a speed-independent manner. I do not believe this implies that it is needed or supported at all speeds. However, both in the Pascal code and in the parameters' tables in section 4.4.2 we are very specific regarding the speeds that support this operation. This will hopefully minimize changes to this clause in the future.

Cl **04** *SC* **4.2.3.2.2** *P* **17** *L* **22** # **5**

Brown, Benjamin J — AMCC

Comment Type **T** *Comment Status* **R**

Need to specify the operating speed for when this lager value of interframe spacing is allowed

SuggestedRemedy

Add the following to the beginning of the paragraph: "At an operating speed of 10 Gb/s, a larger value..."

Proposed Response *Response Status* **C**

REJECT.

This comment has been upgraded to technical by the editor.

See resolution to comment #479.

Cl **04** *SC* **4.2.3.3** *P* **18** *L* **10** # **6**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **R**

Second "shall" for the same requirement. There is already a "shall" for this in subclause 4.2.3.1.1, page 16, line 47.

SuggestedRemedy

Replace "the pad shall also be provided" with "the pad is also provided"

Proposed Response *Response Status* **Z**

REJECT.

There is nothing wrong with using "shall" in this sentence. It is a legal word in the English language. Its purpose is to specify a strong requirement, which is what is intended here. We usually do not use it more than once for the same requirement in order to avoid multiple entries in the PICS tables. Fortunately, Clause 4 does not have a PICS table, so we don't have to worry about it. However, if the commenter insists, I would be happy to accommodate him.

Cl **04** *SC* **4.2.7.1** *P* **20** *L* **28** # **480**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

The statement "its value does not change between invocations of the Initialize procedure" is not absolutely clear. It can be read as saying it doesn't change when during the time between invocations of the Initialize procedure (which is what it means to say) or it doesn't change from one invocation of the initialize procedure to the next (which is wrong). It would be better to say is "its value shall only changed by invocation of the Initialize procedure"

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Needs some more wordsmithing.

Cl **04** *SC* **4.2.7.2** *P* **20** *L* **36** # **481**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **R**

"time" should not be replaced by "gap". We have changed the time value to be measured in bit times rather than seconds, but that is still a measure of time.

SuggestedRemedy

Proposed Response *Response Status* **C**

REJECT.

This change was made as a result of a comment during the initial Task Force review. The term "gap" does not mean that this constant is not a measure of time, and it is consistent with the term used in 4.4.2 (interFrameGap).

Cl **04** *SC* **4.2.7.2** *P* **21** *L* **19** # **483**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

The statement "its value does not change between invocations of the Initialize procedure" is not absolutely clear. It can be read as saying it doesn't change when during the time between invocations of the Initialize procedure (which is what it means to say) or it doesn't change from one invocation of the initialize procedure to the next (which is wrong). It would be better to say is "its value shall only changed by invocation of the Initialize procedure" Also, line 11

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Needs some more wordsmithing.

Cl **04** *SC* **4.2.7.2** *P* **21** *L* **21** # **8**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

The range of ifsStretchCount is incorrect. In 4.2.8, page 28, line 39, there is a comparison of ifsStretchCount to ifStretchRatio.

SuggestedRemedy

Change the range of ifsStretchCount from "0..(ifsStretchRatio-1)" to "0..(ifsStretchRatio)", with or without the parenthesis

Proposed Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.2.7.2** *P* **21** *L* **21-27** # **9**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

Should use a comma instead of semicolon in comment

SuggestedRemedy

Line 21: Replace "In bits; a" with "In bits, a" Line 27: Replace "In octets: a" with "In octets, a"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Same thing in several other places. Fix everywhere.

Cl **04** *SC* **4.2.7.2** *P* **21** *L* **25** # **820**

Tom Mathey Independent

Comment Type **T** *Comment Status* **R**

I believe that the formula for ifsStretchSize and the number ifsStretchRatio from 4.4.2 of 104 are not correct.

I believe that the number 104 is derived from the division of 10.0 / 9.58646 == 1.043138. This means that for every 1.043138 bits transmitted at 10 Gig, there are 1.00 bits transmitted at 9.58646 Gig; or for every 1.00 bits transmitted at 10 Gig, there are 0.958646 bits transmitted at 9.58646 Gig. Thus for each transmitted bit, there is a required accumulation or stretch in bits of 1.043138 minus 1.00 == 0.043138, units of stretch bit per tx bit. However, this is a bit number, not an octal number.
Forming the ratio of (8 stretch bits / stretch octet) * (1 tx bit / 0.043138 stretch bit per tx bit) then leads to (with units cancellation) 185.45 tx bits per stretch octet (the ifsStretchRatio).
Rounding 185.45 down to the nearest multiple of 8 leads to a performance decrease of 185.45 / 184 == 1.00788, or 0.788% loss of thruput. If the MAC rate needs to be further reduced due to the 64b/66b encoding, then
185.45 *64/66 == 179.8 rounded down to 176 leads to 2.16% loss of thruput.

176 is ifsStretchRatio in Table 4.2.2;
ifsStretchSize is 0..(((
(maxUntaggedFrameSize + qTagPrefixSize) * 8 { bytes to bits
+ (headerSize + interFrameSpacing) { bits
) { total number of bits
/ ifsStretchRatio) { 176 tx bits per stretch octet
? 1 { array index starts at 0, not 1
);

If the 2.16% loss of thruput is too great, then I suspect that a ifsStretchRatio of 179 could be used as the magic number, and a remainder could be carried over into the next count. Such Pascal is beyond my capabilities and alloted time.

SuggestedRemedy

Change ifsStretchRatio from 104 to 176.
Change ifsStretchSize to:
0..((((maxUntaggedFrameSize + qTagPrefixSize) * 8 + headerSize + interFrameSpacing) /ifsStretchRatio) - 1);

Proposed Response *Response Status* **Z**

REJECT.

See resolution to comment #1055.

Cl **04** *SC* **4.2.7.2** *P* **21** *L* **25** # **482**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

This is a very picky point, but the upper end of the range needs to be an integer which it is not currently ensured to be. Also, I'll discuss it in another comment, but I don't see why we are stretching for the interFrameSpacing.

SuggestedRemedy

change declaration to:
0..(((maxUntaggedFrameSize + qTagPrefixSize) x 8 + headerSize + interFrameSpacing + ifsStretchRatio ? 1) div ifsStretchRatio);A div B produces the integer part (truncated not rounded) of dividing A by B. If my comment on stretch and interFrameSpacing is accepted (page 28 line 33), then that term will need to be deleted.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.2.7.2** *P* **21** *L* **25** # **1055**

Tom Mathey — Independent

Comment Type **T** *Comment Status* **R**

This comment replaces the previous comment on the same subject, and previous comment is considered withdrawn.

I believe that the formula for ifsStretchSize and the number ifsStretchRatio from 4.4.2 of 104 are not correct.

I believe that the number 104 is derived from the division of 10.0 / 9.58646 == 1.043138. This means that for every 1.043138 bits transmitted at 10 Gig, there are 1.00 bits transmitted at 9.58646 Gig; or for every 1.00 bits transmitted at 10 Gig, there are 0.958646 bits transmitted at 9.58646 Gig. Thus for each MAC Layer transmitted bit, there is a required MAC Layer accumulation or stretch in bits of 1.043138 minus 1.00 == 0.043138, units of stretch bit per tx bit. However, this is a bit number, not an octal number.

Forming the ratio of (8 stretch bits / stretch octet) * (1 tx bit / 0.043138 stretch bit per tx bit) then leads to (with units cancellation) 185.45 tx bits per stretch octet (the ifsStretchRatio).

If the MAC rate needs to be further reduced (the IPG is further stretched) due to the 64b/66b encoding, then 185.45 *66/64 == 191.245 rounded up to 192 leads to 192/191.245 = 0.39% loss of thruput. Thus:

192 is ifsStretchRatio in Table 4.2.2;
ifsStretchSize is 0..(((
(maxUntaggedFrameSize + qTagPrefixSize) * 8 { bytes to bits
+ (headerSize + interFrameSpacing) { bits
) { total number of bits
/ ifsStretchRatio) { 176 tx bits per stretch octet
- 1 { array index starts at 0, not 1
); { == 64.25 octets}

If the 0.39% loss of thruput is too great, then I suspect that a ifsStretchRatio of 184 could be used as the magic number, and a remainder could be carried over into the next count. Such Pascal is beyond my capabilities.

SuggestedRemedy

Change ifsStretchRatio from 104 to 192.
Change ifsStretchSize to:
0..((((maxUntaggedFrameSize + qTagPrefixSize) * 8 + headerSize + interFrameSpacing) /ifsStretchRatio) - 1);

Proposed Response *Response Status* **Z**

REJECT.

I am having trouble understanding the commenters calculations, but the value of 104 for the ifsStretchRatio is correct. The best way to verify it is to calculate the following ratio: 13/(13+1)=0.92857, which ahieves the closest ratio between the WAN and LAN data rates, without exceeding it. This implies that for every 13 bits (or bytes) of the original frame and minimum IPG, we add one bit (or byte) of IPG

extension. Since the MAC is a bit oriented process that always uses integral number of octets, the ifsStretchRatio value has been defined to be 104 bits (13 octets).

Cl **04** *SC* **4.2.7.3** *P* **21** *L* **48** # **491**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

It is clear why one should not change values of variables like halfDuplex while the MAC is in operation.This particular variable unlike the others that have this statement only effects the interface to the service layer. I see no reason why an implementation should be prohibited from changing it without reinitialization.

SuggestedRemedy

Remove "its value does not change between...procedure"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.2.7.5** *P* **23** *L* **11** # **507**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Also line 18: change "is desired" to "is desired and supported" Could also be done on line 7.Support for these functions is an optional feature so desire is not enough to make the variable true. (I'm assuming we do not plan to require all 10Gig MACs to support WAN mode.)

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.2.7.5** *P* **23** *L* **11** # **779**

Furlong, Darrell R — Aura Networks

Comment Type **T** *Comment Status* **R**

This maybe outside the scope of this standards activity but I would recommend allowing the usage of ifsStretchMode at all data rates. I see no reason to limited it's definition to just 10Gig/OC-192 applications.

SuggestedRemedy

Remove the reference to speeds above 1000Mb/s. Only specify the data rate and value as shown in the Table on page 41.

Proposed Response *Response Status* **C**

REJECT.

This is the only place in the standard that indicates the speeds that currently support rate adaptation. If we remove this statement, it would mean that this feature is allowed at all speeds. If we do that, we also need to specify which rates we adapt to for all legacy speeds. This WOULD be outside the scope of this standard.

Cl **04** *SC* **4.2.7.5** *P* **23** *L* **21** # **706**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Clause 4.3.3 says that carrier sense is undefined when in full duplex mode and 46.2.2.3 says that the primitive which generates it is not used for 10 Gb/s operations. However, it is used here not conditioned by half duplex mode.

SuggestedRemedy

change to: while (carrierSense * halfDuplex) or receiveDataValid do nothing.
Even this is a bit sloppy because we are using an undefined variable, but since it is being anded with something we know is false when it is undefined the result will be uneffected by its value.
The purer alternative would be:If halfDuplex then while carrierSense or receiveDataValid do nothing else while receiveDataValid do nothing

Proposed Response *Response Status* **C**

ACCEPT.

Adopt the second suggested remedy.

Cl **04** *SC* **4.2.7.5** *P* **23** *L* **4** # **492**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

"its value does not change between invocations of the Initialize procedure". It seems that we are being very redundant as this statement is already made when each of these variables is declared.Also, lines 9, 14, and 20.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Delete these statements from Initialize, and keep them in the declarations.

Cl **04** *SC* **4.2.7-3.2** *P* **19-38** *L* # **7**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

It appears as though some of the changes to the comments in the Pascal code are to use an uppercase for the first letter of the comment. If this was a goal, and it appears as though it was, there is much inconsistency throughout the clause.

SuggestedRemedy

Search for all comments in the Pascal code in clause 4 and make the first letter uppercase.

Proposed Response *Response Status* **C**

ACCEPT.

None of the changes to the Pascal code were made solely for this purpose. It does seem to be a good idea though.

Cl **04** *SC* **4.2.8** *P* **21** *L* **1** # **498**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **R**

Service to humanity item: Shouldn't there be a : rather than a , after currentTransmitBit?

SuggestedRemedy

Proposed Response *Response Status* **C**

REJECT.

This is an attempt to specify two variables using one declaration and it is correct.

Cl **04** *SC* **4.2.8** *P* **24** *L* **39** # **789**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

constraint is spelled incorrectly

SuggestedRemedy

change "contraint" to "constraint"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.2.8** *P* **27** *L* **29** # **490**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

The sentence construction "In the case of full duplex mode, at operating speeds above 1000 Mb/s, when interframe stretching is used for lowering the nominal data rate of the MAC sublayer," can mean that interframe stretching is always used when in full duplex mode at operating speeds above 1000 Mb/s. Also, the sentence is pretty unwieldy. Also, "average" would be more accurate than "nominal" and more consistant with what was used earlier.

SuggestedRemedy

Change the sentence to "When interframe stretching is used for lowering the average data rate of the MAC sublayer, ..." I think the conditions under which interframe stretching applies are covered adequately by earlier text, but if you really feel it necessary, you could preceed this with "Interframe spacing is used to slow the data rate of a MAC at operating speeds above 1000 Mb/s when it is necessary to adapt it to the data rate of a WAN based physical layer.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.2.8** *P* **27** *L* **50** # **821**

Tom Mathey — Independent

Comment Type **T** *Comment Status* **A**

The line with text “nothing;” is an artifact and may safely be deleted.
This also applies to the following lines:
p.28, line 10
p.28, line 20
p.28, line 45

SuggestedRemedy

Delete line.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See resolution to comment #493.

Cl **04** *SC* **4.2.8** *P* **27** *L* **50** # **493**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

How long does it take to do "nothing"? We needed nothing in the old code because there was nothing to do while waiting for the timer to expire. Now we have something to do: Wait(1) and decrement the counter which has to take zero time for this to work out right. If we can Wait(1) can't we also Wait(interframeSpacingPart1)? I realize that process BurstTimer also did a Wait(1) and decrement loop, but procedure BackOff does the more sensible Wait(slotTime x Random(0, maxBackOff)).

SuggestedRemedy

Replace "while (realTimeCounter > 0) do" and its associated loop with Wait(interframeSpacingPart1). Also delete realTimeCounter=interframeSpacing1.Alternatively, at least delete "nothing".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.2.8** *P* **28** *L* **10** # **494**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

Here one cannot do Wait(interFrameSpacingPart1) because the code needs to be checking for carrierSense continuously. The new code relys on the loop steps other than Wait taking no time to execute when carrierSense is false. The old code didn't have that problem because the timing was done in a separate procedure. In any case, the line "nothing" is unnecessary.

SuggestedRemedy

At least delete "nothing". My preferred resolution would be to resurrect RealTimeDelay as a timer that counts bit times, but I haven't quite figured out the code for that. It is something likeprocedure StartRealTimeDelay (delay)begin RealTimeDelay = false
Wait (delay)
RealTimeDelay = true
end
but I don't know how to get in that the procedure has to restart if called again when the delay hasn't expired.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete the call for "nothing".
The previous draft had RealTimeDelay as a timer that counts bit times. However, it took more work (lines of code) to initialize it and call it than to just embed it in the main procedure. That's why we got rid of it.

Cl **04** *SC* **4.2.8** *P* **28** *L* **18** # **496**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

See my comment on page 27 line 50.

SuggestedRemedy

Replace "while (realTimeCounter > 0) do" and its associated loop with Wait(interframeSpacingPart2). Also delete realTimeCounter=interframeSpacing2.Alternatively, at least delete "nothing".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.2.8** *P* **28** *L* **33** # **495**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

This whole section seems more complicated than it needs to be. We need to stretch the interpacket gap to compensate for the time to send the data, but it isn't clear to me that we also need to stretch to compensate for the IPG time itself. The IPG is 96 bits and we can afford some shrinkage on it. The stretch ratio is such that an IPG causes less than a byte of shrinkage. Perhaps the intent is to allow much smaller stretch ratios for future MACs, but I think we are unlikely to want to adapt a MAC to a link much slower than the MACs speed and if we decide to do up to a 50% slow down for some future speed MAC, its phy can be burdened with dealing with a very short IPG.Therefore, my preference would be to not add the IPG bits to the IFS stretch count. Actually, I think we could also zero IFS stretch count between frames allowing another byte of IPG shrinkage, but keeping it doesn't seem to cause much complexity.

SuggestedRemedy

Remedy 1: (my first choice)
Replace from "realTimeCounter := interFrameSpacing" to the end before "deferring := false" inclusive with the following:
Wait (interFrameSpacing + ifsStretchSize * 8)
ifsStretchCount := 0

Remedy 2: (2nd choice)
Replace from "realTimeCounter := interFrameSpacing" to the end before "if not frameWaiting" with:
Wait (interFrameSpacing + ifsStretchSize * 8)

Remedy 3: (If you really can't bear to let IPG shrink by a fraction of a byte per packet)
Replace from "realTimeCounter := interFrameSpacing" to the end before "if not frameWaiting" with:
ifsStretchSize := ifsStretchSize + (ifsStretchCount + interFrameSpacing) div ifsStretchRatio {Adjust for minimum IFS transmission}
ifsStretchCount := (ifsStretchCount + interFrameSpacing) mod ifsStretchRatio {Save any left over stretch count for the next frame}
Wait (interFrameSpacing + ifsStretchSize * 8)
At least it gets rid of those ugly loops.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Simplify the code based on suggested Remedy 3. Add conditional statements to make clear that it only kicks in when we do ifsStretchMode.

The other two suggested remedies used to be in the earlier versions of the rate adaptation proposal. It has been revised several times based on the comments that I have received over time, every time making it more and more precise. Going back to the original proposal would only invite more comments in the future.

Cl **04** *SC* **4.2.8** *P* **28** *L* **36** # **822**

Tom Mathey — Independent

Comment Type **T** *Comment Status* **A**

There are three places where the same text is repeated. Convert text into a subroutine labeled ComputeStretch.
p.28, line 36
p.29, line 53
p.30, line 47

SuggestedRemedy

With p.28, line 36 as an example, convert text from
if ifsStretchMode then {Adjust for minimum IFS transmission}
begin
ifsStretchCount := ifsStretchCount + 1; {Count the bits during minimum IFS}
if (ifsStretchCount = ifsStretchRatio) then {Reached the “magic” number}
begin {Extend the IFS by one more octet and clear the bit-count}
ifsStretchSize := ifsStretchSize + 1;
ifsStretchCount := 0
end end else nothing;
to
if ifsStretchMode then ComputeStretchCount {Adjust for minimum IFS transmission}
ComputeStretchCount
begin
ifsStretchCount := ifsStretchCount + 1; {Count the bits during minimum IFS}
if (ifsStretchCount = ifsStretchRatio) then {Reached the “magic” number}
begin {Extend the IFS by one more octet and clear the bit-count}
ifsStretchSize := ifsStretchSize + 1;
ifsStretchCount := 0
end
end; {ComputeStretchCount}
and examine where variables are used to see which, if any, can be placed within new routine.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See resolution to comment #495.

Cl **04** *SC* **4.2.8** *P* **29** *L* **12** # **1329**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

paragraph is very confusing

SuggestedRemedy

Change to read as follows:
After the completion of timing the interFrameSpacing, the Deference process continues to enforce interframe spacing for an additional number of bit-times if ifsStretchMode is enabled. The additional number of bit-times is reflected in the variable ifsStretchSize. If the variable ifsStretchCount is less than ifsStretchRatio and the next frame is ready for transmission (variable frameWaiting is true), then the Deference process enforces interframe spacing only for the integer number of octets as indicated by ifsStretchSize and saves ifsStretchCount for the next frame's transmission. If the next frame is not ready for transmission (variable frameWaiting is false), then the Deference process initializes the ifsStretchCount variable to zero.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Rewrite this paragraph based on the suggested remedy, with minor modifications.

Cl **04** *SC* **4.2.8** *P* **29** *L* **51** # **499**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

We could handle the IPG stretching with a smaller number of lines here and no change to the Bit Transmitter if we are willing to get a bit more mathematical. See also my comment on page 28 line 33. If the suggestion of that comment to allow some IPG shrinkage rather than carry over a stretch count from frame to frame is accepted, the added text for the remedy would become:
if ifsStretchMode then
ifsStretchSize := (headerSize + frameSize) div ifsStretchRatio

SuggestedRemedy

Remove all new lines in BitTransmitter and PhysicalSignalEncap. Add after line 42:
if ifsStretchMode then begin
ifsStretchSize := (ifsStretchCount + headerSize + frameSize) div ifsStretchRatio {Calculate the extension of the interframe spacing} ifsStretchCount := (ifsStretchCount + headerSize + frameSize) mod ifsStretchRatio {Save any left over stretch count for the next frame} end

Proposed Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.2.8** *P* **30** *L* **35** # **1330**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

paragraph is a bit confusing

SuggestedRemedy

Change second and third sentences to read as follows:
This variable is initialized by the Deference process to a value between zero and (ifsStretchRatio - 1), depending on the value at the completion of transmission of the previous frame and the time the current frame's transmission is initiated. When ifsStretchCount variable reaches the value of ifsStretchRatio, the ifsStretchSize variable is...

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the text based on the resolution of comments #499 and #497.

Cl **04** *SC* **4.2.8** *P* **30** *L* **36** # **497**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

1. "to either a value of zero or to a value in the range between zero and (ifsStretchRatio-1)" can be "to a value in the range between zero and (ifsStretchRatio-1)" since zero is in that range (you must have meant the range to be inclusive since otherwise the top would be ifsStretchRatio).
2. "set" would probably be more appropriate than "initialized" because initialize implies that it happens once at initialization.
3. Bit Transmitter doesn't actually get the variable with the value that Deference process gave it. PhysicalSignalEncap will change the value.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This comment has been upgraded to technical by the editor.

This paragraph may also need major re-writing as a result of comment #499.

Cl **04** *SC* **4.2.9** *P* **33** *L* **34** # **473**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

We have put in changes to account for switch preservation of fcs, but not for different behavior of a switch MAC with respect to address recognition. For a switch, RecognizeAddress should always return true. Also 4.2.4.1.1 needs to cover switch behavior. Fortunately, the LayerMgmtRecognizeAddress function already contains a provision for promiscuous operation where it always returns true.

SuggestedRemedy

Either add a promiscuous mode to RecognizeAddress or say that switches always provide the LayerMgmtRecogizeAddress function with promiscuous receive enabled. Also, add description of such operation to 4.2.4.1.1.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Pg 99 of 802.3:2000 (5.2.4.3) has the promiscuous mode.
In clause 4, in the Pascal code replace RecognizeAddress with LayerManagementRecognizeAddress and change all calls to RecognizeAddress to LayerManagementRecognizeAddress.

Cl **04** *SC* **4.2.9** *P* **33** *L* **40** # **500**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

"possible" was correct and should not be replaced with "necessary". It probably was never necessary to strip pad. Most protocols provide ways of dealing with the pad bits. The bits are only stripped when the length/type field has a length value. When it has a type field, it is not possible for the MAC to strip pad because it has no way to know what part of the frame is pad. It is also not possible to strip the pad and pass the packet with a relevant CRC value.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.2.9** *P* **35** *L* **19** # **11**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

Excessively long minus sign

SuggestedRemedy

Replace whatever character is being used between "currentReceiveBit" and "1" with a hyphen (minus sign).

Proposed Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.3.2** *P* **37** *L* **17** # **501**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

It seems like we go to lengths here to explain two relatively minor differences between the transmit and receive functions and their primatives while ignoring a bigger difference. The primatives have m_sdu as one parameter. The functions break that into lengthOrTypeParam and dataParam.Also, I think these should be regular text and not notes.

SuggestedRemedy

Add another Note such as "The m_sdu parameter defined in 2.3.1 and 2.3.2 is mapped here into two variables: lengthOrTypeParam and dataParam. The first two bytes of m_sdu contain the lengthOrTypeParam. The remainding bytes of m_sdu form the dataParam."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.3.2** *P* **37** *L* **17** # **502**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

If my comments on clause 2 cause changes to paramater names, they will have to be reflected here.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.3.2** *P* **37** *L* **19** # **506**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Currently, nothing in the Pascal makes it apparent that support for using an FCS provided by the service interface is optional. The simplest way to provide for that is to add a statement here that fcsParamPresent shall always be false.

SuggestedRemedy

Add to the end of the note: "If the MAC does not support client-supplied frame check sequence values, then fcsParamPresent in Transmit Frame shall always be false."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.3.2** *P* **37** *L* **44** # **503**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Where does the TransmitStatus value go? The service interface definition doesn't support reporting the result of transmit efforts. At a minimum, something should be said about the discrepancy like "TransmitStatus is not used by the service interface defined in 2.3.1. TransmitStatus may be used in an implementation dependant manner."

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.3.2** *P* **37** *L* **47** # **504**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

This should be "MACs operation in full duplex mode at..." because the requirement would not apply to a Gigabit MAC that operated only in full duplex mode.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Should be "MACs operating in the half-duplex mode at the speed....".
Same for the lower speeds.

Cl **04** *SC* **4.3.2** *P* **38** *L* **12** # **505**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Where does the ReceiveStatus value go? The receive primative doesn't have any place for it. The service interface definition doesn't support sending up invalid frames. At a minimum, something should be said about the discrepancy like "ReceiveStatus is not used by the service interface defined in 2.3.2. ReceiveStatus may be used in an implementation dependant manner."

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.4.2.8** *P* **27** *L* **50** # **10**

Brown, Benjamin J — AMCC

Comment Type **T** *Comment Status* **A**

What is the point of the "nothing" procedure? I'm not sure I agree that it enhances readability.

SuggestedRemedy

Remove the "nothing" procedure and all locations where it is called.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The use of the "nothing" procedure in the indicated location is not required. However, it is still needed in many other places in the Pascal code, where it does enhance readability (loops waiting for an event. See page 23 line 21).

Cl **04** *SC* **General** *P* **12** *L* **33** # **475**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **R**

Also line 39 and many other places in clause 4. The changes are not actually necessary. The statements are true as they were "In half duplex mode at speeds above 100 Mb/s, ..." is true even if there are some speeds where one is never in half duplex mode. All instances of "at speeds above 100 Mb/s" are either part of "In half duplex mode at speeds above 100Mb/s" or are in clauses that only apply to half duplex except for the instance on page 26 line 39. Since that instance is in the explanation of WatchForCollision, it also only applies to half duplex.

SuggestedRemedy

I'd rather insert at line 26 a statement that half-duplex mode is not supported at all operating speeds and not tweak every instance of "In half-duplex mode at speeds above ..."

Proposed Response *Response Status* **C**

REJECT.

These changes may not be needed for technical accuracy. However, this way it makes perfectly clear that we will not have a half duplex mode for higher speeds, and carrier extension and packet bursting was a one-time exercise.

Cl **04** *SC* **multiple** *P* *L* # **1320**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

change sub-clause to subclause

SuggestedRemedy

fix

Proposed Response *Response Status* **C**

ACCEPT.

Cl **06** *SC* **6.1** *P* **42** *L* **33-35** # **1039**

Robert Grow Intel

Comment Type **E** *Comment Status* **A**

The expansion of acronyms is in random order. Though there may be historical reasons for this (i.e., higher layers to lower layers when there was one protocol stack) there is no descernable reason for order in the current pictures.

SuggestedRemedy

Put in alphabetical order

Proposed Response *Response Status* **C**

ACCEPT.

Cl **06** *SC* **6.2** *P* **42** *L* **6** # **508**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

Having simplified the figure to only show the case where this applies, it would be good to state the speeds where PLS applies. Add before the new text "for 1 Mb/s and 10 Mb/s implementations". Also, the figure this replaces showed the PLS exisiting in two places - directly below the MAC and below an RS and MII for 10 Mb/s operation of an MII. Both positions should be shown as the PLS is necessary when a 10 Mb/s MAU is attached to an MII.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **06** *SC* **multiple** *P* *L* # **1321**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

change sub-clause to subclause

SuggestedRemedy

fix

Proposed Response *Response Status* **C**

ACCEPT.

Cl **22** *SC* **22.1** *P* **2** *L* **23-27** # **1040**

Robert Grow Intel

Comment Type **E** *Comment Status* **A**

The expansion of acronyms is in random order. Though there may be historical reasons for this (i.e., higher layers to lower layers when there was one protocol stack) there is no descernable reason for order in the current pictures.

SuggestedRemedy

Put in alphabetical order

Proposed Response *Response Status* **C**

ACCEPT.

Cl **22** *SC* **22.1** *P* **44** *L* **16** # **509**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **R**

Shouldn't "GMII" and "1 Gb/s" be deleted from the figure? The Reconcilliation sublayer described in this clause only applies to MII use.

SuggestedRemedy

Proposed Response *Response Status* **C**

REJECT.

The Management Interface for 1Gb/s is specified in this clause.

Cl **22** *SC* **22.1** *P* **44** *L* **20** # **1331**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

MEDIUM box different than what is in 802.3:2000

SuggestedRemedy

Change left side of rightmost MEDIUM box to be square to match 802.3:2000.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.** *P* **46** *L* **1** # **511**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

This title is getting a little unwieldy and isn't the bottom line that this is _the_ management clause for all 802.3. All the other management clauses have been deprecated.

SuggestedRemedy

Change the title to "Layer Mangement".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

As this clause does not include 1 Mb/s Management propose that this clause be re-named '10 Mb/s, 100 Mb/s, 1000Mb/s and 10 Gb/s Management'.

Cl **30** *SC* **30.** *P* **46** *L* **16** # **510**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

add a space between 100 and Mb/s

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.** *P* **46** *L* **23** # **512**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Implementation of layer management is also not a requirement of most of the clauses that are not included in the list such 8, 12, 14, Let's change this to "Implementation of part or all of Layer Management is not a requirement for conformance to any other clause of this standard." which I think is true. If not use "Implementation of layer management is only a requirement for conformance to ..." which would be a much shorter list.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.
The text will be changed to read "Implementation of part or all of Layer Management is not a requirement for conformance to any other clause of this standard."

Cl **30** *SC* **30.0** *P* **46** *L* **21** # **1332**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

Clause 33 is missing from this list (DTE Power via MDI).

SuggestedRemedy

Should 33 be added to this list?

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
This list has been replaced by the text "Implementation of part or all of Layer Management is not a requirement for conformance to any other clause of this standard." in response to comment #512 and hence the need to add clause 33 has been removed.

Cl **30** *SC* **30.1.1** *P* **46** *L* **32** # **513**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Delete "external" as it is equally suitable for managing embedded PHYs. Also, MII and GMII are on the list because those MIIs include the MDIO/MDC pins. The item that should be added for 10 Gb/s is "MDIO Interface" rather than XGMII. Alternatively, since one may also manage PHYs which provide access via a proprietary interface, perhaps this should just say "and PHYs"Also consider simplifying to something like "MAC Control, DTEs and repeaters at speeds greater than 10 Mb/s, embedded MAUs, and PHYs."

SuggestedRemedy

Changing "XGMII" to "MDIO interface" will resolve the disapprove. The rest are editorial suggestions.

Proposed Response *Response Status* **C**

ACCEPT.
The text will be changed to read "It also includes the additions for management of MAC Control, DTEs and repeaters at speeds greater than 10 Mb/s, embedded MAUs, and PHYs."

Cl **30** *SC* **30.1.1** *P* **46** *L* **38** # **514**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

The first sentence of this paragraph just repeats information from the prior paragraph and it leaves out PHYs. Delete it. Also, the last two sentences seem unrelated to the rest of the paragraph. Make them start a new paragraph.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.2.1** *P* **47** *L* **1** # **515**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

The construction of these sentences is difficult to parse and I know what it means to say, but I can parse it two ways. Also, I'm on a crusade today against parts of the standard that we have to modify every time we add a new speed without adding any new information.

SuggestedRemedy

Replace everything from "Counters in ...." to end of paragraph with:"Where a counter has a maximium increment rate specified for 10 Mb/s operation and the counter is appropriate to higher speed operation, then the maximum increment rate is (speed of operation in Mb/s)/10 unless otherwise stated."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
We also have counters that are specified at rates other than 10Mb/s (aSymbolErrorsDuringCarrier is specified at 100Mb/s) so the new text to replace everything from "Counters in ...." to end of paragraph reads:

"Where a counter has a maximum increment rate specified at one speed of operation, and that counter is appropriate to a higher speed of operation, then the maximum increment rate at that higher speed of operation is

maximum increment rate specified * (speed of operation in Mb/s)/(specified speed of operation in Mb/s)

unless otherwise indicated."

Cl **30** *SC* **30.2.1** *P* **47** *L* **5** # **823**

Tom Mathey — Independent

Comment Type **T** *Comment Status* **A**

The text needs to describe the condition, which did not previously exist, where the counter is incremented on fixed time intervals, such as once per second, independent of the rate. An example is 30.8.1.1. aSectionSESs with text of: aGeneralized nonresettable counter. This counter has a maximum increment rate of 1 count per second

SuggestedRemedy

Add text with liberal latitude to editor of: Some counters for 10 Gb/s operation increment on a fixed time interval, such as n times per second.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

All counters that have the text "This counter has a maximum increment rate of 1 count per second" will be changed to read "This counter has a maximum increment rate of 1 count per second independent of speed of operation"

I do not believe that any further change is required to subcluase 30.2.1 as it currently states "Counters in 30.3, 30.4, 30.5 and 30.6 that have maximum increment rates specified for 10 Mb/s operation .." hence it would not have applied to the above counters and comment #515 changes it to read "Where a counter has a maximum increment rate specified at one speed of operation .. .. unless otherwise indicated." so it will still not apply to the above counters.

Cl **30** *SC* **30.2.2.2** *P* **47** *L* **20** # **516**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

When we first wrote this line, it seemed like a good idea but it is getting a little ridiculous. Instead of providing a growing list of clause, how about:"Funtions are defined in other clause of which facilitate managed operation. The functions in other clauses that facilitate ...."I deleted "unmanaged operation and" because that didn't seem relevant. If you don't take my suggestion, then you will need to add 45 to the list.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.
The text will be changed to read "Functions are defined in other clauses which facilitate managed operation. The functions in other clauses that facilitate ...."

Cl **30** *SC* **30.2.2.2** *P* **47** *L* **20** # **1333**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

Clause 33 is missing from this list (DTE Power via MDI).

SuggestedRemedy

Should 33 be added to this list?

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This list has been replaced, see comment #516, and hence the need to add clause 33 has been removed.

Cl **30** *SC* **30.2.2.2** *P* **48** *L* **43** # **1334**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

missing spaces

SuggestedRemedy

insert spaces between 10 and Mb/s, and 100 and Mb/s

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This text will be modified to read "Entity relationship diagram" (Sponsored by the crusade against useless lists of speeds.) which will remove the text where the spaces are missing.

Cl **30** *SC* **30.2.4** *P* **48** *L* **36** # **519**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

"Present if MII" is not true for 10 Gb/s. Change to "Present if MII, GMII or MDIO interface." It could be made a note if it doesn't fit in the box. Alternatively, it could be deleted since lots of the other boxes are only present some of the time and don't have notes indicating when. (E.g. the WIS box doesn't say "present only if WAN Phy".)

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

The text will be deleted.

Cl **30** *SC* **30.2.4** *P* **48** *L* **43** # **517**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Figure 30-3 - Change the title to "Entity relationship diagram"Sponsored by the crusade against useless lists of speeds.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.2.5** *P* **49** *L* **11** # **522**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Could we just call it Phy Error Monitor Capability? Everything it reports seems to be some kind of Phy detected error.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.2.5** *P* **49** *L* **4** # **518**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Should WIS managment be added to this list?

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The WIS is part of MAU management and as such is not included in the list. A similar example is Auto-Negotiation which is not included in the list.

Propose to change the text "IEEE 802.3 10 Mb/s, 100 Mb/s, 1000 Mb/s, 10Gb/s, MAC Control, and Link Aggregation Management." to read "IEEE 802.3 Management."

Cl **30** *SC* **30.2.5** *P* **49** *L* **6** # **12**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

Extra comma in list of speeds as compared to a similar list in clause 30, page 46, line 16.

SuggestedRemedy

Replace "100 Mb/s, 1000 Mb/s, and 10 Gb/s" with "100 Mb/s, 1000 Mb/s and 10 Gb/s"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This text has now been removed by the crusade against useless list of speeds.

Cl **30** *SC* **30.2.5** *P* **49** *L* **6** # **521**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

Add MAC Control which is also in these tables.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the text " The capabilities and packages for 10 Mb/s, 100 Mb/s, and 1000 Mb/s, and 10 Gb/s Management are specified in Tables 30-1a, 30-1b, 30-1c, 30-1d, and 30-1e. The capabilities and packages for Link Aggregation Management are specified in Table 30-2. The capabilities and packages for WIS Management are specified in Table 30-3."

to read

"The capabilities and packages for IEEE 802.3 Management are specified in Tables 30-1, 30-2 and 30-3."

Note for Brad - Are we "IEEE 802.3", "ISO/IEC 8802-3" or "this International Standard".

Cl **30** *SC* **30.3.1.1.31** *P* **51** *L* **26** # **524**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

You added rate matching here, but MACCapabilities is still defined in the syntax as a list of DuplexValues and DuplexValues does not have entries for capability of rate matching. Also, DuplexValues would be an odd name under which to put a rate matching value and it is also used for aDuplexStatus which doesn't take rate matching values. Rate matching is defined under RateValues.

SuggestedRemedy

Either give rate matching its own capability attribute or define a set of values that includes both duplex values and rate values. It might be good to define RateValues so that they don't use the enumerations already used by DuplexValues. That way, CapabilityValues (or whatever we call the concatenation of the two) can use the same meanings for each value as the DuplexValues and RateValues do.

Proposed Response *Response Status* **C**

ACCEPT.

A new attribute will be added to indicate the rate control abilities of the MAC. aRateControlAbility. In addition an attribute "aStretchRatio" to control ifsStretchRatio in the MAC.

Cl **30** *SC* **30.3.1.1.33** *P* **51** *L* **33** # **523**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

If an attribute is added, don't you also have to add it to Table 30-1?

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

The changes to the Table 30-1 will be added to the next draft. In addition the new attributes will need to be added to an existing package.

Cl **30** *SC* **30.3.1.1.7** *P* **53** *L* **14** # **520**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

suggest "8-bit or more wide group encoding schemes"or "for group encoding schemes encoding greater than 4 bits per group".If we ever did an encoding scheme with strange width such as 5b/6b, we would probably not report alignment errors either and the dangling preposition in "or a multiple of" is awkward.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Change the text to read "for group encoding schemes encoding greater than 4 bits per group"

Cl **30** *SC* **30.3.1.2.4** *P* **52** *L* **6** # **525**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

The new text should say "or Clause 45 MDIO Interface" or, if we have agreed that the objects are required to be accessible via proprietary means even when the MDIO Interface is not present, then "or a 10 Gb/s PHY".Note that this is under the assumption that MII and GMII are included here because they contain the MDIO/MDC through which loopback is invoked and not because they are a boundary across which loopback is performed. To avoid enumeration of means one could say "If PHY loopback is accessible to management ..."

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

The text will be changed to read "If PHY loopback is accessible through Clause 22 MII, Clause 35 GMII, or Clause 45 MDIO, then this action shall also invoke a data integrity test using ..."

Cl **30** *SC* **30.3.2.1.2** *P* **52** *L* **38** # **526**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **R**

Shouldn't the enumeration "none" also be appropriate when a GMII, XGMII, or XAUI has nothing connected to it? Also effects lines 24 and 51.

SuggestedRemedy

Proposed Response *Response Status* **C**

REJECT.

We have only supported connectors that are defined as "exposed" connectors within 802.3, I.e. AUI and MII hence why GMII is not included and XGMII and XAUI have not been added.

Cl **30** *SC* **30.3.2.1.3** *P* **53** *L* **6** # **13**

Brown, Benjamin J — AMCC

Comment Type **T** *Comment Status* **A**

Description of 10GBASE-W describes 64B/66B but does not include its clause. This comment also applies to the following: Clause 30.5.1.1.2, page 55, line 35 Clause 30B.2, page 144, line 48 Clause 30B.2, page 147, line 45

SuggestedRemedy

Replace "Clause 50" with "Clauses 49 & 50"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.3.2.1.3** *P* **53** *L* **8** # **527**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

The capabilities listed here seem to be primarily PCS/WIS. What if the PCS/WIS supports capabilities that the currently connected PMD does not. For instance, if there is a PCS and a bypassable WIS sublayer connected to a PMD that only supports the LAN data rate, does the implementation return 10GBASE-R and 10GBASE-W because the PCS and WIS sublayer support both or does it report only 10GBASE-R because with the currently installed PMD that is all it can support?For aPhyType, what value does it return if someone has plugged a 10GBASE-R only PMD into a 10GBASE-W PCS/WIS?

SuggestedRemedy

It would be simplist to use aPhyType and aPhyTypeList to report the PCS and WIS sublayer capability of the implementation. aMAUType can be used to query the type of MAU attached to that PCS or WIS.

Proposed Response *Response Status* **C**

ACCEPT.

Add a note that states - At 10Gb/s the ability of the PMD must be taken into account when presenting the possible types that the PHY could be.

Cl **30** *SC* **30.3.2.1.5** *P* **53** *L* **36** # **14**

Brown, Benjamin J — AMCC

Comment Type **T** *Comment Status* **A**

Need to indicate the new increments rate since it is not 1000 times the stated maximum as described in clause 30.2.1, page 47, lines 5 & 6.

SuggestedRemedy

Append the following to the paragraph ending on line 36: "This counter increments at 100 times the stated maximum when operating at 10 Gb/s."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #515

Cl **30** *SC* **30.5** *P* **54** *L* **18** # **1335**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

missing spaces

SuggestedRemedy

insert spaces between:
10 and Mb/s
100 and Mb/s
10 and Gb/s

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.5.1.1.2** *P* **55** *L* **42** # **529**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Delete the list of speeds. "Returns a value that identifies the internal MAU type." Why say any more?

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.5.1.1.2** *P* **55** *L* **42** # **1336**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

missing space

SuggestedRemedy

insert space between 10 and Gb/s

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.5.1.1.4** *P* **56** *L* **48** # **530**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

If we use the existing enumerations, it is pretty straight forward what to do (though less useful because we will be reducing a lot of info to a few status values): If the RS is not receiving LF and not receiving RF, then the status is MAU available. If it is receiving LF, the status is not available. If it is receiving RF, the status is remote fault. Not receiving LF also means that all the device link status bits are good. We have the capability of determining several gradations for "not available" (and it seems strange that the remote fault values enumerated currently have finer gradation than local fault). Also, none of the errors seem to fit "PMD not present" should that be added? If not, what do you report when the PMD isn't there?

SuggestedRemedy

Add enumerations (highest precedence to lowest ordered)
not available - PMD loss of signal (PMD/PMA device reporting LOS)
not available - WIS loss of sync (the WIS can't get frame lock)
not available - WIS link down (WIS has frame lock but Sonet fields say link is bad)
not available - PCS loss of sync
not available - excessive BER (from PCS BER monitor in 64b/66b)
not available - DTE XGXS loss of signal
not available - DTE XGXS loss of sync
I'm not sure where to put the outbound faults of PHY XGXS loss of signal and loss of sync in precedence. Perhaps they should have their own attribute or they should be highest precedence.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

These additional enumerations will be added (although the actual names need to be changed) and the necessary additional text added to the behavior.

Cl **30** *SC* **30.8.1.1.12** *P* **60** *L* **10** # **280**

Figueira, Norival — Nortel Networks

Comment Type **T** *Comment Status* **A**

Since the existence of a Clause 45 MDIO Interface to the WIS implies that aLineStatus will map to the WIS Line Status register specified in 45.2.2.3 page 181, and the bits in this register are latched, aLineSESs cannot use the bits in aLineStatus in its definition. aLineSESs needs to use the original signals generated by the WIS.

SuggestedRemedy

Change "(i.e., the AIS-L bit of aLineStatus was equal to 1)" to ",i.e., the AIS-L flag (50.3.2.5) was equal to 1".

Proposed Response *Response Status* **C**

ACCEPT.

In addition:

1) Remove the text from the counter that refers to aLineStatus
2) Change aLineStatus to be latching
3) Add an attribute to clear the latched state of aLineStatus

Cl **30** *SC* **30.8.1.1.13** *P* **60** *L* **22** # **281**

Figueira, Norival — Nortel Networks

Comment Type **T** *Comment Status* **A**

Since the existence of a Clause 45 MDIO Interface to the WIS implies that aLineStatus will map to the WIS Line Status register specified in 45.2.2.3 page 181, and the bits in this register are latched, aLineESs cannot use the bits in aLineStatus in its definition. aLineESs needs to use the original signals generated by the WIS.

SuggestedRemedy

Change "(i.e., the AIS-L bit of aLineStatus was equal to 1)" to ",i.e., the AIS-L flag (50.3.2.5) was equal to 1".

Proposed Response *Response Status* **C**

ACCEPT.

In addition:

1) Remove the text from the counter that refers to aLineStatus
2) Change aLineStatus to be latching
3) Add an attribute to clear the latched state of aLineStatus

Cl **30** *SC* **30.8.1.1.14** *P* **60** *L* **30** # **1337**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

missing space

SuggestedRemedy

insert space between 10 and Gb/s

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.8.1.1.15** *P* **60** *L* **44** # **282**

Figueira, Norival — Nortel Networks

Comment Type **T** *Comment Status* **A**

Since the existence of a Clause 45 MDIO Interface to the WIS implies that aLineStatus will map to the WIS Line Status register specified in 45.2.2.3 page 181, and the bits in this register are latched, aFarEndLineSESs cannot use the bits in aLineStatus in its definition. aFarEndLineSESs needs to use the original signals generated by the WIS.

SuggestedRemedy

Change "(i.e., the RDI-L bit of aLineStatus was equal to 1)" to ",i.e., the RDI-L flag (50.3.2.5) was equal to 1".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

1) Remove the text from the counter that refers to aLineStatus
2) Change aLineStatus to be latching
3) Add an attribute to clear the latched state of aLineStatus

Cl **30** *SC* **30.8.1.1.16** *P* **61** *L* **2** # **283**

Figueira, Norival — Nortel Networks

Comment Type **T** *Comment Status* **A**

Since the existence of a Clause 45 MDIO Interface to the WIS implies that aLineStatus will map to the WIS Line Status register specified in 45.2.2.3 page 181, and the bits in this register are latched, aFarEndLineESs cannot use the bits in aLineStatus in its definition. aFarEndLineESs needs to use the original signals generated by the WIS.

SuggestedRemedy

Change "(i.e., the RDI-L bit of aLineStatus was equal to 1)" to ",i.e., the RDI-L flag (50.3.2.5) was equal to 1".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

1) Remove the text from the counter that refers to aLineStatus
2) Change aLineStatus to be latching
3) Add an attribute to clear the latched state of aLineStatus

Cl **30** *SC* **30.8.1.1.17** *P* **61** *L* **10** # **1338**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

missing space

SuggestedRemedy

insert space between 10 and Gb/s

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.8.1.1.2** *P* **57** *L* **51** # **824**

Tom Mathey Independent

Comment Type **E** *Comment Status* **A**

Text for “Loss of Signal” appeares to be in a smaller font size than surrounding text.

SuggestedRemedy

Check font size, also for text “Loss of Frame” on line 52.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.8.1.1.20** *P* **61** *L* **48** # **1249**

Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **R**

Note: an example of counter length no specified in clause 30.Though redundant, shouldn't we specify counter length (size) here?

SuggestedRemedy

Specify length of counter.

Proposed Response *Response Status* **C**

REJECT.

Clause 30 is the Protocol independent Management specification and as such does not specify counter sizes. The Protocol dependent Management specifications in the Clause 30 Annexes (Annex 30A & B - GDMO, Annex 30C - SNMP) provide the counter size specifications as these may be different for different protocols (GDMO supports 64 bit counters, SNMP SMI v1 can only support 32 bit counters and will supply two 32 bits counter to support a 64 bit counter, SNMP SMI V2 can support 64 bit counters).

Cl **30** *SC* **30.8.1.1.20** *P* **61** *L* **52** # **284**

Figueira, Norival Nortel Networks

Comment Type **T** *Comment Status* **A**

Since the existence of a Clause 45 MDIO Interface to the WIS implies that aPathStatus will map to the WIS Path Status register specified in 45.2.2.5 page 183, and the bits in this register are latched, aPathSESs cannot use the bits in aPathStatus in its definition. aPathSESs needs to use the original signals generated by the WIS.

SuggestedRemedy

Change "(i.e., any of the bits of aPathStatus is set to 1)" to ",i.e., the LOP-P flag (50.3.2.5) was equal to 1, or the AIS-P flag (50.3.2.5) was equal to 1, or the PLM-P flag (50.3.2.5) was equal to 1, or the LCD-P flag (50.3.2.5) was equal to 1,".

Proposed Response *Response Status* **C**

ACCEPT.

In addition:

1) Remove the text from the counter that refers to aPathStatus
2) Change aPathStatus to be latching
3) Add an attribute to clear the latched state of aPathStatus

Cl **30** *SC* **30.8.1.1.21** *P* **62** *L* **10** # **285**

Figueira, Norival Nortel Networks

Comment Type **T** *Comment Status* **A**

Since the existence of a Clause 45 MDIO Interface to the WIS implies that aPathStatus will map to the WIS Path Status register specified in 45.2.2.5 page 183, and the bits in this register are latched, aPathSESs cannot use the bits in aPathStatus in its definition. aPathSESs needs to use the original signals generated by the WIS.

SuggestedRemedy

Change "(i.e., any of the bits of aPathStatus is set to 1)" to ",i.e., the LOP-P flag (50.3.2.5) was equal to 1, or the AIS-P flag (50.3.2.5) was equal to 1, or the PLM-P flag (50.3.2.5) was equal to 1, or the LCD-P flag (50.3.2.5) was equal to 1,".

Proposed Response *Response Status* **C**

ACCEPT.

In addition:

1) Remove the text from the counter that refers to aPathStatus
2) Change aPathStatus to be latching
3) Add an attribute to clear the latched state of aPathStatus

Cl **30** *SC* **30.8.1.1.3** *P* **58** *L* **10** # **15**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

I don't know if this is a European thing or not but there is a space in the middle of the number 8554. This comment also applies to the following: Clause 30.8.1.1.11, page 59, lines 48 & 50 Clause 30.8.1.1.19, page 61, lines 39 & 41

SuggestedRemedy

Remove the space within the number

Proposed Response *Response Status* **C**

ACCEPT.

This is not a European thing but relates to a USA based Standards body. In the 2000 Edition of the IEEE Standards Guide (http://standards.ieee.org/guides/style/2000Style.pdf) subclause 15.3.2 reads:

15.3.2 Numerical values
To facilitate the comprehension of numbers, digits shall be separated into groups of three, counting from the decimal point toward the left and right. The groups shall be separated by a space, rather than by a comma, period, or dash. If the magnitude of the number is less than one, the decimal point shall be preceded by a zero. In numbers of four digits, the space is not necessary, unless four-digit numbers are grouped in a column with numbers of five digits or more.

Examples:
73 722 7372 0.133 47

All numbers shall be aligned at the decimal point. The width of the columns may vary to accommodate the length of the longest entry in each column. Only as many significant digits should be used as the precision of data justifies. Decimals shall be used in tabulations unless fractions are commonly used in the field. Fractions and decimals shall not be combined in the same table. A dash shall be used to indicate the lack of data for a particular cell in a table.

This comment does however point out that there is an error in the Clause 30 draft as four digit numbers have a space after the first digit which is not correct.

Cl **30** *SC* **30.8.1.1.3** *P* **58** *L* **9** # **1248**

Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **R**

Note: this is an example of several cases in clause 30.A variable name that had some meaning might be more helpful than "x".

SuggestedRemedy

How about "Section_SES_threshold"

Proposed Response *Response Status* **C**

REJECT.

X is the globally accepted symbol for thresholds in SONET/SDH and we wish to remain consistent to this particularly as Clause 50 references these standards so frequently.

Cl **30** *SC* **30.8.1.1.4** *P* **58** *L* **23** # **278**

Figueira, Norival Nortel Networks

Comment Type **T** *Comment Status* **A**

Since the existence of a Clause 45 MDIO Interface to the WIS implies that aSectionStatus will map to the WIS Section Status register specified in 45.2.2.4 page 182, and the bits in this register are latched, aSectionSESs cannot use the bits in aSectionStatus in its definition. aSectionSESs needs to use the original signals generated by the WIS.

SuggestedRemedy

Change "(i.e., any of the bits of aSectionStatus is equal to 1)" to ",i.e., the LOS flag (50.3.2.5) was equal to 1 or the LOF flag (50.3.2.5) was equal to 1,".

Proposed Response *Response Status* **C**

ACCEPT.

In addition:

1) Remove the text from the counter that refers to aSectionStatus
2) Change aSectionStatus to be latching
3) Add an attribute to clear the latched state of aSectionStatus

Cl **30** *SC* **30.8.1.1.5** *P* **58** *L* **37** # **279**

Figueira, Norival — Nortel Networks

Comment Type **T** *Comment Status* **A**

Since the existence of a Clause 45 MDIO Interface to the WIS implies that aSectionStatus will map to the WIS Section Status register specified in 45.2.2.4 page 182, and the bits in this register are latched, aSectionESs cannot use the bits in aSectionStatus in its definition. aSectionESs needs to use the original signals generated by the WIS.

SuggestedRemedy

Change "(i.e., any of the bits of aSectionStatus is equal to 1)" to ",i.e., the LOS flag (50.3.2.5) was equal to 1 or the LOF flag (50.3.2.5) was equal to 1,".

Proposed Response *Response Status* **C**

ACCEPT.

In addition:

1) Remove the text from the counter that refers to aSectionStatus
2) Change aSectionStatus to be latching
3) Add an attribute to clear the latched state of aSectionStatus

Cl **30** *SC* **30.8.1.1.8** *P* **59** *L* **14** # **277**

Figueira, Norival — Nortel Networks

Comment Type **E** *Comment Status* **A**

Typo: "An single".

SuggestedRemedy

Change to "A single".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **General** *P* **54** *L* **19** # **528**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Clause 30 has numerous references to MAU where it clearly is used to mean "the bottom of all physical stacks" but only 10 Mb/s Ethernet uses MAUs. The higher speed stacks don't use the term and the only references to it in their clauses are in relation to supporting 10 Mb/s MAUs with the MII. PMD is the closest equivalent. It seems late to change all the instances of MAU to "MAU or PMD" or to develop a term that includes both since many instances appear in names of capabilities, attributes, etc.

SuggestedRemedy

In the Clause 30 overview and at the beginning of 30.5 put a statement like: "The sublayer that connects directly to the media is called MAU for 10 Mb/s operation and PMD at higher operating speeds. Because this clause defines management for use at many speeds, it needs to be able to refer to MAUs and PMDs as a group. Therefore in this clause, the term MAU will include PMDs as well as MAUs except in those instances where it is explicitly restricted to 10 Mb/s.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Generally the 'MAU' is the PMA, PMD (added for 100Mb/s and higher) and the MDI. The wording suggested will be added with the addition of the modification of the word PMD to reflect the other sublayers that are part of the 'MAU'

Cl **30** *SC* **multiple** *P* *L* # **1339**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

numbering along the edge goes from outside placement to right hand placement

SuggestedRemedy

adjust to use outside placement

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30A** *SC* **30A.** *P* **67** *L* **37** # **531**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

"that" should be "than"Also, is the meaning of this paragraph that some attributes will have 64 bit counters at higher speeds and 32-bit counters at lower speeds because they roll in less than 58 minutes with a higher speed? Or do we let them roll over in about 3 seconds for 10 Gb/s?

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

"that" will be changed to read "than"

The intent of the text is that if a 32 bit counter would roll over in less than 58 minutes, a 64 bit counter should be used.

Cl **30A** *SC* **30A.** *P* **67** *L* **38** # **16**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

Too much text was removed from the previous draft. Also, at the end of this line, the "Mb/" should not be separated from the "s"

SuggestedRemedy

Remove the strikethrough from the word "counters". The strikethrough should only be through the comma. Also, fix the wrap at the end of the line so the "Mb/s" is kept together.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30A** *SC* **30A.15.1** *P* **131** *L* **24** # **17**

Brown, Benjamin J — AMCC

Comment Type **T** *Comment Status* **R**

The attribute aSectionSESthreshold uses GET-REPLACE here but uses GET & SET in clause 30.8.1.1.3, page 58. Same comment applies to the following attributes on this page: aJ0ValueTX aLineSESthreshold aPathSESthreshold aJ1ValueTX

SuggestedRemedy

Reconcile to make both GET-SET or GET-REPLACE

Proposed Response *Response Status* **C**

REJECT.

Clause 30 is the Protocol independent Management specification, the Protocol dependent Management specifications are in the Clause 30 Annexes (Annex 30A & B - GDMO, Annex 30C - SNMP).

The use of GET-SET within the GDMO Management specification (Annex 30A & B) is a long standing error and causes a GDMO compiler to report numerous errors. That error is now fixed in 802.3ae, in not only the WIS related attributes, but in all the existing ones. While it could be argued that a similar change should be made to Clause 30 it should be stated again that Clause 30 is a Protocol Independent Management definition (although very GDMO biased) and therefore it can be argued that GET-SET is being used colloquially rather than as GDMO keyword. In adition this change to Clause 30 would be very wide ranging and would have significant formatting implications to table 30-1. For this reason I believe that Clause 30 and Annex 30A are correct in this respect and no change is required.

Cl **30B** *SC* **30B.2** *P* **145** *L* **11** # **790**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

spelling error

SuggestedRemedy

change "disbaled" to "disabled"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **31** *SC* **31.4.1.6** *P* **150** *L* **14** # **532**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Delete the new words "of the". The sentence read better as it was. Also remove the changes on line 17 to 19.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **31** *SC* **31.5.1** *P* **150** *L* **39** # **533**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

The fcs parameter should not be the concatenation of the two variables. The way the service interface primatives are defined a parameter may or may not be present and no indicator is necessary to say it isn't present.

SuggestedRemedy

Text for d) should be:
The fcs parameter is equal to the fcsParamValue from the ReceiveFrame function if fcsParamPresent from the ReceiveFrame function is true; otherwise, the fcs parameter is not present.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **31** *SC* **multiple** *P* *L* # **1322**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

change sub-clause to subclause

SuggestedRemedy

fix

Proposed Response *Response Status* **C**

ACCEPT.

Cl **31B** *SC* **31B.3.1** *P* **152** *L* **18** # **826**

Tom Mathey — Independent

Comment Type **T** *Comment Status* **R**

The text for indented bullets a) thru d) on lines 9 thru 17 do not include all of the matching indented bullets a) thru d) on lines 24 thru 30 in that passing of fcs is not incuded.

SuggestedRemedy

Replicate bullet d) on line 30 as bullet e) following d) after line 17.

Proposed Response *Response Status* **C**

REJECT.

Pause frames always originate within the MAC Control sublayer. Therefore, the MAC will always have to generate the CRC for these frames. The passing of the CRC is intended only for MAC clients that are relay entities and not end stations or internal sublayers of a DTE.

Cl **31B** *SC* **31B.3.7** *P* **153** *L* **11** # **780**

Furlong, Darrell R — Aura Networks

Comment Type **E** *Comment Status* **R**

Specify data rate as 10Gig only.

SuggestedRemedy

Remove reference to above 10Gig.

Proposed Response *Response Status* **C**

REJECT.

The value chosen here is generous enough to also accommodate higher speeds in the future. If we are wrong, then this section will have to change anyway to add a parameter for a higher speed. If we are right, then we might save ourselves the trouble of editing this clause again. In any case, there is no harm in specifying it this way.

Cl **31B** *SC* **31B.3.7** *P* **153** *L* **16** # **827**

Tom Mathey — Independent

Comment Type **T** *Comment Status* **A**

The text provides a hint to designers to account for the link delay, but does not include a pointer to management variable. The pointer to Clause 29 is mostly for 100 BASE half-duplex operation. Remove or add pointer to all speeds.

SuggestedRemedy

Add text “(see 30.3.4.1)”. Remove text “(see Clause 29)”.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove the pointer to clause 29. This will eliminate the need for changing this section in the future.

I don't understand why we need a pointer to clause 30. I don't believe we specified pointers to this clause for any other attributes. There is nothing special about this one that would justify treating it any differently.

Cl **31B** *SC* **31B.3.7** *P* **153** *L* **43** # **781**

Furlong, Darrell R — Aura Networks

Comment Type **E** *Comment Status* **R**

Specify the value for TIM5 for 10Gig only.

SuggestedRemedy

Remove reference to above 10Gig.

Proposed Response *Response Status* **C**

REJECT.

See resolution to comment #780.

Cl **31B** *SC* **31B.4.6** *P* **153** *L* **36** # **598**

William G. Lane — CSU, Chico

Comment Type **T** *Comment Status* **R**

The bit rate applicability should be defined

SuggestedRemedy

Add "(100 Mb/s or less)" after "with MII"

Proposed Response *Response Status* **C**

REJECT.

The MII is only specified for 10/100Mb/s. Therefore, adding the rate would be redundant.

Cl **31B** *SC* **31B.4.6** *P* **156** *L* **38** # **599**

William G. Lane — CSU, Chico

Comment Type **T** *Comment Status* **A**

The bit rate applicability should be defined

SuggestedRemedy

Add "(100 Mb/s or less)" after "without MII"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **31B** *SC* **31B3.1** *P* **152** *L* **18** # **534**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

add e) The fcsParamPresent is set to false.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **31B** *SC* **31B3.1** *P* **152** *L* **29** # **535**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

"field" should be "parameter" (also on line 31). We could also be more precise here like "The lengthOrTypeParam is set to the value of the first two bytes of the m_sdu parameter and the dataParam is set to the value of the remaining bytes of the m_sdu parameter."

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Use the proper name for m_sdu.

Cl **31B** *SC* **31B3.1** *P* **152** *L* **30** # **536**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

We should be more precise:"If the fcs parameter is present and the MAC supports client-supplied frame check sequence values, then the fcsParamValue is set to the value of the fcs Parameter and fcsParamPresent is set to true. Otherwise, fcsParamPresent is set to false."

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **31B** *SC* **31B3.2.6** *P* **152** *L* **33** # **537**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Now if we really wanted to do a service to humanity, we would redraw the Pause Operation Transmit state diagram so that it could be right-side up instead of sideways. It looks like it could be done and sideways diagrams in a pdf are a pain.

SuggestedRemedy

I'd be willing to convert the drawing.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Future generations of Ethernet users will remember us forever for the outstanding service we will be doing to them by accepting this comment!!!

I will put it on my wish list.

Cl **31B** *SC* **31B3.7** *P* **153** *L* **11** # **540**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Forty pause_quantum sounds like plenty, but we should check our sublayers fit within the total once we solidify the sublayer delays.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

No action required at this time.

The editors performed their math and have decided on 60 pause quanta.

Cl **31B** *SC* **multiple** *P* *L* # **1323**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

change sub-clause to subclause

SuggestedRemedy

fix

Proposed Response *Response Status* **C**

ACCEPT.

Cl **35** *SC* **35.1** *P* **156** *L* **20** # **1340**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

MEDIUM box in figure is different than version in 802.3:2000

SuggestedRemedy

Change left edge of MEDIUM box to be square to match 802.3:2000

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44** *SC* **44.1** *P* **158** *L* **1** # **541**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

"ISO/IEC 8802-3" Both the 1998 and 2000 consolidated books were produced as IEEE standards only rather than as ISO/IEC. We seem to have abandoned updating the ISO/IEC version of the book (or at least to have slowed it down a lot). I think the latest version of ISO/IEC 8802-3 is the 1996 publication and it does not have full duplex mode. Perhaps that is why it says "an extended version", but it would be more accurate to say "IEEE 802.3"

SuggestedRemedy

Replace "ISO/IEC 8802-3" with "IEEE 802.3" unless there is a plan to submit this to JTC-1 for approval such that it is likely to be published as an ISO/IEC standard within a short time (less than a year) of IEEE approval. Also replace other instances of "ISO/IEC 8802-3" in the new clauses. Do not change the instances in 4.2.2.4 because they refer to a specific earlier edition. The instance in 30.1.1 could be replaced or "ISO/IEC 8802-3 and IEEE 802.3" could be used as the management chapter applies to both. Do not change the instance in 30A that is part of an arc.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Verify with Geoff Thompson.

Cl **44** *SC* **44.1** *P* **158** *L* **12-36** # **218**

Shimon Muller — Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**

Figure 44-1 is not consistent with other clauses.

SuggestedRemedy

See Figure 1-1:
* Add the indication for a PHY on the right side of the figure.
* Add the definition of the PHY acronym at the bottom of the figure.
* Change the block for the MEDIUM to be the same as in Figure 1-1.
* Use dashed lines between the OSI stack and the LAN layers.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accept the first and second items. Reject the third item. Accept the fourth, as line is dashed, but needs to be more visible.

Cl **44** *SC* **44.1** *P* **158** *L* **3** # **539**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

"extended version of the ISO/IEC 8802-3" MAC. Presumably "extended" refers to the addition of rate control, but once .3ae is approved, that will just be part of the 802.3 MAC.

SuggestedRemedy

Delete "an extended version of"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See comment #541.

Cl **44** *SC* **44.1** *P* **158** *L* **3** # **538**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

I realize that this text is pretty much a copy from 1 Gig, but it isn't quite right. In "... couples and extended version of the ISO/IEC 8802-3 (CSMA/CD MAC) to ...", the sentence should be able to stand if you take out the text in parenthesis, but we don't couple the 8802-3 to the physical layers. Either remove the parenthesis or replace "(CSMA/CD MAC)" with "(CSMA/CD) MAC" or "MAC" or even "(Ethernet) MAC"

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See comment #541.

Cl **44** *SC* **44.1** *P* **158** *L* **33-35** # **1041**

Robert Grow — Intel

Comment Type **E** *Comment Status* **A**

The expansion of acronyms is in random order. Though there may be historical reasons for this (i.e., higher layers to lower layers when there was one protocol stack) there is no descernable reason for order in the current pictures.

SuggestedRemedy

Put in alphabetical order

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44** *SC* **44.1** *P* **158** *L* **40** # **542**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Delete extended.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See comment #541.

Cl **44** *SC* **44.1** *P* **158** *L* **40-42** # **219**

Shimon Muller — Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**

The first sentence of this paragraph defines the MAC as an interface and the XGMII as a layer.

SuggestedRemedy

Delete "interface" after "MAC layer" and "layer" after "(XGMII)" to read as follows:
"10 Gigabit Ethernet uses the extended ISO/IEC 8802-3 MAC layer, connected through a 10 Gigabit Media Independent Interface (XGMII) to Physical Layer entities such as..."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See comment #541. Will sublayer and interface swapping.

Cl **44** *SC* **44.1** *P* **158** *L* **46** # **543**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

This paragraph should also have a sentence describing the other change made to the MAC - addition of rate control mode/ifs stretch mode. Also, it could be argued that addition of operation over WAN links makes the last sentence of the paragraph inaccurate. 10 Gigabit Ethernet certainly supports longer physical link distances between switches because of the addition of WANs and because of longer physical link distances specified for 10GBASE-R. 1000BASE-X longest distance objective was 3 Km.

SuggestedRemedy

Add before the last sentence: "A rate control mode is added t the MAC to adapt the average MAC data rate to SONET/SDH data rates for WAN-compatible applications of this standard." Consider changing the last sentence to indicate that 10 Gigabit Ethernet has the objective of serving WAN distances.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accept first suggested remedy item. Accept in principle second item, as the last sentence refers to topologies, not distances. The wording will be changed to include WAN topology.

Cl **44** *SC* **44.1** *P* **158** *L* **47** # **1250**

Jonathan Thatcher — World Wide Packets

Comment Type **T** *Comment Status* **A**

While it is true that 10 Gig supports all topologies supported by 1000BASE-X full duplex mode, it also supports topologies that span the WAN....

SuggestedRemedy

Add paragraph explaining the use of 10GBASE to connect to a WAN (not just 10GBASE-W). Sorry Brad :-)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See response to comment #543.

Cl **44** *SC* **44.1** *P* **158** *L* **50** # **220**

Shimon Muller — Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**

Style. The last sentence of this sub-clause sounds too negative.

SuggestedRemedy

Change the sentence to read as follows:
"10 Gigabit Ethernet is defined for the full duplex mode of operation only."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44** *SC* **44.1** *P* **159** *L* **6** # **1251**

Jonathan Thatcher — World Wide Packets

Comment Type **E** *Comment Status* **A**

Missing information....

SuggestedRemedy

Add paragraph that says something like: "While the XGMII is an optional interface, it is used extensively in this standard as a basis for functional specification and provides a common primitive service interface for clauses 47, 48, ..."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Editor granted editorial license for appropriate text.

Cl **44** *SC* **44.1.2** *P* **159** *L* **11** # **544**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

"its four lane differential pairs transmit and receive paths." is a little hard to parse and a lot of adjectives without being apparent what modifies what unless you already know what it means.

SuggestedRemedy

"its four-lane differential-pair transmit and receive paths."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44** *SC* **44.1.2** *P* **159** *L* **12** # **1224**

Rich Taborek — nSerial Corporation

Comment Type **E** *Comment Status* **A**

The sentence: "This XAUI supports 10 Gb/s operation through its four lane differential pairs transmit and receive paths." uses funky english and too many adjectives.

SuggestedRemedy

Simplify by rewriting as: "This XAUI supports 10 Gb/s operation through its four lane transmit and receive paths."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See response to comment #544.

Cl **44** *SC* **44.1.4** *P* **159** *L* **28** # **600**

William G. Lane CSU, Chico

Comment Type **T** *Comment Status* **R**

Table 44-1 does not include all applicable 10GBASE clauses

SuggestedRemedy

Add columns for clauses 45, 46, and 47; Change column entries to: M (mandatory), O (optional), or blank (not applicable)

Proposed Response *Response Status* **C**

REJECT.
This information is related to nomenclature and the clauses required for that nomenclature. Clause 45, 46 and 47 do not impact nomenclature.

Cl **44** *SC* **44.1.4** *P* **160** *L* **10** # **545**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

delete "each" or use "device" rather than "devices"

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.
Change "devices" to "device".

Cl **44** *SC* **44.1.5** *P* **160** *L* **18** # **586**

Ben Brown AMCC

Comment Type **T** *Comment Status* **R**

802.3x flow control should not be supported over WAN links that enter the "SONET cloud".

SuggestedRemedy

Add the following text to the end of this subclause:

"Support of 802.3x Flow Control is beyond the scope of this standard when any active physical devices (e.g. SONET regenerators) or passive link extensions exist between 10GBASE-W PHYs."

Proposed Response *Response Status* **C**

REJECT.
There is no compelling reason to prevent an implementer from using 802.3x flow control over whatever link distances they choose to support.

Cl **44** *SC* **44.3** *P* **160** *L* **35** # **546**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

"Clause" should be "clause".

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #19.

Cl **44** *SC* **44.3** *P* **160** *L* **35** # **19**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

word is singular when it should be plural and uppercase when it should be lowercase

SuggestedRemedy

Replace "Clause" with "clauses"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44** *SC* **44.3** *P* **160** *L* **36** # **1341**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

clause number should be 54 instead of 52

SuggestedRemedy

fix

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44** *SC* **44.3** *P* **160** *L* **36** # **829**

Tom Mathey Independent

Comment Type **E** *Comment Status* **A**

Since clauses 53 and 54 both have PICS, is there any reason that they are excluded from conformance.

SuggestedRemedy

Change text from “45 through 52” to “45 through 54”

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See comment #1341.

Cl **44** *SC* **44.4** *P* **160** *L* **46** # **1342**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

add information related to other standards.

SuggestedRemedy

fix

Proposed Response *Response Status* **C**

ACCEPT.
Editor to work with Geoff Thompson to ensure the correct information is added.

Cl **44** *SC* **44.4** *P* **162** *L* **46** # **547**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

We've adopted PMD proposals to meet all out objectives. We need to add the entries for 11801 before Working Group ballot.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Will add Table to indicate entries into 11801.

Cl **44** *SC* **Figure 44.1** *P* **158** *L* **38** # **828**

Tom Mathey Independent

Comment Type **T** *Comment Status* **R**

The text in 44.1.2 on page 159 refers to XGXS and XAUI. However, these are not shown in Figure 44-1.

SuggestedRemedy

Crib the piece from Figure 47-1 which shows “Optional XGMII Extender” and place in Figure 44-1. Also convert from solid lines to dashed lines for lines from OSI block to LAN block.

Proposed Response *Response Status* **C**

REJECT.

This is an architectural positioning diagram. XGXS and XAUI are contained within the construct of XGMII.

Dash line changes accepted in comment #218.

Cl **44A** *SC* *P* **161** *L* **1** # **1046**

Robert Grow Intel

Comment Type **E** *Comment Status* **A**

The title was not updated for clause renumbering

SuggestedRemedy

Change "Annex 45A" to "Annex 44A"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44A** *SC* **44A.** *P* *L* # **1344**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

Diagrams show serial data flow only. Should include information on LAN and WAN WWDM data flow.

SuggestedRemedy

Add information.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44A** *SC* **44A.** *P* **161** *L* # **20**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

This Annex should be 44A not 45A

SuggestedRemedy

Replace title and all subclauses "45A" with "44A"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44A** *SC* **44A.** *P* **161** *L* **1** # **484**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

This should now be Annex 44A.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44A** *SC* **44A.1** *P* **161** *L* **18** # **1225**

Rich Taborek nSerial Corporation

Comment Type **E** *Comment Status* **A**

The subclause title, text and figure title do not accurately reflect what is illustrated. The specific PHY illustrated is 10GBASE-W with all optional interfaces.

SuggestedRemedy

Change the subclause title on line 18 to: 10GBASE-W transmit path bit ordering Change the subclause text on line 20 to: Figure 45A-1 shows the bit ordering on the transmit data path for the 10GBASE-W PHY. All optional interfaces are shown. The 10GBASE-R PHY is shown by bypassing the WIS. Change the figure title on page 162, line 54+ to: 10GBASE-W transmit path bit ordering

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add in new figure for 10GBASE-R transmit path as Figure 44A-1, shift current figure to 44A-2, and 44A-2 to 44A-4. Change figure titles to match suggested remedy.

Cl **44A** *SC* **44A.1** *P* **162** *L* **1** # **549**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A** *diagram*

This is a picky detail, but the point of this figure is to cover picky details. 802.3 avoids assigning significance to the bytes. In the few cases where it does assign such significance, the most significant byte goes first so that the order is most significant byte first and least significant bit (within a byte) first. So, if any of the bits of D0 through D31 is to be condsidered least significant, it would be D24. But mostly, 802.3 does not take a position on whether D0 or D24 is the least significant bit of the 32 bits shown.

SuggestedRemedy

Either divide D31 to D0 into 4 bytes and mark the lowest numbered bit of each byte as LSB (but I don't know where we would find the room) or mark D0 "LSB of first byte" and D31 "MSB of fourth byte".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Strike MSB, arrow and LSB to data from the MAC.
Strike MSB and LSB from RS bytes.

Cl **44A** *SC* **44A.1** *P* **162** *L* **12** # **551**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

It would be nice if we could find space to put the 8B/10B A through H designations for unencoded 8B/10B bytes into these boxes and on line 24. I realize we are already fighting a space constraint so if it can't be done, that is okay. This comment also applies on the next page.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Attempt will be made to insert this information without impacting the current diagram size.

Cl **44A** *SC* **44A.1** *P* **162** *L* **19** # **1227**

Rich Taborek nSerial Corporation

Comment Type **E** *Comment Status* **A**

Since two XGXSs sandwich a XAUI, both Transmit and Receive sides should be illustrated. The PHY XGXS Receive side should be illustrated.

SuggestedRemedy

On line 19, change Tcg 1, Tcg 11, Tcg 21 and Tcg 31 to Rcg 1, Rcg 11, Rcg 21 and Rcg 31;
On line 20, change Tcg 0, Tcg 10, Tcg 20 and Tcg 30 to Rcg 1, Rcg 10, Rcg 20 and Rcg 30;
On line 22, change all Tcg to Rcg;
Add RXD to Legend.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change all references to Tcg to be Cg (code group) to eliminate transmit/receive confusion.

Cl **44A** *SC* **44A.1** *P* **162** *L* **24** # **1228**

Rich Taborek nSerial Corporation

Comment Type **E** *Comment Status* **R**

The output of an 8B/10B decoder goes to the Receive, not Transmit, side of the XGMII.

SuggestedRemedy

On line 22, change all TXD to RXD. Add RXD to Legend.

Proposed Response *Response Status* **C**

REJECT.
TXD is what sits at the top of the transmit PCS. Reference to transmit removed from code groups and XAUI, but is still required to be the same at the top of the PCS as it is at the bottom of the RS.

Cl **44A** *SC* **44A.1** *P* **162** *L* **24** # **558**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *diagram*

The picture shows the decoder producing the data bits but not the control/data bits. The 64b/66b encoder of course needs to receive the control bits as well. This comment also applies to the figure on the next page.

SuggestedRemedy

Make the bits on line 24 match those on line 11.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44A** *SC* **44A.1** *P* **162** *L* **25** # **1097**

Finch, Stephen G. — Texas Instruments

Comment Type **T** *Comment Status* **A** *diagram*

In figure 45A-1, the XGMII interface between MAC and XGXS devices differs from that of the XGMII interface between the XGXS and the PCS devices. There is only one XGMII interface definition. The XGMII shown between the XGXS and the PCS devices should be identical to that shown between the MAC and XGXS devices. In the PCS device, the assembly of 64 bits from the XGMII bus into a "grouping" to be encoded/scrambled is missing the necessary control characters.

SuggestedRemedy

Add the RXC0 thru RXC3 bits to the XGMII interface between the XGXS and PCS devices and in the PCS device.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44A** *SC* **44A.1** *P* **162** *L* **25** # **1141**

Greenlaw, Jonathan — Hewlett-Packard

Comment Type **E** *Comment Status* **A**

The datapath shows data flowing from XGMII -> Scrambler -> 64/66b encode.Figure 49-4 on page 289 shows the data flowing from XGMII -> 64/66b encode-> Scrambler.

SuggestedRemedy

One of the two figures needs to be changed to reflect the intended data flow.

Proposed Response *Response Status* **C**

ACCEPT.
Figure 44A-1 will be changed to reflect the flow in 49-4.

Cl **44A** *SC* **44A.1** *P* **162** *L* **29** # **554**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

The 64b/66b encoder comes before the scrambler, not after. See figure 49-5.

SuggestedRemedy

Switch the order of encoder and scrambler. Show the encoder creating the sync header and the sync header bypassing the scrambler as on 49-5.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44A** *SC* **44A.1** *P* **162** *L* **34** # **548**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

"LSB" should be under TxB 2 rather than under TxB 0. I don't think the sync header has any bit significance relative to the data bytes.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44A** *SC* **44A.1** *P* **162** *L* **41** # **550**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

The other cases where there is an arrow going itnto a process as this arrow does, it is going into a serial process and there is another arrow coming out so that the arrows are indicating the order in which the bits are processed. Here there is an arrow going in but not one coming out which gives the impression that the block is reversing the order of bit transmission which it is not. Also, the block is labeled "WIS Frame Generation" but I would have thought that generating overhead bytes is part of WIS Frame Generation.

SuggestedRemedy

If the block is intended to represent the WIS scrambler, then add a similar arrow out of the right side of the box going into the Tdg bits and delete the fat straight arrow. Otherwise, delete the arrow and show the bytes going straight down into the box more like they do for the coders it is awkward since there are 3 bytes going in and two coming out. Since Overhead bytes, I suggest we show two overhead bytes and show as sepaate arrow at an angle for each going into the encoder.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Remove the ovh and SPE. Show Tdu going directly into WIS Frame Generation. Show Tdg leaving the WIS Framer. Add note that overhead and scrambling is performed inside the framer.

Cl **44A** *SC* **44A.1** *P* **162** *L* **45** # **553**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *diagram*

From here through line 54, MSB and LSB are with respect to the WIS frame and not with respect to Ethernet payload bit significance. To avoid confusion, they should be labeled so as to indicate that. This comment also applies to the next page.

SuggestedRemedy

Either write MSB (w.r.t. WIS frame) and LSB (w.r.t. WIS frame) as was done on line 41 or create an additional pair of abbreviations such as MSBW and LSBW with that definition. I also think this bit is confusing enough to warrant a bit of text in 45A.1 to explain that Ethernet payload is packed into WIS bytes so as to maintain transmission order and therefore the Ethernet byte LSB to MSB is mapped into WIS frame byte MSB to LSB.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Remove reference to MSB and LSB from line 45 down.

Cl **44A** *SC* **44A.1** *P* **162** *L* **48** # **1229**

Rich Taborek — nSerial Corporation

Comment Type **E** *Comment Status* **A**

Typo

SuggestedRemedy

(SXGMII) should be (XGMII)

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44A** *SC* **44A.1** *P* **162** *L* **9** # **1252**

Jonathan Thatcher — World Wide Packets

Comment Type **T** *Comment Status* **A** *diagram*

In Figure 45A-1, this is not a XAUI Ctrl Bit

SuggestedRemedy

Remove word XAUI

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See response to comment #222.

Cl **44A** *SC* **44A.1** *P* **163** *L* **49** # **1233**

Rich Taborek — nSerial Corporation

Comment Type **E** *Comment Status* **A**

Typo

SuggestedRemedy

(SXGMII) should be (XGMII)

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44A** *SC* **44A.2** *P* **161** *L* **23** # **1226**

Rich Taborek — nSerial Corporation

Comment Type **E** *Comment Status* **A**

The subclause title, text and figure title do not accurately reflect what is illustrated. The specific PHY illustrated is 10GBASE-W with all optional interfaces.

SuggestedRemedy

Change the subclause title on line 23 to: 10GBASE-W receive path bit ordering Change the subclause text on line 25 to: Figure 45A-1 shows the bit ordering on the receive data path for the 10GBASE-W PHY. All optional interfaces are shown. The 10GBASE-R PHY is shown by bypassing the WIS. Change the figure title on page 163, line 54+ to: 10GBASE-W receive path bit ordering

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See response to comment #1225. Figure for 10GBASE-R to be added as Figure 44A-3.

Cl **44A** *SC* **44A.2** *P* **162** *L* **29** # **555**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *diagram*

The 64b/66b descrambler comes before the decoder, not after. See figure 49-6.

SuggestedRemedy

Switch the order of decoder and descrambler. Show the sync header bypassing the descrambler as on 49-6.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44A** *SC* **44A.2** *P* **163** *L* **13** # **561**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

"Coder" should be "Decoder" (4 places)

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44A** *SC* **44A.2** *P* **163** *L* **13** # **1230**

Rich Taborek — nSerial Corporation

Comment Type **E** *Comment Status* **A**

The 8B/10B Coder and Decoder elements are swapped.

SuggestedRemedy

On line 13, change all Coder to Decoder
On line 24, change all Decoder to Coder

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44A** *SC* **44A.2** *P* **163** *L* **2** # **552**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *diagram*

My comment on page 162 line 1 also applies here. In addition, the LSB to MSB labels are swapped here.

SuggestedRemedy

Label D0 "LSB of first byte" andlabel D31 "MSB of fourth byte.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Remove references to MSB and LSB. Swap "Last Bit" and "First Bit" on data to the MAC.

Cl **44A** *SC* **44A.2** *P* **163** *L* **20** # **1231**

Rich Taborek — nSerial Corporation

Comment Type **E** *Comment Status* **A**

Since two XGXSs sandwich a XAUI, both Transmit and Receive sides should be illustrated. The PHY XGXS transmit side should be illustrated.

SuggestedRemedy

On line 20, change Rcg 8, Rcg 18, Rcg 28 and Rcg 38 to Tcg 8, Tcg 18, Tcg 28 and Tcg 38;
On line 21, change Rcg 9, Rcg 19, Rcg 29 and Rcg 39 to Tcg 9, Tcg 19, Tcg 29 and Tcg 39;
On line 23, change all Rcg to Tcg;
Add TXD to Legend.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See response to comment #1227.

Cl **44A** *SC* **44A.2** *P* **163** *L* **24** # **560**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

"Decoder" should be "coder" (4 places)

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44A** *SC* **44A.2** *P* **163** *L* **25** # **1098**

Finch, Stephen G. — Texas Instruments

Comment Type **T** *Comment Status* **A** *diagram*

In figure 45A-2, the XGMII interface between MAC and XGXS devices differs from that of the XGMII interface between the XGXS and the PCS devices. There is only one XGMII interface definition. The XGMII shown between the XGXS and the PCS devices should be IDENTICAL to that shown between the MAC and XGXS devices. In the PCS device, the decoding of the 66 bit code words generates the control characters.

SuggestedRemedy

Add the RXC0 thru RXC3 bits to the XGMII interface between the XGXS and PCS devices. Indicate the new control characters in the PCS.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44A** *SC* **44A.2** *P* **163** *L* **25** # **1232**

Rich Taborek — nSerial Corporation

Comment Type **E** *Comment Status* **R**

The input of an 8B/10B coder comes from the Transmit, not receive, side of the XGMII.

SuggestedRemedy

On line 25, change all RXD to TXD. Add TXD to Legend.

Proposed Response *Response Status* **C**

REJECT.
RXD at top of PCS is required to mate with RXD at bottom of RS.

Cl **44A** *SC* **44A.2** *P* **163** *L* **34** # **559**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *diagram*

"Deleted Sync Header" should be "Sync Header". The sync header is not deleted, it is used in combination with the other bits to produce the decoded bytes and their control/data bits.

SuggestedRemedy

Delete "deleted".Also, it might be helpful to put text into 45A.1 and 45A.2 explaining that when the block contains 8 data byte there is a direct correspondence between encoded and unencoded bits - D0 goes to S0, D1 goes to S1, etc. When one or more bytes contain control characters, then the encoding depends on the specific content. See clause 49 for the full encoding rules. (or the reference could be to Figure 49-7)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Text to be added to 44A.1 and 44A.2 to reference the appropriate clauses (and figures) where appropriate.

Cl **44A** *SC* **44A.2** *P* **163** *L* **35** # **562**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *diagram*

This box should be labeled "Frame Sync" rather than "Gear Box" because on the receive side, the frame sync function provides the gearing in addition to finding the sync header positon.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
"Gearbox" changed to "Block Sync"

Cl **44A** *SC* **44A.2** *P* **163** *L* **40** # **557**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

"Deleted" does not seem correct. The overhead bytes are removed from the data stream but some are used for various purposes.

SuggestedRemedy

"Removed overhead bytes"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44A** *SC* **44A.2** *P* **163** *L* **41** # **556**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *diagram*

The combination of the arrow at 45 and this arrow indicate a reversal of data that should not be there. Both arrows need to be the same type.

SuggestedRemedy

See my similar comment on the previous page.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See response to comment #550. Resolution to use receive rather than transmit.

Cl **44A** *SC* **44A.2** *P* **163** *L* **9** # **1253**

Jonathan Thatcher — World Wide Packets

Comment Type **T** *Comment Status* **A** *diagram*

In Figure 45A-2, this is not a XAUI Ctrl Bit

SuggestedRemedy

Remove word XAUI

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See response to comment #223.

Cl **44A** *SC* **44A-1** *P* **162** *L* **Multiple** # **222**
Shimon Muller Sun Microsystems, Inc

Comment Type **T** *Comment Status* **A** *diagram*

Several typos/errors on Figure 45A-1.

SuggestedRemedy

* On line 3 replace "Input Data From MAC" with "Output Data From MAC".
* On lines 9-10 replace "XAUI Ctrl Bit" with "XGMII Ctrl Bit".
* On line 12 replace "8B/10B Coder" with "8B/10B Encoder" in 4 instances.
* On line 50 (Legend) replace "S-Scrambler (PCS)" with "S-Scrambled data (PCS)".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
First bullet changed to be "Input Data From MAC" with "Data From MAC".

Cl **44A** *SC* **44A-2** *P* **163** *L* **Multiple** # **223**
Shimon Muller Sun Microsystems, Inc

Comment Type **T** *Comment Status* **A** *diagram*

Several typos/errors on Figure 45A-2.

SuggestedRemedy

* On line 2 replace "Last Bit" with "First Bit".
* On line 2 replace "MSB" with "LSB".
* On line 5 replace "First Bit" with "Last Bit".
* On line 5 replace "LSB" with "MSB".
* On lines 9-10 replace "XAUI Ctrl Bit" with "XGMII Ctrl Bit".
* On line 13 replace "8B/10B Coder" with "8B/10B Decoder" in 4 instances.
* On line 50 replace "Output Data To PMD" with "Input Data From PMD".
* On line 51 (Legend) replace "S-Scrambler (PCS)" with "S-Scrambled data (PCS)".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Remove MSB and LSB on line 2 and 5, respectively. Accept all other items. Changed to be "Inputt Data To MAC" with "Data To MAC".

Cl **44A** *SC* **45A.1** *P* **162** *L* **25-33** # **21**
Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A** *diagram*

The encoder should occur before the scrambler

SuggestedRemedy

Modify the figure to put the encoder before the scrambler

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44A** *SC* **45A.2** *P* **163** *L* **26-33** # **22**
Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A** *diagram*

The descrambler should occur before the decoder

SuggestedRemedy

Modify the figure to put the descrambler before the decoder

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44A** *SC* **all** *P* *L* # **1343**
Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

45A should be 44A

SuggestedRemedy

fix

Proposed Response *Response Status* **C**

ACCEPT.

Cl **44A** *SC* **Figure 44A-1** *P* **162** *L* **various** # **830**
Tom Mathey Independent

Comment Type **E** *Comment Status* **A**

SuggestedRemedy

line 3: change text from “Input Data From MAC” to “Output Data From MAC”
line 9: Delete Text “XAUI” since the control bit is not specific to XAUI
line 12: change text from “Coder” to “Encoder”
line 20: at 4 places, add dogleg line with arrow from Tcg0 output to i input of Tcg decoder.
line 24: since the XGMII on line 11 must be identical to that on line 24, show the TXC (control bit).
line 28: the 4 boxes have box 2, 3, and 4 mislabeled for data number. 4th box with D31 is OK.
line 47: the legend box has text “SXGMII”, should this be “XGMII”

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Line 3 changed to be "Data from MAC".
Tcg changed to be Cg.
Line 51 changed to be "Data to PMD".

Cl **44A** *SC* **Figure 44A-2** *P* **163** *L* **various** # **831**

Tom Mathey Independent

Comment Type **E** *Comment Status* **A**

SuggestedRemedy

line 3: interchange text MSB and LSB
line 3: interchange text First Bit and Last Bit
line 9: Delete Text "XAUI" since the control bit is not specific to XAUI
line 14: change text from "Coder" to "Decoder"
line 24: change text from " Decoder " to "Encoder"
line 24: since the XGMII on line 11 must be identical to that on line 24, show the RXC (control bit).
line 28: the 4 boxes have box 2, 3, and 4 mislabeled for data number. 4th box with D31 is OK.
line 47: the legend box has text "SXGMII", should this be "XGMII"
line 51: change text from "Output Data to PMD" to "Input Data from PMD"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Coder is used instead of encoder.
Line 3, MSB and LSB removed.
Line 51, change to be "Data from PMD".

Cl **44A** *SC* **Multiple** *P* **161-163** *L* **Multiple** # **221**

Shimon Muller Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**

Wrong annex numbering. Annex 45A should be Annex 44A.

SuggestedRemedy

* Page 161, Line 2: Replace "Annex 45A" with "Annex 44A".
* Page 161, Line 18: Replace "45A.1" with "44A.1".
* Page 161, Line 20: Replace "Figure 45A-1" with "Figure 44A-1".
* Page 161, Line 23: Replace "45A.2" with "44A.2".
* Page 161, Line 25: Replace "Figure 45A-2" with "Figure 44A-2".
* Page 162, Line 54: Replace "Figure 45A-1" with "Figure 44A-1".
* Page 163, Line 54: Replace "Figure 45A-2" with "Figure 44A-2".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See comments #1225, #1226, #1343.

Cl **45** *SC* **45** *P* **166** *L* **various** # **849**

Tom Mathey Independent

Comment Type **E** *Comment Status* **A**

I would like to see the text for all registers to include its full name. When deep into the clause, it is sometimes difficult to spot just which control register, etc. the text is actually referring to.
For example:
change from 45.2.1.1 Control 1 Register (Register 0)
to 45.2.1.1 10G PMA/PMD Control 1 Register (Register 1.0)
For example:
change from 45.2.1.1.1 Reset
to 45.2.1.1.1 10G PMA/PMD Control 1 Register, Reset (1.0.15)
(alternative of)
to 45.2.1.1.1 Reset (1.0.15)
This becomes very usefull when there is a Table of Contents.

SuggestedRemedy

As above

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45** *P* **180** *L* **48** # **850**

Tom Mathey Independent

Comment Type **E** *Comment Status* **A**

Text changes from Control 2.0 to Status 2.1 without a numbered heading.

SuggestedRemedy

Add numbered heading 45.2.2 10G WIS Status register (2.1).
Note that this renumbers following headings.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45** *P* **181** *L* **50** # **851**

Tom Mathey Independent

Comment Type **E** *Comment Status* **A**

Incorrect reference.

SuggestedRemedy

Change reference from Table 45-14 to Table 45-13.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.1** *P* **166** *L* **6** # **1254**

Jonathan Thatcher World Wide Packets

Comment Type **T** *Comment Status* **A**

********** BIG TICKET ITEM! **********
What good does it do to have "logical compatibility" with clause 22 if there can be no reasonable implementation where the two can be simultaneously used?FOR EXAMPLE: the current definition does not allow for the creation of a 10Gig and slower multispeed PHY. Such a PHY would have to have two MDIO interfaces operating at different voltages to make all the register space available to the PHY.Such an implementation is not explicitly excluded. Neither is it supported.See wording at 45.2.6, p200, line 8. Implies co-existence without explanation....

SuggestedRemedy

Allow implementations were clause 22, functionally, can be implemented with the electrical interface described in clause 45.Specify that the standard does not simultaneously support operation of an MDIO interface using the electrical interface specified in clause 22 and the extension specified in clause 45.Optionally, explain that support of 5 volt clause 22 devices will require a separate MDIO interface. Or, provide description of a buffer than can do the voltage translation (not recommended) Add 10Gig to clause 22 as appropriate.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
* Insert an informative annex with details of the voltage translation, drive side aware device.
* For cases where a single entity combines Clause 45 registers with Clause 22 registers then the Clause 22 registers may be accessed using the Clause 45 electrical interface.
Insert this in the introduction to Clause 45.

Cl **45** *SC* **45.1** *P* **166** *L* **8** # **224**

Shimon Muller Sun Microsystems, Inc

Comment Type **T** *Comment Status* **A**

Need to make clear that all the functionality specified in this clause applies to implementations of 10Gb/s and above.

SuggestedRemedy

Add the following sentence to the end of sub-clause 45.1:
"This extension to the MDIO interface is applicable to Ethernet implementations that operate at speeds of 10Gb/s and above."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.1** *P* **166** *L* **8** # **225**

Shimon Muller Sun Microsystems, Inc

Comment Type **T** *Comment Status* **A** *BTI PMD control*

The terms "inbound" and "outbound" are extensively used throughout clause 45. Since all the devices in this clause transmit and receive on both sides of the device, it is not always obvious which side of the device is being referred to.

SuggestedRemedy

Define the terms "inbound" and "outbound" using either the MAC or the medium as reference point. This can be done either in the Overview section for the entire clause (sub-clause 45.1), or for each device in the relevant sub-clauses.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
New terminology adopted in #653. Insert a diagram if new terminology appears unclear.

Cl **45** *SC* **45.1** *P* **166** *L* **8** # **1256**

Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **A**

Add a pointer to where the semantics are defined (e.g. "1.0.12:3")

SuggestedRemedy

see comment

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The semantics are not defined in Clause 22. However, I accept that for clarity, the semantics should be defined for Clause 45 and I propose the following text :
"Throughout this clause, an a.b.c format is used to identify register bits. Where 'a' is the device address, 'b' is the register address and 'c' is the bit number within a register."

Cl **45** *SC* **45.1.2** *P* **166** *L* **19** # **486**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

"applies to the" would be better "defines a"

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.1.2** *P* **166** *L* **22** # **487**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

"If a device supports the MDIO interface, it shall...."

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.1.2** *P* **166** *L* **22** # **640**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

This incompletely addresses what a device does for access to undefined registers. It says a device may return a value of zero. Does that mean that it also may return a value of 1 or should it have said "shall return"? Also what about writes to undefined register (and to read only registers). We should state that such writes shall have no effect. The alternative is to allow MMDs to do partial address decodes and alias such writes to other registers which seems unwise.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Propose to delete the "may" at line 22, change 'return' to 'returns' and insert the text "Writes to undefined registers and read only registers shall have no effect." at line 23.
Also add text to optional registers to say that if they are not supported then "Writes to this register shall have no effect if not supported".

Cl **45** *SC* **45.1.2** *P* **166** *L* **22** # **668**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

What about defined but not applicable or not supported registers?

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
I propose to insert the text ".. And unsupported .." at line 22.

.

Cl **45** *SC* **45.1.2** *P* **166** *L* **24** # **485**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

The second sentence is kind of awkward.

SuggestedRemedy

Where no ... exists, provision of an equivalent mechanism to access the registers is recommended.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.1.2** *P* **166** *L* **24** # **1255**

Jonathan Thatcher — World Wide Packets

Comment Type **E** *Comment Status* **A**

Move paragraph into the overview: "The MDIO electrical interface is optional...."

SuggestedRemedy

see comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.1.2** *P* **166** *L* **25** # **563**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

At this point, we don't know what an MMD is but it is optional. Since this is the first use of MMD in the clause, please spell it out. Since the MMDs are the physical sublayers, implementation of them isn't exactly optional. Making them MMDs vs. unmanaged sublayers is the option.

SuggestedRemedy

"Provision of such access is optional." or "Provision of a management interface by a port device is optional." The third alternative is to delete the sentence. The previous sentence said that the provision of the access was recommended. When we recommend something, it is clearly optional otherwise we would have required it. Even if we delete the sentence, the subclause should explain something about what an MMD is since it is shown on the figure the clause references.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Propose to strike the sentence of line 25 and insert the following at line 19 in place of "port devices" : "MDIO Manageable Devices (MMDs)"

Cl **45** *SC* **45.1.2** *P* **166** *L* **25** # **1099**

Finch, Stephen G. Texas Instruments

Comment Type **E** *Comment Status* **A**

The acronym MMD is used before definition in this section. First definition is on line 48/49.

SuggestedRemedy

Move full name up to this paragraph.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Sentence to be deleted as per #563. MMD to be fully defined on first instance.

Cl **45** *SC* **45.1.2** *P* **166** *L* **25** # **1345**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

First instance of MMD should be defined.

SuggestedRemedy

Change to read "...of each of the MDIO Manageable Devices (MMDs) is optional."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Sentence to be deleted as per #563. MMD to be fully defined on first instance.

Cl **45** *SC* **45.1.2** *P* **166** *L* **38** # **1346**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

add a some space between the figure and figure title

SuggestedRemedy

fix

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2** *P* **166** *L* **41** # **489**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

Something like "MII interface registers" would be a more representative title for this subclause.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2** *P* **166** *L* **42** # **708**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

With the current status registers, it will be very difficult to localize problems causing intermittent faults, most bits covering fault conditions are not latched and are not supplimented by counters. Counters have been defined to cover 10GBASE-R PCS faults but were not included in the register definitions. (A separate comment has been submitted to cover this.) The WIS layer uses latch high to preserve some intermitent fault conditions. One of these two strategies needs to be applied to each of the other fault conditions.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Charter the editor to apply appropriately latching bits for all MMDs (Fault latch high, link status latch low).

Cl **45** *SC* **45.2** *P* **166** *L* **47** # **488**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

This subclause doesn't describe the relationship of the MII management interface to the MDIO interface very clearly. It makes it sound like the MDIO interface is part of the MII management interface.

SuggestedRemedy

The MDIO interface is based on the MII management interface but differs from it in several ways. The MDIO interface uses indirect addressing to create an extended address space allowing a much larger number of registers to be accessed within each MDIO Manageable Device (MMD). The MDIO interface address space is orthogonal to the MII managment interface address space. The mechanism for the addressing is defined in 45.2.6. The MDIO interface electrical operates at lower voltages than those specified for the MII management interface. The electrical interface is defined in 45.3.The list of possible MMDs is shown in Table 45?1.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Delete lines 48-50 and insert SuggestedRemedy text.

Cl **45** *SC* **45.2** *P* **167** *L* **1** # **1347**

Booth, Brad — Intel

Comment Type **T** *Comment Status* **R**

Table 45-1 shows MDIO manageable devices, but does not list the reconciliation sublayer. This is where local fault messages are terminated and remote fault messages are generated. This is also where link partner remote fault messages would be terminated. There is not means to communicate this information to the management entity via the MDIO.

SuggestedRemedy

Change the draft to be written such that the PCS responsible for the coding used on the medium is the source and termination of all LF and RF messages associated with the link. This would be a consistent device with a device address of 3.

Proposed Response *Response Status* **C**

REJECT.
See response to comment to Clause 46 #1364.

Cl **45** *SC* **45.2** *P* **167** *L* **1-19** # **226**

Shimon Muller — Sun Microsystems, Inc

Comment Type **T** *Comment Status* **A**

The main purpose for providing indirect register access in this clause was to significantly expand the addressable register space, so that we never run out of registers again. However, the allocation of device addresses in the current draft is suboptimal, which will inevitably create a shortage of addressable register space in the foreseeable future (for Terabit Ethernet?). Specifically, Table 45-1 limits the total number of MMDs that we will ever be able to use for all revisions of the standard to 16, five of which have already been consumed for 10 Gigabit Ethernet. That leaves us with only 11 MMDs for all the future revisions of the standard. This may be shortsighted.

SuggestedRemedy

The devices in Table 45-1 should be specified as speed-independent device types. The speed-related information should be "pushed down" into register definitions inside the devices, which have a much more generous address space.
Therefore, the entries in Table 45-1 should be:
"PMA/PMD", "WIS", "PCS", "PHY MII Extender", "DTE MII Extender".
The entries in Table 45-2 should be:
"10G Control 1", "10G Status 1", etc.
In the future, additional entries may be added to Table 45-2:
"100G Control 1", "100G Status 1", etc.
Similar changes should be made for the remaining MMDs and registers.
Additional editorial changes will be required to accommodate this new register allocation throughout clause 45.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1** *P* **167** *L* **27** # **1257**

Jonathan Thatcher — World Wide Packets

Comment Type **E** *Comment Status* **A**

Add a Status 2 register and reserve space (1.2 and bump others down?)

SuggestedRemedy

see comment

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
A status 2 register already exists (register number 1.7). When the status 2 register bits are all used up then I'll create a status 3 register.

Cl **45** *SC* **45.2.1** *P* **167** *L* **42** # **1050**

Robert Grow — Intel

Comment Type **T** *Comment Status* **A**

Name inconsistency. This line uses 10GBASE-4 and the register description on page 177 uses 10GBASEL4 yet every bit uses 10GBASE-W4

SuggestedRemedy

Search entire clause for occurances of "10GBASEL4", "10GBASE-4", and "10GBASE-W4" and replace with "10GBASE-L4".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See #1234. Replacing with "10GBASE-LX4/LW4".

Cl **45** *SC* **45.2.1** *P* **167** *L* **42** # **1234**

Rich Taborek — nSerial Corporation

Comment Type **E** *Comment Status* **A**

An invalid PHY type is listed in table 45-2, 10GBASE-4.

SuggestedRemedy

Replace 10GBASE-4 with 10GBASE-LX4/LW4 or equivalent; else define 10GBASE-4 as an alias in Clause 44.

Proposed Response *Response Status* **C**

ACCEPT
Replace with "10GBASE-LX4/LW4"

Cl **45** *SC* **45.2.1** *P* **167** *L* **52** # **630**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

"upon reset" should be "upon completion of reset" as it is difficult to ensure the contents of registers at the start of reset. Also because during reset the reset bit should be 1 and it doesn't reach its value for normal operation until the end of reset. This applies to the Control Register definition for each MMD. (However, I also have a comment in that suggests deleting the whole sentence.)

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Acceptance of #636 (delete sentence) supercedes the proposed modification of text.

Cl **45** *SC* **45.2.1.1** *P* **167** *L* **51** # **636**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

I don't understand why this statement about default value is here. All bits have defined default values except port type selection bits. It is not possible for an implementation to default the port type selection bits to a value that "a normal operational state" (assuming that means a state where the link is up) since an MMD does not know what port type other sublayers support.

SuggestedRemedy

Delete this sentence. Add a statement to the port type selection bits (in 45.2.1.1.4) that indicates that the PMD/PMA support bits shall default to one of the valid abilities for that port.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace "should be" with "has been".

Cl **45** *SC* **45.2.1.1** *P* **168** *L* **13** # **641**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Write as zero, ignore on read specifies the manager's behavior. Shouldn't we specify MMD behavior? "ignore on write, read as zero". Same comment applies to the other reserved bits. For read only, the statement should be "read as zero".

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Insert text in section 45.1.2 :

"The operation of an MMD shall not be affected by writes to reserved and unsupported bits in supported registers and such register bits shall return a value of zero when read."

Cl **45** *SC* **45.2.1.1** *P* **168** *L* **18** # **1258**

Jonathan Thatcher — World Wide Packets

Comment Type **T** *Comment Status* **A**

Reorder PMD types (some coder will appreciate it)

SuggestedRemedy

From: SR/LR/ER/LX4/SW/LW4/LW/EW
To: SR/LR/ER/LX4/SW/LW/EW/LW4

Proposed Response *Response Status* **C**

ACCEPT.
Apply also to rest of Clause.

Cl **45** *SC* **45.2.1.1.1** *P* **168** *L* **28** # **648**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **R**

Should say something about the effect of writing a zero to the reset bit. This comment applies to all reset bits.

SuggestedRemedy

Add "Writing a zero to this bit has no effect on operation."

Proposed Response *Response Status* **C**

REJECT.

Action when writing a one is clearly defined, and action when writing zero is implicit.

Cl **45** *SC* **45.2.1.1.1** *P* **168** *L* **28** # **645**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

Nothing has been done to clarify the operation of reset when devices with multiple MMDs are integrated together. It is highly likely that PCS and WIS will be integrated into a single device and that larger portions of the stack such as PMD through PCS may be integrated into a single device. It may be difficult in that case to reset a single MMD. Therefore, we should allow for a reset to an MMD to also cause a reset to associated MMDs. This comment applies to all reset MMD bits.

SuggestedRemedy

Add to 45.2: "Multiple MMDs may share a single MDIO interface. It is recommended that MMDs sharing a single MDIO interface supply a single value for identifier (registers n.2 and n.3)." (The purpose of sharing an identifier is to help a manager know that the MMDs are integrated.)Add to each subclause on reset: "This action may also initiate a reset in any MMDs that share the MDIO interface."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add the text : "This action may also initiate a reset in any MMDs that share the MDIO interface." to all reset definitions.

Also,
Change the text in 45.2.6 replace "the MMDs" with "the MMD's address registers" and remove "and appear .. entity.".

Cl **45** *SC* **45.2.1.1.1** *P* **168** *L* **28** # **633**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

Is support for reset initiated by this bit mandatory? This comment applies to reset bits for all MMD's.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Yes, support for reset initiated by this bit is mandatory (as indicated by the shall statement).

Cl **45** *SC* **45.2.1.1.1** *P* **168** *L* **30** # **631**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

The structure of this sentence seems a bit ambiguous as it doesn't say when a zero is returned and doesn't make it clear what the value is when a reset has been initiated by means other than a write to the bit. "A PMA/PMD shall return a value of one in bit 1.0.15 when a reset is in progress and a value of zero otherwise. "This comment applies to the Control 1 reset bits for all MMDs.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.1.1** *P* **168** *L* **31** # **634**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

Does this imply that a device is required to accept a read transaction while a reset is in progress? It seems that during some parts of reset, it may be difficult to respond to reads of some registers. Reads to registers 0 and 1 should be responded to during reset - the first so that it can be seen that a reset is in progress and the second one so that it can be seen that a device is present. For other registers, I recommend we allow all zeros to be returned.This comment applies to all MMD resets.

SuggestedRemedy

Clarify read behavior during reset.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Proposed text to insert :
"During reset, a PMA/PMD shall respond to reads to register bit 0.15 and all other register bits should be ignored."

Apply this text to all MMD reset descriptions.

Cl **45** *SC* **45.2.1.1.1** *P* **168** *L* **32** # **632**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

The sentence about writes of bits in register 1 seems rather redundant with the sentence before that says that it is not required to accepte writes while in reset. Also, it isn't clear to me what behavior it is allowing. Does "... writes ... have uo effect until the reset process is completed" mean that the write occurs but the action caused by the write is not initiated until the reset completes or does it mean that the write doesn't take place at all? This comment applies to all MMD Control 1 register reset bit descriptions.

SuggestedRemedy

Delete the sentence.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.1.1** *P* **168** *L* **36** # **635**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

This bit should not have a default value. It always has a defined value since a reset either is in progress or is not. This comment also applies to resets for PHY and DTE XGXS.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.
Delete the "Default" sentence.
Apply to all MMD reset sections.

Cl **45** *SC* **45.2.1.1.2** *P* **168** *L* **40** # **637**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *BTI PMD control*

I don't understand why we disable transmission on the inbound path. Also, the label for this bit seems confusing since we normally use Tx exclusively as an outbound path label. I_Tx doesn't match our normal usage.Also, why do we have this but not a transmit disable?

SuggestedRemedy

If we are to have this bit it should be RxDbl rather than I_TxDbl.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
A pointer will be added to Clauses 51 - 54 where the behaviour will be clearly defined. If the PMA/PMD clauses decide not to implement this function then these bits will be removed.

Cl **45** *SC* **45.2.1.1.2** *P* **168** *L* **40** # **1235**

Rich Taborek — nSerial Corporation

Comment Type **T** *Comment Status* **A** *BTI PMD control*

The term "disable" must be explicitely defined for this mandatory function.

SuggestedRemedy

Expound on thatcher_1_1100.pdf, slide 8.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
A pointer will be added to Clauses 51 - 54 where the behaviour will be clearly defined. If the PMA/PMD clauses decide not to implement this function then these bits will be removed.

Cl **45** *SC* **45.2.1.1.2** *P* **168** *L* **40** # **1351**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

Title is not easy to read, and the note used in the Reset description should be added.

SuggestedRemedy

Change I_TxDbl to be Isolate.Add "NOTE-This operation may interrupt data communication."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
I will insert the requested note. The current signal names are taken from thatcher_1_1100. Modified terminology is accepted in #653. "Inbound" to become "receive", "outbound" to become "transmit", "tx" to become "out" and "rx" to become "in".

Cl **45** *SC* **45.2.1.1.2** *P* **168** *L* **42** # **23**

Brown, Benjamin J — AMCC

Comment Type **T** *Comment Status* **A** *BTI PMD control*

I'm getting very confused by what is meant by inbound and what is meant by outbound, what is meant by transmission and what is meant by reception. For example, this line describes I_TxDbl saying "the PMA/PMD shall disable transmission on the inbound path". To me inbound means from the media towards the MAC. However, transmit means from the MAC to the media. This comment also applies to the bits in Control 2 and Status 2 registers.

SuggestedRemedy

Add a figure to describe what is meant by inbound and outbound, transmission and reception.

Proposed Response *Response Status* **C**

ACCEPT.
See #653.

Cl **45** *SC* **45.2.1.1.2** *P* **168** *L* **42** # **638**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *BTI PMD control*

When I_TxDbl is asserted, does the PMA assert loss of signal up the stack? I think it should since it is not relaying a signal.

SuggestedRemedy

Complete behavior for I_TxDbl needs to be stated either here or in the PMA sublayer description.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Good question. I agree that loss of signal should be asserted when I_TxDbl is asserted, but don't think that the behaviour should be detailed in C45. A pointer will be added to Clauses 51 - 54 where the behaviour will be clearly defined and the bit behaviour will be matched to the definition. If the PMA/PMD clauses decide not to implement this function then these bits will be removed.

Cl **45** *SC* **45.2.1.1.2** *P* **168** *L* **42** # **639**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *BTI PMD control*

Is support for I_TxDbl mandatory? If support is optional, the value of the bit would remain 0 if an attempt is made to write a 1 to it.

SuggestedRemedy

Clarify.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

A pointer will be added to Clauses 51 - 54 where the behaviour will be clearly defined and the bit behaviour will be matched to the definition. If the PMA/PMD clauses decide not to implement this function then these bits will be removed.

Cl **45** *SC* **45.2.1.1.2** *P* **168** *L* **42-43** # **1047**

Robert Grow — Intel

Comment Type **E** *Comment Status* **A** *BTI PMD control*

The use of any form of the word transmit on the inbound (receive) side of a DTE is confusing.

SuggestedRemedy

Change to read "... shall disable indications..." and "...shall enable indications".
Change lines 8 and 9 in Table 45-3 replacing "transmission" with "indications".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE

See #1351.

Cl **45** *SC* **45.2.1.1.3** *P* **168** *L* **47** # **1259**

Jonathan Thatcher — World Wide Packets

Comment Type **E** *Comment Status* **A** *BTI PMD control*

Why not be able to power down Rx and Tx sides independently?

SuggestedRemedy

see comment

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
This should be implementation specific.

Cl **45** *SC* **45.2.1.1.3** *P* **168** *L* **49** # **642**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **R**

Is support for power down mandatory? To some extent, it may not matter since specific behavior is implentation specific. An MMD in power down state could operate exactly the same as one in power up state except for the value of the bit. :^) However, it would be better for such an MMD to not allow the power down bit to be set so that the manager can tell that it isn't actually powered down in any sense. This comment applies to power down bits for all MMDs.

SuggestedRemedy

Proposed Response *Response Status* **C**

REJECT.

The specific behaviour of an MMD in power down is implementation specific as stated in the text.

Cl **45** *SC* **45.2.1.1.3** *P* **168** *L* **49** # **671**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **R**

What happens to state during power down? Is configuration saved? There are three possiblities: State is saved and operation resumes from where it left off - this seems difficultState on transitioning out of power down is the same as state after reset.State is indeterminate - manager must initiate a reset and reconfigure.This comment applies to all MMD power down bits.

SuggestedRemedy

Choose one and specify it. My preference would be for exit from power down is through reset.

Proposed Response *Response Status* **C**

REJECT.

The specific behaviour of an MMD (including the internal register states) is implementation specific as stated in the text.

Cl **45** *SC* **45.2.1.1.3** *P* **168** *L* **49** # **646**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Nothing has been done to clarify the operation of power down when devices with multiple MMDs are integrated together. It is highly likely that PCS and WIS will be integrated into a single device and that larger portions of the stack such as PMD through PCS may be integrated into a single device. It would be difficult in that case to power down a single MMD. Therefore, we should allow for a power down to an MMD to also cause a power down to associated MMDs. This comment applies to all power down MMD bits.

SuggestedRemedy

Add to 45.2: "Multiple MMDs may share a single MDIO interface. It is recommended that MMDs sharing a single MDIO interface supply a single value for identifier (registers n.2 and n.3)." (This is also suggested to solve the similar problem for reset - only add it once of course.)Add to each subclause on reset: "Other MMDs sharing the MDIO interface may change power state along with this device."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add the text : "This action may also initiate a power down in any MMDs that share the MDIO interface." to all power down definitions.

Cl **45** *SC* **45.2.1.1.3** *P* **168** *L* **49** # **647**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

A time should be stated for responding to power up as is done for reset. This comment applies to all MMD power down bits.

SuggestedRemedy

"The power up process shall be completed within 0.5s from the setting of bit n.0.13."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.1.3** *P* **168** *L* **51** # **644**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

If an MMD is required to respond to all management transactions while in power down state in the same way it does while powered up - that is, if it shall be able to read every register and accept writes to any register - then much of the chip may have to remain powered up. This comment applies to all power down MMD bits.

SuggestedRemedy

Replace the sentence with: While in the power down state, the <MMD name> shall respond to management transactions to register n.0 and n.1. For all other registers, it may ignore write transactions and respond to read transactions with all zeros. It shall write and increment the value of the address register in responce to management transactions as specified in 45.2.6.*Perhaps "may" should be "shall" or we should specifically allow the alternative of handling all registers the same as in power up. Some in between state of updating some registers but not others would be bad. I included the status register so that the manager can still find out the device is present, but we also need to consider what the other status bits report in power down because the device will not know whether there is a fault condition.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Proposed text to insert :
"During power down, a PMA/PMD shall respond to accesses to register bits 0.15 and 0.13 and all other register bits may be ignored."

Apply this text to all MMD power down descriptions

Cl **45** *SC* **45.2.1.1.3** *P* **168** *L* **52** # **643**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

What is the definition of a "spurious signal"? It is unlikely that a PMD/PMA will be able to transition from no signal to a perfectly compliant signal with no intermediate state. If we feel we need a specification for signal behavior during and at transition out of power down, then the same should apply to reset.This comment applies to all power down bits.

SuggestedRemedy

Delete the sentence.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert "that could be interpreted as valid data" between "spurious signals" and "on".

Cl **45** *SC* **45.2.1.1.3** *P* **169** *L* **2** # **1352**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

Add note.

SuggestedRemedy

Add the following:"NOTE-This operation may interrupt data communication."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.1.4** *P* **169** *L* **9** # **649**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

Should specify what this defaults to - presumably to any supported ability.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Insert the text : "The port type selection defaults to a supported ability."

Cl **45** *SC* **45.2.1.2** *P* **169** *L* **22** # **1048**

Robert Grow Intel

Comment Type **E** *Comment Status* **A**

All bit combiniation are not defined.

SuggestedRemedy

Add definition of other bit combinations (i.e., 00, 01, 11) and meaning per 45.2.1.2.1 (e.g., no valid device present).

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.2** *P* **169** *L* **30** # **1260**

Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **A**

Only "Inbound Fault" is indicated.

SuggestedRemedy

Add "Outbound Fault"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.2** *P* **169** *L* **30** # **1103**

Finch, Stephen G. Texas Instruments

Comment Type **E** *Comment Status* **A** *BTI PMD control*

The use of "inbound" and "outbound" are at a minimum confusing if not a potential cause of error. The terms inbound and outbound are used and not defined. For two back to back XGXS devices, which side is inbound and which is outbound?Is the receive path the inbound or the outbound? No help in 802.3-2000 either.This discussion applies to all of 802.3ae D2.0. Most, if not all, usages of these words are in clause 45.

SuggestedRemedy

In many cases, "inbound" or "outbound" can be removed without lose of meaning. In others, the substitution of the words "transmit path" or "receive path" can be used for "inbound path" or "outbound path".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See #653 for new terminology that has been adopted.

Cl **45** *SC* **45.2.1.2** *P* **169** *L* **30** # **1104**

Finch, Stephen G. Texas Instruments

Comment Type **E** *Comment Status* **A**

Table 5-4, bits 1.1.10, the use of LF is inappropriate. LF is used in other clauses as "Local Fault", meaning the Local Fault Pulse Ordered Set. The "Fault" bit in the status register means the detection of a local fault condition which, if the device is able, may be generated as a result.This problem is repeated in a number of tables within clause 45, along with the sub-clause that describe the bits. All should be corrected.

SuggestedRemedy

Replace "LF" and "local fault signal" with "local fault condition"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.2** *P* **170** *L* **1** # **1049**

Robert Grow Intel

Comment Type **E** *Comment Status* **A**

If you figure out how to keep the footnote from flowing across a page boundary please let me know.

SuggestedRemedy

Become a FrameMaker meister.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Don't know if I'll be able to become a FrameMaker meister :-)
but if I figure it out I'll let you know !

Cl **45** *SC* **45.2.1.2.3** *P* **169** *L* **34** # **652**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **R**

Should we allow for a device where the PMA/PMD interface knows what the PMA is without knowing which optics are attached? Perhaps we should have entries for 10GBASE-X, 10GBASE-R, 10GBASE-W.

SuggestedRemedy

Proposed Response *Response Status* **C**

REJECT.
I originally had separate coding and wavelength bits and was asked to change it to be just 'port types' at the editors meeting.

Cl **45** *SC* **45.2.1.2.3** *P* **170** *L* **15** # **24**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

Does this signal refer directly to Signal Detect from the PMD?

SuggestedRemedy

Add the comment that this signal is controlled by the Signal Detect indication from the PMD.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
I shall also add a pointer to the PMD clauses that will define this fully.

Cl **45** *SC* **45.2.1.2.3** *P* **170** *L* **17** # **651**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

"has detected a local fault signal" could be interpreted as having detected a signal containing the ordered set for local fault. This bit should be set when the PMA had detected a local fault - something wrong with the incoming signal.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.
I will replace "signal" with "condition".

Cl **45** *SC* **45.2.1.4** *P* **171** *L* # **1354**

Booth, Brad — Intel

Comment Type **T** *Comment Status* **R** *BTI PMD control*

This register seems to have horrendous overkill. The logic controlled by this register in the past has been left to be implementation specific.

SuggestedRemedy

Move the "Port type selection" from table 45-3 to this register.Strike the other register bits and leave to be implementation dependent.

Proposed Response *Response Status* **C**

REJECT.

Register required by approved presentation thatcher_1_1100. This presentation may provision for all options. The PMD group will examine which functions should remain and this Clause will reflect the result of their decision.

Cl **45** *SC* **45.2.1.4** *P* **171** *L* **26** # **1353**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

add space between paratheses

SuggestedRemedy

fix

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.4.1** *P* **172** *L* **4** # **654**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *BTI PMD control*

The terms I_Loop and O_Loop are not clear since any loop involves both paths. Also, the paths should be called Rx and Tx rather than I and O. For loopback, names like Local_Loop (or L_Loop) for a loop back up the stack and Remote_Loop (or R_Loop) for a loop back down the stack would be more clear.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See #653.

Cl **45** *SC* **45.2.1.4.1** *P* **172** *L* **4-27** # **1051**

Robert Grow Intel

Comment Type **T** *Comment Status* **A** *BTI PMD control*

The text is very confusing. From the descriptions, it would appear that the two bits are co-dependent (a two bit variable).

SuggestedRemedy

Combine the two subclauses and table rows and describe the behavior for each of the four combiniations of bits. For each combination, the data source for indications on the inbound path and requests on the outbound path must be specified.

Proposed Response *Response Status* **C**

ACCEPT.
Additionally a pointer will be added to Clauses 51 - 54 where the behaviour will be defined. If the PMA/PMD clauses decide not to implement this function then these bits will be removed.

Cl **45** *SC* **45.2.1.4.1** *P* **172** *L* **7** # **655**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A** *BTI PMD control*

I think it would be more clear if this sentence and the next sentence were swapped. Same applies to 45.2.1.4.2. Also, we should say that when I_Loop is set to zero the PMA/PMD forwards data from the Rx input to the Rx output. We should also add a statement on the effect of O_Loop set to zero to the next subclause.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See #1051.

Cl **45** *SC* **45.2.1.4.1** *P* **172** *L* **7-9** # **227**

Shimon Muller Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A** *BTI PMD control*

The second sentence of the paragraph is confusing. It is not clear what the relationship is between I_Loop and O_Loop.

SuggestedRemedy

Clarify.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See #1051.

Cl **45** *SC* **45.2.1.4.2** *P* **172** *L* **19-21** # **228**

Shimon Muller Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A** *BTI PMD control*

The second sentence of the paragraph is confusing. It is not clear what the relationship is between O_Loop and I_Loop.

SuggestedRemedy

Clarify.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See #1051.

Cl **45** *SC* **45.2.1.4.3** *P* **172** *L* **30** # **656**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A** *BTI PMD control*

Where are these fault signals defined? This comment applies to 45.2.1.4.3 through 45.2.1.4.6.

SuggestedRemedy

Define what a type of signal is to be generated or provide a reference to the definition in the PMA/PMD clauses.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

A pointer will be added to Clauses 51 - 54 where the behaviour will be clearly defined and the bit behaviour will be matched to the definition. If the PMA/PMD clauses decide not to implement this function then these bits will be removed.

Cl **45** *SC* **45.2.1.4.3** *P* **172** *L* **31** # **659**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

It should say something like, "When bit 1.6.3 is set to a logic zero, the PMA/PMD shall generate signal on the outbound path as directed by the relevant PMA and PMD clauses."This would cover that sometimes it sends a fault signal because of an internally detected fault. Also, we need to consider whether the read value of this bit should reflect only what has been written to it or whether it should reflect whether a fault signal is being sent. If the latter, the suggested text would not be correct.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The bit should reflect what has been written to it, not whether a fault signal is being sent. If the PMA/PMD clauses decide not to implement this function then these bits will be removed.

Cl **45** *SC* **45.2.1.4.3** *P* **172** *L* **34** # **658**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Reads from bits for unsupported features should return the zero value (when that is the value for the feature not being activated). Applies to the next three subclauses and any other similar instances. Writes that attempt to set bits to activate an unsupported feature should have no effect. That is, reading the bit should reflect the operating mode of the device rather than the last write of the bit.

SuggestedRemedy

Rather than covering it repeatedly, I suggest we add a section at the beginning of 45.2.1 covering general behavior during writes and reads to unsupported registers, writes to set a bit to an unsupported value, reads and writes to undefined registers."Some registers are optional or apply to only some MMDs. Writes to unsupported or undefined registers shall not effect any registers. Reads of unsupported registers shall return all zeros. Some bits in registers activate optional features. Reads of those bits shall reflect the operating mode of the chip rather than the most recently written value. Writes to reserved bits may change the value of the bit or may be ignored."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See #641.

Cl **45** *SC* **45.2.1.4.5** *P* **172** *L* **50** # **657**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *BTI PMD control*

How does one generate a fault signal to an input? One isn't sending a signal there. Applies to 45.2.1.4.5 and 45.2.1.4.6.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accept this is confusing.

A pointer will be added to Clauses 51 - 54 where the behaviour will be clearly defined and the bit behaviour will be matched to the definition. If the PMA/PMD clauses decide not to implement this function then these bits will be removed.

Cl **45** *SC* **45.2.1.5** *P* **173** *L* # **1355**

Booth, Brad — Intel

Comment Type **T** *Comment Status* **R** *BTI PMD control*

Overkill. This information is best left to be implementation specific.

SuggestedRemedy

Move ability information from table 45-4 to this register.Stike the rest of the information.

Proposed Response *Response Status* **C**

REJECT.

Required by thatcher_1_1100. Register required by approved presentation thatcher_1_1100. This presentation may provision for all options. The PMD group will examine which functions should remain and this Clause will reflect the result of their decision.

Cl **45** *SC* **45.2.1.5** *P* **173** *L* **24** # **660**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Many of these bits are optional. What value is sent when the ability is not supported? This comment applies to all optional capabilities.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See #658.

Cl **45** *SC* **45.2.1.5.1** *P* **173** *L* **26** # **661**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *BTI PMD control*

Also 45.2.1.5.2. Another instance of I and O used to distinguish paths. Use Tx and Rx instead.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See #653.

Cl **45** *SC* **45.2.1.5.1** *P* **173** *L* **30** # **1261**
Jonathan Thatcher World Wide Packets

Comment Type **T** *Comment Status* **A** *BTI PMD control*
I_SD is the logical AND of I_SD0-3

SuggestedRemedy
Include in text.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **45** *SC* **45.2.1.5.2** *P* **173** *L* **34** # **1262**
Jonathan Thatcher World Wide Packets

Comment Type **T** *Comment Status* **A** *BTI PMD control*
O_SD is the logical AND of O_SD0-3

SuggestedRemedy
Include in text; and add O_SD0-3

Proposed Response *Response Status* **C**
ACCEPT.

Assuming that the PMD group decide to keep the O_SD signals.

Cl **45** *SC* **45.2.1.6** *P* **175** *L* # **1356**
Booth, Brad Intel

Comment Type **T** *Comment Status* **R** *BTI PMD control*
Overkill. Leave this to be implementation specific.

SuggestedRemedy
Delete 45.2.1.6 and its subclauses.

Proposed Response *Response Status* **C**
REJECT.

Register required by approved presentation thatcher_1_1100. This presentation may provision for all options. The PMD group will examine which functions should remain and this Clause will reflect the result of their decision.

Cl **45** *SC* **45.2.1.6** *P* **175** *L* **26** # **663**
Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**
Add a statement that this register applies to 10GBASE-X and 10GBASE-LW4 PMAs only. It does not apply to 10GBASE-R and 10GBASE-W (other than LW4) PMAs.

SuggestedRemedy

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Lane 0 is required for single wavelength PMDs. Will add text to say that lanes 1-3 only apply to 10GBASE-LX4/LW4 PMDs and Lane 0 applies to all PMDs.

Cl **45** *SC* **45.2.1.6** *P* **175** *L* **27** # **662**
Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A** *BTI PMD control*
It does not state whether the functions controlled by this register are optional or mandatory. They should be optional - other simpler functions such as signal detect are optional.

SuggestedRemedy

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Text clarifying optionality to be inserted.

A pointer will be added to Clauses 51 - 54 where the behaviour will be clearly defined and the bit behaviour will be matched to the definition. If the PMA/PMD clauses decide not to implement this function then these bits will be removed.

Cl **45** *SC* **45.2.1.7** *P* **176** *L* # **1357**
Booth, Brad Intel

Comment Type **T** *Comment Status* **R** *BTI PMD control*
Overkill. This information should be implementation specific.

SuggestedRemedy
Delete 45.2.1.7 and its subclauses.

Proposed Response *Response Status* **C**
REJECT.
Required by thatcher_1_1100.

Cl **45** *SC* **45.2.1.7** *P* **176** *L* **29** # **665**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Add a statement that this register applies to 10GBASE-X and 10GBASE-LW4 PMAs only. It does not apply to 10GBASE-R and 10GBASE-W (other than LW4) PMAs.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Lane 0 is required for single wavelength PMDs. Will add text to say that lanes 1-3 only apply to 10GBASE-LX4/LW4 PMDs and Lane 0 applies to all PMDs.

Cl **45** *SC* **45.2.1.7** *P* **176** *L* **34-50** # **229**

Shimon Muller — Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**

The text is not clear on what the relationship is between the bits in Register 9 and bit 1.7.15 in Register 7.

SuggestedRemedy

Clarify.

Proposed Response *Response Status* **C**

ACCEPT.
See #1261, #1262. Insert text to say it's a logical AND.

Cl **45** *SC* **45.2.1.8** *P* **177** *L* **21** # **1236**

Rich Taborek — nSerial Corporation

Comment Type **T** *Comment Status* **A**

All defined status register 24 bits are equally applicable to 10GBASE-LX4 and 10GBASE-LW4 PHY types. In addition, three incorrect PHY types are used in this subcaluse: 10GBASE-4, 10GBASEL4 and 10GBASE-W4.

SuggestedRemedy

Replace all PHY type occurances in this subclause with 10GBASE-LX4/LW4 or equivalent. This comment and remedy is also applicable to subclauses 45.2.1.8.1 through 45.2.1.8.5.

Proposed Response *Response Status* **C**

ACCEPT.
I'll use "10GBASE-LX4/LW4". See #1234.

Cl **45** *SC* **45.2.1.8** *P* **177** *L* **23** # **601**

William G. Lane — CSU, Chico

Comment Type **E** *Comment Status* **A**

The type names "10BASEL4" and "10GBASE-W4" are incorrect in subclauses 45.2.1.8 through 45.2.1.8.5

SuggestedRemedy

Replace the current type names with "10GBASE-4" -- (32 places)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See #1234. Replacing with "10GBASE-LX4/LW4"

Cl **45** *SC* **45.2.1.8** *P* **177** *L* **23** # **1358**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

missing a dash

SuggestedRemedy

change 10GBASEL4 to be 10GBASE-L4 on line 23 and line 26

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See #1234. Replacing with "10GBASE-LX4/LW4"

Cl **45** *SC* **45.2.1.8** *P* **177** *L* **23** # **664**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

"10GBASE-4", "10GBASE-W4" and "10GBASEL4" should be "10GBASE-LW4". We do not use the other terms.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See #1234. Replacing with "10GBASE-LX4/LW4"

Cl **45** *SC* **45.2.1.8** *P* **177** *L* **23** # **667**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Need to state whether this is mandatory or optional. If optional, state what is returned. Also, maybe should explicitly state "This register only applies to 10GBASE-LW4 PMA."

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert text to say its mandatory for 10GBASE-LX4/LW4.

Cl **45** *SC* **45.2.1.8** *P* **177** *L* **23** # **666**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **R**

While some 10GBASE-X PMAs may be simple retimers, the PMA spec allows for the 10GBASE-X to execute the full sync state machine. Therefore, we should use this register or a similar one to report the sync status of 10GBASE-X PCS. It should be optional for the 10GBASE-X PCS.

SuggestedRemedy

Proposed Response *Response Status* **C**

REJECT.

Re-timers are beyond the scope of the standard.

Cl **45** *SC* **45.2.1.8** *P* **177** *L* **23-26** # **25**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

Misspelling of PHY type

SuggestedRemedy

Replace 2 instances of "10GBASEL4" with "10GBASE-4"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See #1234. Replacing with "10GBASE-LX4/LW4"

Cl **45** *SC* **45.2.1.8** *P* **177** *L* **3252** # **1360**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

W4 is incorrect

SuggestedRemedy

change W4 to L4

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See #1234. Replacing with "10GBASE-LX4/LW4"

Cl **45** *SC* **45.2.1.8** *P* **178** *L* **431** # **1361**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

W4 is incorrect

SuggestedRemedy

change W4 to L4

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See #1234. Replacing with "10GBASE-LX4/LW4"

Cl **45** *SC* **45.2.1.8.1** *P* **178** *L* **6** # **693**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

When the link is 10GBASE-LW4, the value of this bit and the value of 1.1.12 should be the same. The descripiton of 1.1.12 should be augmented to state that.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The 'link status' bit of register 24 is really the 'lane alignment' status bit since link status is reported at the RS.
I propose to re-name bit 12 the 'lane alignment' status bit.

Cl **45** *SC* **45.2.2** *P* **179** *L* **15** # **676**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

The current register definitions for WIS partition bits into a lot of registers. The WIS Line Status, WIS Section Status, and WIS Path Status registers contain a total of 8 bits. MDIO interface reads are pretty slow and this level of partitioning doesn't seem to buy us anything. The bits should be consolidated into one register.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.2** *P* **179** *L* **17** # **314**

Figueira, Norival — Nortel Networks

Comment Type **E** *Comment Status* **A**

It would be better to order the WIS registers for Section, Line, and Path status in this order to follow SONET/SDH overhead hierarchy.

SuggestedRemedy

Change register addresses to:
2.32 WIS Section Status
2.33 WIS Line Status
WIS Path Status is already 2.34.If change is implemented, WIS subclause 50.3.7.1 needs to be updated.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Superceded by #676. Will order the bits in the order 'section, line, path' for the combined register.

Cl **45** *SC* **45.2.2.1** *P* **179** *L* **31-33** # **26**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **R**

I don't know if this is a European thing or not but there is a space in the middle of some of your numbers. This comment also applies to the following:

SuggestedRemedy

Remove the space within the number

Proposed Response *Response Status* **C**

REJECT.
Spacing in numbers is required by the IEEE style manual. See P20.

Cl **45** *SC* **45.2.2.1** *P* **179** *L* **48** # **1263**

Jonathan Thatcher — World Wide Packets

Comment Type **T** *Comment Status* **R**

Shouldn't we have a WIS bypass control in case someone wants to build a port that supports both 10GBASE-W and 10GBASE-R?

SuggestedRemedy

Add feature to reserved space 2.0.12:1

Proposed Response *Response Status* **C**

REJECT.

Bit 0 should provide the necessary functionality (check). See 45.2.2.1.4, p 180.

Cl **45** *SC* **45.2.2.1.2** *P* **180** *L* **13** # **681**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

The WIS does not transmit data on the medium. It sends data to the PMA. When the interface is the XSBI, there is no way to not send data except by disabling the transmit clock on the XSBI. Is that the intent? Or should the WIS just send all zeros? If the interface is only logical, it is not clear whether there is a way to stop supplying primatives.

SuggestedRemedy

Clarify transmitter behavior on loopback.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See #268 for wording.

Cl **45** *SC* **45.2.2.1.2** *P* **180** *L* **13** # **268**

Figueira, Norival — Nortel Networks

Comment Type **E** *Comment Status* **A**

The following statement about what to do when bit 2.0.14 is set to a logic one is not precise: "the WIS shall not transmit data onto the medium". The WIS does not transmit directly onto the medium. It transmits to the PMA sublayer.

SuggestedRemedy

Say instead (like in 50.3.7.1.1 page 328 lines 51-53) that "the WIS shall transmit a continuous stream of all-zeros data words to the PMA sublayer, and shall ignore all data presented to it by the PMA sublayer".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.2.1.4** *P* **180** *L* **36** # **27**
Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**
Wrong speed at the WIS-PMA interface

SuggestedRemedy
Replace "9.58" with "9.95328"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **45** *SC* **45.2.2.1.4** *P* **180** *L* **36** # **269**
Figueira, Norival Nortel Networks

Comment Type **E** *Comment Status* **R**
Payload speed of 9.58 Gb/s is not precise.

SuggestedRemedy
Change payload speed to 9.58464 Gb/s.

Proposed Response *Response Status* **C**
REJECT.
See #27. Replacing "9.58" with "9.95328".

Cl **45** *SC* **45.2.2.1.4** *P* **180** *L* **43** # **270**
Figueira, Norival Nortel Networks

Comment Type **E** *Comment Status* **A**
Missing subclause number for heading "WIS Status register (Register 1)".

SuggestedRemedy
Include subclause number for "WIS Status register (Register 1)".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **45** *SC* **45.2.2.1.4** *P* **180** *L* **43** # **1100**
Finch, Stephen G. Texas Instruments

Comment Type **E** *Comment Status* **A**
Should be sub-clause header 45.2.2.2

SuggestedRemedy
Set to appropriate heading level.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **45** *SC* **45.2.2.1.4** *P* **180** *L* **43** # **670**
Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**
This line should be a heading.

SuggestedRemedy

Proposed Response *Response Status* **C**
ACCEPT.

Cl **45** *SC* **45.2.2.1.4** *P* **180** *L* **43** # **230**
Shimon Muller Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**
Missing sub-clause.

SuggestedRemedy
The heading "WIS Status register (Register 1)" should be the title of sub-clause 45.2.2.2. Renumber all the subsequent sub-clauses.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **45** *SC* **45.2.2.1.4** *P* **180** *L* **43** # **602**
William G. Lane CSU, Chico

Comment Type **E** *Comment Status* **A**
The line "WIS Status register (Register 1)" should be a subclause title

SuggestedRemedy
Make it a a subclause title

Proposed Response *Response Status* **C**
ACCEPT.

Cl **45** *SC* **45.2.2.1.4** *P* **180** *L* **43** # **28**
Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**
This line should be a heading. Same comment also applies to clause 45.2.3.1.4, page 189, line 36

SuggestedRemedy
Make this line a heading with subclause numbering 45.2.2.2 / 45.2.3.2

Proposed Response *Response Status* **C**
ACCEPT.

Cl **45** *SC* **45.2.2.1.6** *P* **181** *L* **26** # **271**
Figueira, Norival Nortel Networks

Comment Type **E** *Comment Status* **A**

The WIS link status is already defined in the WIS Clause. See 50.3.7.1.2 page 329 lines 12-15.

SuggestedRemedy

Include reference to 50.3.7.1.2.

Proposed Response *Response Status* **C**

ACCEPT.
I'll insert the text : "The behaviour of the WIS link status bit is defined in 50.3.7.1.2."

Cl **45** *SC* **45.2.2.1.7** *P* **181** *L* **30** # **288**
Figueira, Norival Nortel Networks

Comment Type **T** *Comment Status* **R**

WIS local Fault (bit 2.1.10 in Table 45-12) was not defined in subclause 50.3.7.1.2. I do not recall any proposal for a WIS local faultbit.

SuggestedRemedy

Delete bit 2.1.10.

Proposed Response *Response Status* **C**

REJECT.
See taborek_2_1100 . Raise comment against Clause 50 to include LF definition.

Cl **45** *SC* **45.2.2.1.7** *P* **181** *L* **31** # **673**
Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

What does it mean by "has detected a local fault signal"? The WIS is unlikely to be able to decode LF. I expect that what is actually meant is that the WIS has detected a local fault rather than a local fault signal, i.e. it cannot obtain lock on the received signal. If so, it isn't clear what information is conveyed by this that is different from WIS link status.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.
Replace "signal" with "condition".

Cl **45** *SC* **45.2.2.1.8** *P* **181** *L* **37** # **29**
Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

Missing a word

SuggestedRemedy

Replace "WIS is able bypass" with "WIS is able to bypass"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.2.1.8** *P* **181** *L* **37** # **272**
Figueira, Norival Nortel Networks

Comment Type **E** *Comment Status* **A**

Missing word "to" before "bypass".

SuggestedRemedy

Include word "to" before "bypass".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.2.1.8** *P* **181** *L* **37** # **1101**
Finch, Stephen G. Texas Instruments

Comment Type **E** *Comment Status* **A**

Grammer: "WIS is able bypass"

SuggestedRemedy

Change to "WIS is able to bypass"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.2.1.8** *P* **181** *L* **37** # **231**
Shimon Muller Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**

Typo.

SuggestedRemedy

Insert "to" between "able" and "bypass" in the first sentence.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.2.10.1** *P* **185** *L* **46** # **678**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Also page 186 line 37, page 186 line 46, and page 187 line 38. Delete these headings. Also delete the last sentence of the paragraph on page 185 line 48 and the last sentence of the paragraph on page 186 line 49. Then WIS J1 Tx and WIS J1 Rx will be each described by one paragraph. The current level of segmentation detracts from readability.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.2.3** *P* **181** *L* **48** # **232**

Shimon Muller — Sun Microsystems, Inc

Comment Type **T** *Comment Status* **A**

The definition of Register 4 (WIS Capability) is missing.

SuggestedRemedy

Add sub-clause "45.2.2.3 WIS Capability (Register 4)".
Renumber all the subsequent sub-clauses.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
WIS capability register is no longer needed, so I will remove it from the tables.

Cl **45** *SC* **45.2.2.3** *P* **181** *L* **50** # **273**

Figueira, Norival — Nortel Networks

Comment Type **E** *Comment Status* **A**

Reference to the wrong table (Table 45-14). Correct table is Table 45-13.

SuggestedRemedy

Change to Table 45-13.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.2.3** *P* **181** *L* **50** # **233**

Shimon Muller — Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**

Wrong reference.

SuggestedRemedy

Replace the reference in the first sentence from "Table 45-14" to "Table 45-13".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.2.3** *P* **182** *L* **7** # **274**

Figueira, Norival — Nortel Networks

Comment Type **T** *Comment Status* **A**

Order of bits 2.32.1 AIS-L and 2.32.0 RDI-L is not consistent with the order of these same bits in aLineStatus (30.8.1.1.10 page 59).

SuggestedRemedy

Make bit 2.32.0 = AIS-L and bit 2.32.1 = RDI-L.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.2.3.1** *P* **182** *L* **16** # **674**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Does this bit report the status of the AIS-L flag that the WIS is transmitting or the one it is receiving? Shouldn't there be a bit for for the transmitted flag and another for the received flag? This comment also applies to the RDI-L, LOS, and LOF flags.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
These bits apply to the receive path.

Cl **45** *SC* **45.2.2.3.1** *P* **184** *L* **16** # **672**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Why do the LOS and LOF bits in the section status register say in their descriptions that they are latching high while the AIS-L and RDI-L bits don't? The tables indicate LH for all of them.

SuggestedRemedy

Be more consistant.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See #708.
WIS track needs to clarify requirements.

Cl **45** *SC* **45.2.2.4** *P* **182** *L* **39** # **275**

Figueira, Norival — Nortel Networks

Comment Type **T** *Comment Status* **A**

Order of bits 2.33.1 LOS and 2.33.0 LOF is not consistent with the order of these same bits in aSectionStatus (30.8.1.1.2 page 57).

SuggestedRemedy

Make bit 2.33.0 = LOS and bit 2.33.1 = LOF.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.2.4.1** *P* **180** *L* **51** # **675**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

From this description: "The LOS bit shall be implementedwith a latching function, such that the raising of the LOS flag will cause the LOS bit to become set to a logic one and remain set until it is read via the management interface." It seems that if the LOS bit is read while the LOS flag is up, the LOS bit value will be cleared and will stay cleared until LOS flag is dropped and raised again. Is that really the intent or is the intent that the LOS bit only clears if the LOS bit is read while the LOS flag is down? As currently defined, how will it be possible to determine that the fault has cleared? This comment applies to many latching bits.

SuggestedRemedy

Clarify whether the latching functionality is edge triggered high by the fault or whether it persists until the fault has cleared.Also, it would be better to describe latching operation clearly once at the beginning rather than repeating it in the clause for each latching bit.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See #708.

Cl **45** *SC* **45.2.2.5** *P* **183** *L* **21** # **276**

Figueira, Norival — Nortel Networks

Comment Type **T** *Comment Status* **A**

Order of bits 2.34.0 PLM-P and 2.34.2 LOP-P is not consistent with the order of these same bits in aPathStatus (30.8.1.1.18 page 61).

SuggestedRemedy

Make bit 2.34.0 = LOP-P and bit 2.34.2 = PLM-P.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.2.9** *P* **185** *L* **32** # **677**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Latching bits are shown as LH in the R/W column. Shouldn't this latching byte have some designation here as well? Perhaps LNZ for latch non-zero.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3** *P* **188** *L* **16** # **679**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

A register needs to be added for the 10GBASE-R PCS counters that were approved in November. See clause 49.2.12.2. The counters are frame_lock_count, hi_ber_counter, and errored_frame_counter. The first two are 4 bit and the last is 8 bits. The counters are sticky, clear on read counters.When we added them, we said they would be put into a single MDIO register.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.
Frame_lock latch low single bit, hi_ber latch high single bit, bad_sh counter a six bit counter (sticky) 8 bit errored_frame counter.

Cl **45** *SC* **45.2.3.1.2** *P* **189** *L* **8** # **669**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

The PCS does not transmit data on the medium. It sends data to the PMA or the WIS. When the interface is the XSBI, there is no way to not send data except by disabling the transmit clock on the XSBI. Is that the intent? Or should the PCS just send all zeros? If the interface is only logical, it is not clear whether there is a way to stop supplying primatives.

SuggestedRemedy

Clarify transmitter behavior on loopback.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
PCS track needs to clarify.

Cl **45** *SC* **45.2.3.1.4** *P* **189** *L* **36** # **1102**

Finch, Stephen G. — Texas Instruments

Comment Type **E** *Comment Status* **A**

Should be sub-clause header 45.2.2.x

SuggestedRemedy

Promote to appropriate header level.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.1.4** *P* **189** *L* **36** # **234**

Shimon Muller — Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**

Missing sub-clause.

SuggestedRemedy

The heading "PCS Status register (Register 1)" should be the title of sub-clause 45.2.3.2. Renumber all the subsequent sub-clauses.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.1.4** *P* **189** *L* **37** # **680**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Should be a heading.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.1.6** *P* **190** *L* **28** # **682**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

For 10GBASE-R, the link is down when the Receive state machine is in RX_INIT and it is up otherwise. (49.2.11.2) Also, I believe that the intent is that this bit be the same as the link status bit in the 10GBASE-R or 10GBASE-X register (whichever applies to the current operation of the PCS) so an alternative is to reference them.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.1.7** *P* **190** *L* **34** # **684**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

"has detected a local fault signal" could be interpreted as having detected a signal containing the ordered set for local fault. This bit should be set when the PCS had detected a local fault - something wrong with the incoming signal. The R PCS does not check to see whether the incoming signal contains an LF or RF code. Also, it seems that this bit would just be the inverse of the PCS link status bit. Is that the intent?

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
I'll replace the word "signal" with "condition".

Whether the 'local fault' bit equals the inverse of the 'link status' bit needs further discussion.

Cl **45** *SC* **45.2.3.1.9** *P* **190** *L* **46** # **30**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

Do we need an additional capability bit for 10GBASE-W? There are certain requirements of a 10GBASE-R PCS that allow it to connect to a WIS vs. a PMA.

SuggestedRemedy

Add a capability bit for 10GBASE-W which indicates it is capable of performing the IDLE insert/strip required when connecting to a WIS.

Proposed Response *Response Status* **C**

ACCEPT.
Propose use of bit 2.

Cl **45** *SC* **45.2.3.3** *P* **191** *L* **36** # **1237**

Rich Taborek nSerial Corporation

Comment Type **T** *Comment Status* **A**

Add a 10GBASE-LX4 Lane Alignment status bit

SuggestedRemedy

Redefine reserved bit 3.24.4 as 10GBASE-LX4 LaneAlignment status
1 = 10GBASE-LX4 lanes are aligned
0 = 10GBASE-LX4 lanes are not aligned
R/W status should be RO

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The 'link status' bit of register 24 is really the 'lane alignment' status bit since link status is reported at the RS.
I propose to re-name bit 12 the 'lane alignment' status bit.

Cl **45** *SC* **45.2.3.4** *P* **192** *L* **22** # **1133**

Finch, Stephen G. Texas Instruments

Comment Type **T** *Comment Status* **A**

Clause 49 defines a status bit "signal_detect" as being available via MDIO, but which is not in the MDIO registers.

SuggestedRemedy

Add bit to table 45-26
3.32.2 10GBASE-R PCS signal detect
1=10GBASE-R receiving valid signal indication from PMA/PMD
0=10GBASE-R receiving invalid signal indication from PMA/PMD

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The PCS should not reflect the status of signal_detect because it is already reflected in the PMA or WIS. A comment will be raised against Clause 49 for removal of signal_detect from 49.2.12.1.

Cl **45** *SC* **45.2.3.4.1** *P* **192** *L* **35** # **683**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

Looks like this text was cut and pasted from 10GBASE-X. It does not apply here.

SuggestedRemedy

"When read as a logic one, bit 3.32.12 indicates that the 10GBASE-X PCS is detecting a good receive signal. This bit shall be a logic one if the Receive state machine is not in the RX_INIT state. When read as a logic zero, bit 3.32.12 indicates that the 10GBASE-R PCS Receive state machine is in the RX_INIT state. Loss of frame lock, high BER and reset cause the Receive state machine to enter RX_INIT."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
I propose the following replacement text :
'When read as a logic one, bit 3.32.12 indicates that the 10GBASE-R PCS has FRAME_LOCK = TRUE and HI_BER = FALSE. When read as a logic zero, bit 3.32.12 indicates that either FRAME_LOCK = FALSE or HI_BER = TRUE.'

Cl **45** *SC* **45.2.3.4.1** *P* **192** *L* **35-37** # **31**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

This paragraph does not belong here, it appears to be cut and pasted from somewhere else but never modified.

SuggestedRemedy

Insert desired text for 10GBASE-R, which is essentially that FRAME_LOCK is TRUE and HI_BER is FALSE.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Addressed by resolution to #683

Cl **45** *SC* **45.2.3.4.1** *P* **192** *L* **35-38** # **235**

Shimon Muller Sun Microsystems, Inc

Comment Type **T** *Comment Status* **A**

The text in this sub-clause refers to the wrong PCS.

SuggestedRemedy

Re-write this sub-clause with the relevant information.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Addressed by resolution to #683

Cl **45** *SC* **45.2.3.4.1** *P* **192** *L* **36** # **692**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

This bit and the bit in 4.24.12 are copies of the same information. It would be helpful to point that out in one of their descriptions. This also applies to DTE XGXS for bits 5.1.12 and 5.24.12.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.4.2** *P* **192** *L* **41** # **236**

Shimon Muller Sun Microsystems, Inc

Comment Type **T** *Comment Status* **A**

A BER that is equal to 10*(E-4) should be considered high.

SuggestedRemedy

Replace ">" with ">=" (greater than or equal to) in the first sentence.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.4.2** *P* **192** *L* **41-49** # **33**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

Incorrect term for 64B/66B encoding

SuggestedRemedy

Replace "64B66B" with "64B/66B"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.4.2** *P* **192** *L* **42** # **685**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **R**

"64B66B" should be "64b/66b". This appears on several lines. Another alternative is to replace it with "10GBASE-R PCS"

SuggestedRemedy

Proposed Response *Response Status* **C**

REJECT.
Correcting to capital 'B' as per comment #33

Cl **45** *SC* **45.2.3.4.3** *P* **192** *L* **45** # **32**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

There is no longer a variable called sync_done in clause 49.

SuggestedRemedy

Replace "sync done" with "frame lock" and "sync_done" with "frame_lock"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.4.1.1** *P* **194** *L* **1** # **686**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **R**

Why does this reset have a note and others don't. Delete the note - I doubt we can provide much help to anyone who doesn't realize that a reset may disrupt communication.

SuggestedRemedy

Proposed Response *Response Status* **C**

REJECT
I'll add the note to all reset descriptions.

Cl **45** *SC* **45.2.4.1.2** *P* **189** *L* **8** # **688**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

The Phy XGXS does not transmit data on the medium. It sends data to the PCS. When the interface is the XGMII, there is no way to not send data except by disabling the transmit clock on the XGMII. Is that the intent? Or should the PCS just send all zeros? If the interface is only logical, it is not clear whether there is a way to stop supplying primatives.

SuggestedRemedy

Clarify transmitter behavior on loopback.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
XGXS track to clarify behaviour.

See comment #

Cl **45** *SC* **45.2.4.1.2** *P* **194** *L* **6** # **1107**

Finch, Stephen G. — Texas Instruments

Comment Type **T** *Comment Status* **R**

The XGXS device can be a standalone device, having an XGMII interface on one side and a XAUI device on the other. Two such devices, placed back to back, can extend an XGMII interface. In such a condition, the SAME device is used as both a PHY XGXS and a PCS XGXS device, without knowledge of which it is. The definition of Loopback in 45.2.4.1.2 and 45.2.5.1.2 state that the loopback is at the PCS and XAUI side of the bus.

SuggestedRemedy

Create two loopback bits, one for each direction. State that, if a device does not support one of the directions of loopback, it can ignore writes to the associated bit.

Proposed Response *Response Status* **C**

REJECT.
The PHY XGXS and DTE XGXS are separate devices and must know which one they are so they can respond to the correct MDIO device address. Therefore, the same device is not used for the DTE XGXS and PHY XGXS (unless a pin selects the mode).
However, clarification of the term 'XGXS' is required in both 45.2.4 and 45.2.5. I propose to replace XGXS with PHY XGXS in 45.2.4 and replace XGXS with DTE XGXS in 45.2.5.

Cl **45** *SC* **45.2.4.2** *P* **194** *L* **39** # **691**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

This line uses "transmit link" while line 43 uses "inbound path". We need to be consistant. I recommend we use transmit path and receive path rather than outbound path and inbound path because that is more consistant with usage in the rest of 802.3. Usually "link" refers to both directions of the connection except when it is "simplex link". (Also, I have another comment that inbound path is the wrong direction.)Also 45.2.5.2 uses "receive link" for one bit and "inbound path" for the other.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
'inbound' and 'outbound' terminology replaced with 'receive' and 'transmit' by another comment.

Cl **45** *SC* **45.2.4.2.2** *P* **195** *L* **1** # **687**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Also applies to page 194, line 38. The other link status definitions state that the link is up or down, but this one refers specifically to the transmit link. Either delete transmit here or make the others specific to the direction being tested.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.
I will make all link status bits direction specific.

Cl **45** *SC* **45.2.4.2.2** *P* **195** *L* **3** # **1105**

Finch, Stephen G. — Texas Instruments

Comment Type **E** *Comment Status* **R**

How can the XAUI transmit link be skewed? The receive path, I can understand.Also, in table 45-29.

SuggestedRemedy

Change to receive link or receive path.

Proposed Response *Response Status* **C**

REJECT.
On the transmit path, the XAUI link must be de-skewed by the PHY XGXS.

Cl **45** *SC* **45.2.4.2.3** *P* **195** *L* **8** # **690**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

"has detected a local fault signal" could be interpreted as having detected a signal containing the ordered set for local fault. This bit should be set when the XGXS had detected a local fault - something wrong with the incoming signal. The XGXS does not need to check to see whether the incoming signal contains an LF or RF code. Also, it seems that this bit would just be the inverse of the XGXS link status bit. Is that the intent? Applies also to 45.5.2.3.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See #684.

Insert an editors note 'Is link status always the inverse of fault ? If so, shall we delete one ?'

Cl **45** *SC* **45.2.4.2.3** *P* **195** *L* **8** # **689**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Also affects page 194 line 43. This should be on the outbound path as that is the direction where the Phy XGXS has fault detects. Also, this bit is currently the only case where a phy XGXS would need different implementation than a DTE XGXS. In all other cases the behavior of an XGXS is the same regardless of which way it faces in the stack.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Replace 'signal' with 'condition'.
In addition, two fault bits are to be added (transmit and receive).

Cl **45** *SC* **45.2.4.4** *P* **195** *L* **22-51** # **237**

Shimon Muller — Sun Microsystems, Inc

Comment Type **E** *Comment Status* **R**

Is there any reason why these status bits have to be in a separate register?

SuggestedRemedy

Combine Register 24 (PHY XGXS Lane Status register) with Register 1 (PHY XGXS Status register).

Proposed Response *Response Status* **C**

REJECT.
Register 24 provides the detailed debug info, whilst the status register is for the more general status information.

Cl **45** *SC* **45.2.4.4** *P* **195** *L* **36** # **1106**

Finch, Stephen G. — Texas Instruments

Comment Type **E** *Comment Status* **R**

Bits 4.24.12 and 4.1.12 appears to be a duplicates of each other.

SuggestedRemedy

Remove one.

Proposed Response *Response Status* **C**

REJECT.
The two bits are deliberately duplicates of each other. An STA would poll register 1 for device status and if link goes down then it can go to register 24 to find specific lane status. When it reads the lane status it needs to monotonically get the link status bit again so it can check that the link is still down (remember that MDIO is very slow in comparison to XAUI).

Cl **45** *SC* **45.2.4.4** *P* **195** *L* **36** # **325**

TURNER, ED — 3COM

Comment Type **T** *Comment Status* **R**

XAUI transmit link status bit is duplicated in the PHY XGXS by bit 4.1.12

SuggestedRemedy

Remove bit 2.24.12 and its associated definition (45.2.4.4.1)

Proposed Response *Response Status* **C**

REJECT.
Bit is duplicated to allow monotonic reads of lane status register status with link status.

Cl **45** *SC* **45.2.4.4** *P* **195** *L* **39** # **1238**

Rich Taborek — nSerial Corporation

Comment Type **T** *Comment Status* **R**

Add a 10GBASE-LX4 Lane Alignment status bit

SuggestedRemedy

Redefine reserved bit 4.24.4 as 10GBASE-LX4 Lane Alignment status. This bit is missing anyway.1 = 10GBASE-LX4 lanes are aligned
0 = 10GBASE-LX4 lanes are not aligned
R/W status should be RO

Proposed Response *Response Status* **C**

REJECT.
The link status bit is equivalent to the lane alignment bit.

Cl **45** *SC* **45.2.4.4** *P* **195** *L* **39** # **327**

TURNER, ED 3COM

Comment Type **E** *Comment Status* **A**

Reserved bits are defined from 11 to 5 and 'lane 3 sync' is bit 3. Bit 4 is undefined.

SuggestedRemedy

Modify text '4.24.11:5' to read '4.24.11:4'

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.4.4** *P* **195** *L* **table 45-3** # **1056**

Wesley Lee Agere Systems

Comment Type **T** *Comment Status* **A**

The PHY XGXS Lane status register does not provide any status for the NO/A/ or NO||A| conditions per sec 48.2.5.1.4 There should be some means available to know that these conditions have occured.

SuggestedRemedy

1) Add bits 4.24.7:4 for the NO/A/ condition for lanes 3 down to 0.
2) Add bit 4.24.8 for the NO||A|| condition

Also, table 45-34 would also be correspondingly affected.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

If they existed. Comment resolved by removing functionality.

Cl **45** *SC* **45.2.4.4.1** *P* **196** *L* **1-4** # **238**

Shimon Muller Sun Microsystems, Inc

Comment Type **E** *Comment Status* **R**

How is this status bit (4.24.12) different from 4.1.12?

SuggestedRemedy

Delete 4.24.12.

Proposed Response *Response Status* **C**

REJECT.
See #1106.

Cl **45** *SC* **45.2.5.2.2** *P* **198** *L* **33** # **695**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

Also applies to line 15. The other link status definitions state that the link is up or down, but this one refers specifically to the receive link. Either delete receive here or make the others specific to the direction being tested.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.
See #687.

Cl **45** *SC* **45.2.5.4** *P* **199** *L* # **324**

TURNER, ED 3COM

Comment Type **E** *Comment Status* **A**

Entire section (including its subsections) refers to transmit lanes and links. DTE XGXS can only synchronize and deskew the receive lanes and link.

SuggestedRemedy

Change all text which reads 'transmit' in section 45.2.5.4 to 'receive'. Apply to 45.2.5.4.1, 45.2.5.4.2, 45.2.5.4.3, 45.2.5.4.4, 45.2.5.4.5.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.5.4** *P* **199** *L* **1-31** # **239**

Shimon Muller Sun Microsystems, Inc

Comment Type **E** *Comment Status* **R**

Is there any reason why these status bits have to be in a separate register?

SuggestedRemedy

Combine Register 24 (DTE XGXS Lane Status register) with Register 1 (DTE XGXS Status register).

Proposed Response *Response Status* **C**

REJECT.
See #237 and #1106.

Cl **45** *SC* **45.2.5.4** *P* **199** *L* **16** # **326**
TURNER, ED 3COM

Comment Type **T** *Comment Status* **R**
DTE XGXS receive link status bit is duplicated by bit 5.1.12.

SuggestedRemedy
Remove bit 5.24.12 and its associated definition (45.2.5.4.1)

Proposed Response *Response Status* **C**
REJECT.
See #325.

Cl **45** *SC* **45.2.5.4** *P* **199** *L* **19** # **1239**
Rich Taborek nSerial Corporation

Comment Type **T** *Comment Status* **R**
Add a 10GBASE-LX4 Lane Alignment status bit

SuggestedRemedy
Redefine reserved bit 5.24.4 as 10GBASE-LX4 Lane Alignment status.
1 = 10GBASE-LX4 lanes are aligned
0 = 10GBASE-LX4 lanes are not aligned
R/W status should be RO

Proposed Response *Response Status* **C**
REJECT.
Lane alignment status bit is the link status bit.

Cl **45** *SC* **45.2.5.4.1** *P* **199** *L* **34-37** # **240**
Shimon Muller Sun Microsystems, Inc

Comment Type **E** *Comment Status* **R**
How is this status bit (5.24.12) different from 5.1.12?

SuggestedRemedy
Delete 5.24.12.

Proposed Response *Response Status* **C**
REJECT.
See #325, #1106, #237.

Cl **45** *SC* **45.2.5.4.1** *P* **199** *L* **34-52** # **241**
Shimon Muller Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**
Typos.

SuggestedRemedy
Replace "transmit" with "receive" in 8 instances in the indicated sections.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **45** *SC* **45.2.5.4.5** *P* **200** *L* **1-4** # **242**
Shimon Muller Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**
Typos.

SuggestedRemedy
Replace "transmit" with "receive" in 2 instances in the indicated sections.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **45** *SC* **45.2.6** *P* **200** *L* **6** # **694**
Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**
This would be better as a second level heading so that 45.2 has the register definitions and 45.3 has the management frame structure.

SuggestedRemedy

Proposed Response *Response Status* **C**
ACCEPT.

Cl **45** *SC* **45.2.6** *P* **200** *L* **9** # **696**
Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**
There should be some mention here that the electrical specs are somewhat different.

SuggestedRemedy

Proposed Response *Response Status* **C**
ACCEPT.

Cl **45** *SC* **45.2.6** *P* **200** *L* **9** # **329**

TURNER, ED 3COM

Comment Type **T** *Comment Status* **A**

No indication is given as to how bus turn-around for read is done in implementations where the two systems co-exist on the same bus.

SuggestedRemedy

Add text :'For such systems, the device that interfaces between the Clause 22 compliant part of the bus and the Clause 45 compliant part of the bus should use the ST and OP fields to control the MDIO tri-state buffers.'

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See #1254.

Cl **45** *SC* **45.2.6.1** *P* **200** *L* **45** # **697**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

Since there is a pull up on the MDIO line, why does device present require a 10?

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Active driving to one and zero is required in case the pull ups on the new electrical interface are unable to pull up enough.

Cl **45** *SC* **45.2.6.2** *P* **200** *L* # **838**

Wesley Lee Agere Systems

Comment Type **T** *Comment Status* **R**

Clause 22 (22.2.4.2.9) allows for a mode for preamble suppression. This mode can decrease the access time by 1/2 if a number of back-to-back accesses are required. A 10G PHY allows for a very rich set of registers, and with multiple PHYs in a system, the number of back-to-back register access can be significant.

SuggestedRemedy

Allow for the preamble suppression mode per 22.2.4.2.9.

Proposed Response *Response Status* **C**

REJECT.
Preamble supression would significantly degrade the error detection and recovery capabilities for the MDIO. In Clause 22, the ST was always 01 and the op-code was either 01 or 10. With the expansions of Clause 45, the ST can now be either 01 or 00

Cl **45** *SC* **45.3.1** *P* **201** *L* **47** # **1115**

Finch, Stephen G. Texas Instruments

Comment Type **T** *Comment Status* **A**

Electrical specifications for MDC and MDIO are not defined.

SuggestedRemedy

No suggestion at this time. The results of an ad-hoc to determine this is pending. Until that material is available for review, I can not vote to approve an incomplete standard.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Adopt an instance of the JESD8-11 standard with a VDD of 1.2v.
Specify a VOH MAX of 1.5v.
Specify a pull up resistor for the MDIO line.
Specify a VOL MIN of -0.3.
Specify that the input capacitance not exceed 10pF.

Insert an implementation note to indicate that this can be achieved using open drain buffers.

Cl **45** *SC* **45.3.2** *P* **202** *L* # **34**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

Where is the timing for MDC?

SuggestedRemedy

Add a timing diagram and AC characteristics for MDC.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Insert reference to clause 22 for the timing.

Cl **45** *SC* **45.3.2** *P* **202** *L* **1** # **698**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

There is no specification for MDC clock rate.

SuggestedRemedy

Add one.

Proposed Response *Response Status* **C**

ACCEPT

See #34.

Cl **45** *SC* **45.3.2** *P* **202** *L* **32** # **1264**

Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **A**

Second set of cross hatches unnecessary.

SuggestedRemedy

Remove or drop a timing line down from 2nd rising edge of MDC....

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Timing diagrams to be reviewed.

Cl **45** *SC* **45.4.5.8** *P* **213** *L* **615** # **328**

TURNER, ED 3COM

Comment Type **E** *Comment Status* **A**

Items ST1, ST2 and ST3 have been incorrectly copied over from Clause 22 and should not be present

SuggestedRemedy

Remove items ST1, ST2, ST3 and re-number ST4 and ST5 to ST1 and ST2 respectively.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **General** *P* **168** *L* **22** # **650**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

Consistency - The clause sometimes uses "logic one" and "logic zero" while other times it uses "one" and "zero". Pick one - I prefer to drop "logic".

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.
Logic to be dropped.

Cl **45** *SC* **General** *P* **168** *L* **8** # **653**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

The usage of I_Tx, O_Tx, I_Rx and O_Rx is inconsistant with the way we have used the terms Tx and Rx elsewhere in the standard. Here I and O are used to refer to the transmit and receive paths while Tx and Rx refer to whether it is the input or output of the sublayer on that path. Elsewhere in 802.3, the outbound path is always the transmit path and points on the transmit path are Tx regardless of whether they are an input or an output. Being inconsistant here will cause a lot of confusion.

SuggestedRemedy

Use the following:
Tx_In Input of an MMD on the Tx path
Tx_Out Output of an MMD on the Tx path
Rx_In Input of an MMD on the Rx path
Rx_Out Output of an MMD on the Rx path.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **multiple** *P* *L* # **1349**

Booth, Brad Intel

Comment Type **T** *Comment Status* **A**

Register 0 speed indication.

SuggestedRemedy

Set bits 13 and 6 in register 0 to be 11. Define this as indicating speeds greater than 1 Gb/s. Will involve a change in clause 22.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
No change required for Clause 22.

Cl **45** *SC* **multiple** *P* *L* # **1348**

Booth, Brad Intel

Comment Type **T** *Comment Status* **A**

Register 0 bits not align across all devices, and are not aligned with clause 22.

SuggestedRemedy

Change all devices register 0 to have the following bit assignments:
15 - reset
14 - loopback (transmit path back onto receive path)
13:12 - undefined for 10GbE
11 - power down
10 - isolate (same as inbound transmission disable)
9:0 - undefined for 10GbE
move other bits to device-specific control register

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Dependent on PMD resolution, we'll do the best we can.

Cl **45** *SC* **multiple** *P* *L* # **1350**

Booth, Brad Intel

Comment Type **T** *Comment Status* **A**

Register 1 does not align across all devices, and are not aligned with clause 22.

SuggestedRemedy

Change all devices register 1 to have the following bit assignments:
15:9 - undefined for 10GbE
8 - extended status (indicates information in register 15)
7 - local fault
6:5 - undefined for 10GbE
4 - remote fault (used by coding PCS)
3 - undefined for 10GbE
2 - link status
1 - undefinted for 10GbE
0 - extended capabilities
move other status information to device-specific status register

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Dependent on PMD resolution, we'll do the best we can.

Cl **46** *SC* **46.1** *P* **216** *L* **1** # **1299**

Jonathan Thatcher World Wide Packets

Comment Type **T** *Comment Status* **A**

In clause 48.2.2, page 254, line 1, it is stated that the PCS depends on the XGMII generating continuous code-groups. It would be good to state in clause 48 that the XGMII does in fact generate continuous code groups.

SuggestedRemedy

see comment

Proposed Response *Response Status* **C**

ACCEPT. Add to p.216 l.48
"x) It generates continuous code-groups on the transmit path and expects continuous code-groups on the receive path."

Cl **46** *SC* **46.1** *P* **216** *L* **10** # **700**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **R**

Why isn't this the same figure as in 44?

SuggestedRemedy

Proposed Response *Response Status* **C**

REJECT. See change to figure in response #852. The figures are different because the XGMII is PHY idependent and Figure 44-1 is PHY dependent.

Cl **46** *SC* **46.1** *P* **216** *L* **23-24** # **243**

Shimon Muller Sun Microsystems, Inc

Comment Type **E** *Comment Status* **R**

The representation for the MEDIUM block on Figure 46-1 is not consistent with other clauses.

SuggestedRemedy

Change the block for the MEDIUM to be the same as in Figure 1-1.

Proposed Response *Response Status* **C**

REJECT. Note that some of the 802.3ae clauses had this appearance of medium. The jagged edge on both sides of the medium implies multiple access while to some, the solid edge on one side and jagged edge on the other indicates a point-to-point medium.

Cl **46** *SC* **46.1** *P* **216** *L* **36** # **699**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *MDIO*

The XGMII does not require any assumptions about the management interface and it is not necessary to mention the MDIO interface or MII management frames here. The MDIO is independently optional and provision of an alternate access to the registers is optional.

SuggestedRemedy

Delete the sentence. Also delete e) on page 217 line 8.

Proposed Response *Response Status* **C**

ACCEPT. See related comment 244 which if accepted eliminates the sentence.

Cl **46** *SC* **46.1** *P* **216** *L* **36** # **244**

Shimon Muller — Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A** *MDIO*

The XGMII uses the extension of the MII management frames.

SuggestedRemedy

In the second sentence of the paragraph insert "extended" between "of" and "MII" to read as follows:
"The XGMII assumes the use of extended MII management frames, ...".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See related comment #699, 740, 1114, 741.
Search for MDC, MDIO to verify no other references to MDC/MDIO. Clause 45 needs to describe that if not implememented, equilivent management capability must be provided as was done in clause 22 and clause 35.

Cl **46** *SC* **46.1** *P* **216** *L* **44** # **35**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

List item b) ends in a period. No other bullet ends this way

SuggestedRemedy

Remove period at end of list item b)

Proposed Response *Response Status* **C**

ACCEPT.

Cl **46** *SC* **46.1** *P* **216** *L* **46** # **1266**

Jonathan Thatcher — World Wide Packets

Comment Type **E** *Comment Status* **A**

Extra comma after "levels"

SuggestedRemedy

Remove

Proposed Response *Response Status* **C**

ACCEPT.

Cl **46** *SC* **46.1** *P* **216** *L* **47** # **245**

Shimon Muller — Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**

Need to make clear that the XGMII will support full duplex operation ONLY.

SuggestedRemedy

In bullet e) add "only" at the end of the sentence to read as follows:
"It provides for full duplex operation only".

Proposed Response *Response Status* **C**

ACCEPT. This is best defered to the Editor-in-Chief if it also includes other clauses.

Search clause 46 and make usage of sublayer consistent.

Cl **46** *SC* **46.1** *P* **216** *L* **5** # **1265**

Jonathan Thatcher — World Wide Packets

Comment Type **T** *Comment Status* **A**

Text does not define XGMII as optional interface.

SuggestedRemedy

Add paragraph that says something like: "While the XGMII is an optional interface, it is used extensively in this standard as a basis for functional specification and provides a common primitive service interface for clauses 47, 48, ..."

Proposed Response *Response Status* **C**

ACCEPT. Add as new second paragraph.

Cl **46** *SC* **46.1** *P* **217** *L* **1** # **1267**

Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **A**

Change "...serviced by Data..." to "...serviced by independent Data..."

SuggestedRemedy

see comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **46** *SC* **46.1.2** *P* **217** *L* **17** # **1268**

Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **A**

"LAN or WAN PHY" types is not defined. We should remove this from everywhere and simply specify the -R or -W PHYs....

SuggestedRemedy

Change "either LAN or WAN PHY types" to "all PHY types" or "all 10GBASE PHY types."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change to "all 10Gb/s PHY types".

Cl **46** *SC* **46.1.3** *P* **217** *L* **27** # **1269**

Jonathan Thatcher World Wide Packets

Comment Type **T** *Comment Status* **A**

Is it reasonable for a PHY to support multiple interfaces at different voltage levels?

SuggestedRemedy

If we want to support the concept of multirate PHYs, we are going to have to define how. Better, remove the implication that we ever thought we wanted to do this. Should this be out of scope?

Proposed Response *Response Status* **C**

ACCEPT. See related comment #701.
Delete last two sentences of the paragraph.

Cl **46** *SC* **46.1.3** *P* **217** *L* **28** # **701**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A** *MDIO*

"PHYs must report ..." Since the management interface is optional and providing any access to the registers is optional, this statement is incorrect.

SuggestedRemedy

Delete

Proposed Response *Response Status* **C**

ACCEPT. See related #1269.
Delete the last two sentences. Confirm clause 45 contains an equilivent statement and if not generate comment to include similar text.

Cl **46** *SC* **46.1.4** *P* **217** *L* **35** # **37**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

Misspelling

SuggestedRemedy

Replace "signalling" with "signaling"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **46** *SC* **46.1.4** *P* **217** *L* **35** # **751**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

Can we quantify (at least approximately) what the intended distance is? It is a question I frequently get asked. Also, Clause 47 suggests that it is 7 cm. It seems odd that 47 lists a distance for XGMII while 46 is mute.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change the end of sentence p,217 l.12 to: "with printed circuit board trace lengths of approximately 7cm."

Cl **46** *SC* **46.1.4** *P* **217** *L* **38** # **38**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

Too many "sublayers". To put the word sublayer after PCS is to say the Physical Coding Sublayer sublayer. This does not make sense.

SuggestedRemedy

Replace "the PLS or PCS sublayer" with "the PLS sublayer or PCS"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **46** *SC* **46.2** *P* **226** *L* **49** # **318**

Anafi, Yariv Galileo

Comment Type **T** *Comment Status* **A**

both local and remote fault are coded the same in this section

SuggestedRemedy

Fix

Proposed Response *Response Status* **C**

ACCEPT. See Comment #43.

Cl **46** *SC* **46.2.1** *P* **218** *L* **18** # **702**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

There should be some kind of punctuation between "common clock" and "TX_CLK"; probably a colon.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Will use a dash.

Cl **46** *SC* **46.2.1** *P* **218** *L* **20** # **1271**

Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **A**

The concept of "first octet..." is not clear. Use <0:7>... instead.

SuggestedRemedy

see comment; perhaps reference figure 45A-1; perhaps forward reference to 46.2.2.1.3 or 46.2.5?

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #703 for edits. This is an overview. The preceding sentence defines what "first" is.

Cl **46** *SC* **46.2.1** *P* **218** *L* **21** # **703**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

"The first octet being aligned ...." is not a sentence. Either change it to "The first octet is aligned" or change "an octet. The first" to "an octet, the first".

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See related #1271.
Change to read: "On transmit, each eight PLS_DATA.request transactions repesent an octet transmitted by the MAC. The first octet is aligned to . . . "

Cl **46** *SC* **46.2.1** *P* **218** *L* **33** # **869**

Lynskey, Eric R UNH IOL

Comment Type **E** *Comment Status* **A**

Table 46-1 indicates that lane 1 includes TXD <15:7>. This is incorrect, as lane 0 is properly shown to include TXD<7:0>.

SuggestedRemedy

Change <15:7> to <15:8>.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **46** *SC* **46.2.1** *P* **218** *L* **7** # **1270**

Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **A** *PLS*

Also line 13.Add words "(not used)" to figure 46-2 under PLS_Signal.indicate and PLS_Carrier.indicate.

SuggestedRemedy

see comment

Proposed Response *Response Status* **C**

ACCEPT. See #250. The primitive is used by MAC though never generated by 10Gb/s RS.

Cl **46** *SC* **46.2.2** *P* **218** *L* **39** # **603**

William G. Lane CSU, Chico

Comment Type **E** *Comment Status* **R** *PLS*

The title of this subclause does not follow the common format used elsewhere in 802.3 standards

SuggestedRemedy

Change the title to "PLS service primitives"

Proposed Response *Response Status* **C**

REJECT. See comments #604, 606
The primitives are defined in clause 6. This is not a definition of the primitives but a mapping of how the bit serial primitives are adapted to 10Gb/s parallel interfaces. The same titles are used in Clauses 22 and 35.

Cl **46** *SC* **46.2.2** *P* **218** *L* **39** # **246**

Shimon Muller Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**

Clause 46 does not provide neither XGMII signals nor their mapping to Station Management.

SuggestedRemedy

In the title for sub-clause 46.2.2 delete "and Station Management".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **46** *SC* **46.2.2** *P* **218** *L* **42** # **704**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

There is no reason for a the commas in "sublayer, and described here, behave". Delete them.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **46** *SC* **46.2.2** *P* **218** *L* **43** # **1272**

Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **R**

Change "Full-duplex operation only" to "Only full-duplex operation"

SuggestedRemedy

see comment

Proposed Response *Response Status* **C**

REJECT. The placement of "only" is correct.

Cl **46** *SC* **46.2.2** *P* **218** *L* **45** # **604**

William G. Lane CSU, Chico

Comment Type **E** *Comment Status* **A**

The primitive list is missing from this overview subclause

SuggestedRemedy

Add "The following primitives are defined:" after line 45.

List the following primitives below the new line:

PLS_DATA.request
PLS_DATA.indicate
PLS_DATA_VALID.indicate

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See related comment #603.
Add "Mappings for the following primitives are defined for 10 Gb/s operation.:" after line 45.

List the following primitives below the new line:

PLS_DATA.request
PLS_DATA.indicate
PLS_DATA_VALID.indicate

If #250 is accepted, also add the two primitives not generated with 10Gb/s operation.

Cl **46** *SC* **46.2.2.1** *P* **218** *L* **47** # **605**

William G. Lane CSU, Chico

Comment Type **E** *Comment Status* **R** *PLS*

The title of this subclause does not follow the common format used elsewhere in 802.3 standards

SuggestedRemedy

Delete "Mapping of" from the title

Proposed Response *Response Status* **C**

REJECT. The primitives are defined in clause 6. This is not a definition of the primitives but a mapping of how the bit serial primitives are adapted to 10Gb/s parallel interfaces. The same titles are used in Clauses 22 and 35.

Cl **46** *SC* **46.2.2.1.3** *P* **219** *L* **11** # **705**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *PLS*

The material that is in "When generated" should describe when the PLS_DATA.request primitive is generated. The material that is here is appropriate to a section titled "Effect of receipt". See clause 6 for an example. I realize that this section is copying the format in clause 35, but we did it wrong that time and shouldn't continue the error.

SuggestedRemedy

Correct text for When generated would be: "This primitive is generated by the MAC sublayer to request the transmission of a single data bit on the physical medium or to stop transmission." Put current text into "Effect of receipt".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #606.
The initial draft of clause 35 was written this way. By the time balloting was complete, it had been changed to the style of clause 22 (no Effect of Receipt).

Generate is per clause 6.

Cl **46** *SC* **46.2.2.1.3** *P* **219** *L* **13** # **606**

William G. Lane — CSU, Chico

Comment Type **E** *Comment Status* **A** *PLS*

The "Effect of receipt" subclause is missing

SuggestedRemedy

Make the text on line 13 beginning with "Each PLS_DATA.request is ..." through the end of line 21 into a new subclause "46.2.2.1.4 Effect of receipt" following line 13

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #705

Cl **46** *SC* **46.2.2.1.3** *P* **219** *L* **19** # **247**

Shimon Muller — Sun Microsystems, Inc

Comment Type **T** *Comment Status* **A**

The statement at the end of the first sentence in this paragraph is not always true, such as when the Terminate control character occurs in lanes 1, 2 or 3.

SuggestedRemedy

Delete the following text:
"and is transferred to the PHY at the next TX_CLK edge.".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The Terminate will be transferred on the next TX-CLK edge. Since the DATA_COMPLETE follows the final data bit, it logically occurs as the first bit of the byte that becomes the Terminate control character with the next TX_CLK edge occurring at the end of that byte, 7, 15, 23 or 31 BT later.

Add a sentence like "This may be on the same clock as the last octet or the subsequent clock."

Cl **46** *SC* **46.2.2.1.3** *P* **219** *L* **19-21** # **248**

Shimon Muller — Sun Microsystems, Inc

Comment Type **T** *Comment Status* **R**

The last sentence of this paragraph implies that the RS may sometimes take the liberty of modifying the data stream from the MAC, which is not really the case. All the Idle symbols on the XGMII are sourced by the MAC.

SuggestedRemedy

Change the last sentence of this paragraph to read as follows:
"Following the Terminate control character, and regardless of its alignment, the Reconciliation sublayer maps the interframe bytes generated by the MAC sublayer to Idle control characters, and encodes them on the lanes following in sequence as described in 46.2.5.1.".

Proposed Response *Response Status* **C**

REJECT. Even though the MAC is counting the interframe, it doesn't generate any PLS_DATA.request primitives. (Consequently none are received by the RS.) All Idle control characters are created by the RS as the result of no PLS_DATA.request primitives or to create lane alignment.

Cl **46** *SC* **46.2.2.2** *P* **219** *L* **23** # **607**

William G. Lane — CSU, Chico

Comment Type **E** *Comment Status* **R** *PLS*

The title of this subclause does not follow the common format used elsewhere in 802.3 standards

SuggestedRemedy

Delete "Mapping of" from the title

Proposed Response *Response Status* **C**

REJECT. The primitives are defined in clause 6. This is not a definition of the primitives but a mapping of how the bit serial primitives are adapted to 10Gb/s parallel interfaces. The same titles are used in Clauses 22 and 35.

Cl **46** *SC* **46.2.2.2.3** *P* **219** *L* **45** # **901**

Healey, Adam — Agere Systems

Comment Type **E** *Comment Status* **R**

"Each primitive generated to the MAC layer entities corresponds to a PLS_DATA.request issued by a connected DTE."PLS_DATA.request should be PLS_DATA.indicate.

SuggestedRemedy

"Each primitive generated to the MAC layer entity corresponds to a PLS_DATA.indicate issued by a connected DTE."

Proposed Response *Response Status* **C**

REJECT.

Cl **46** *SC* **46.2.2.2.3** *P* **219** *L* **45** # **249**

Shimon Muller Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**

On a full duplex link only one MAC receive entity can be connected to a MAC transmit entity.

SuggestedRemedy

In the first sentence of this paragraph replace "entities" with "entity".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **46** *SC* **46.2.2.2.3** *P* **219** *L* **49** # **608**

William G. Lane CSU, Chico

Comment Type **E** *Comment Status* **A** *PLS*

The "Effect of receipt" subclause is missing

SuggestedRemedy

Add a new subclause "46.2.2.2.4 Effect of receipt" following line 49 with the following text "The effect of receipt of this primitive is unspecified by the Reconciliation sublayer."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #705 for decision on Effect of Receipt

Cl **46** *SC* **46.2.2.3** *P* **219** *L* **51** # **609**

William G. Lane CSU, Chico

Comment Type **E** *Comment Status* **R** *PLS*

Unused primitives should not be listed

SuggestedRemedy

Delete lines 50 through 52

Proposed Response *Response Status* **C**

REJECT. See #250.

Cl **46** *SC* **46.2.2.3** *P* **219** *L* **52** # **250**

Shimon Muller Sun Microsystems, Inc

Comment Type **T** *Comment Status* **A** *PLS*

Although this primitive is not required for 10Gb/s operation, it is still part of the PLS. This creates an open-ended interface to the PLS sublayer. I believe it would be much cleaner to define it as an inactive service primitive.

SuggestedRemedy

Replace the text in this sub-clause with the following:

"46.2.2.3.1 Function

10Gb/s operation is specified for the full duplex mode only, and therefore does not require the use of this service primitive.

46.2.2.3.2 Semantics of the service primitive

PLS_CARRIER.indicate(CARRIER_STATUS)

The CARRIER_STATUS parameter shall always assume the value of CARRIER_OFF.

46.2.2.3.3 When generated

The Reconciliation sublayer shall never generate the PLS_CARRIER.indicate service primitive."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #609.
CARRIER_STATUS doesn't have to have a defined value if it is never reported (the only way is through generation of the primitive). If the initial value for CARRIER_STATUS is not correct for clause 4, then it should be fixed there (as opposed to the alternative of having the RS generate an initial primitive). Change the text to read:

"10 Gb/s operation supports full duplex operation only. The Reconciliation sublayer never generates this primitive."

Cl **46** *SC* **46.2.2.4** *P* **220** *L* **1** # **610**

William G. Lane CSU, Chico

Comment Type **E** *Comment Status* **R** *PLS*

Unused primitives should not be listed

SuggestedRemedy

Delete lines 1 through 4

Proposed Response *Response Status* **C**

REJECT. See #251

Cl **46** *SC* **46.2.2.4** *P* **220** *L* **3** # **251**

Shimon Muller, Sun Microsystems, Inc

Comment Type **T** *Comment Status* **A** *PLS*

Although this primitive is not required for 10Gb/s operation, it is still part of the PLS. This creates an open-ended interface to the PLS sublayer. I believe it would be much cleaner to define it as an inactive service primitive.

SuggestedRemedy

Replace the text in this sub-clause with the following:

"46.2.2.4.1 Function

10Gb/s operation is specified for the full duplex mode only, and therefore does not require the use of this service primitive.

46.2.2.4.2 Semantics of the service primitive

PLS_SIGNAL.indicate(SIGNAL_STATUS)

The SIGNAL_STATUS parameter shall always assume the value of NO_SIGNAL_ERROR.

46.2.2.4.3 When generated

The Reconciliation sublayer shall never generate the PLS_SIGNAL.indicate service primitive."

Proposed Response *Response Status* **C**

ACCEPT. See #610
SIGNAL_STATUS doesn't have to have a defined value if it is never reported (the only way is through generation of the primitive). If the initial value for SIGNAL_STATUS is not correct for clause 4, then it should be fixed there (as opposed to the alternative of having the RS generate an initial primitive). Change the text to read:

"10 Gb/s operation supports full duplex operation only. The Reconciliation sublayer never generates this primitive."

Cl **46** *SC* **46.2.2.5** *P* **220** *L* **5** # **611**

William G. Lane, CSU, Chico

Comment Type **E** *Comment Status* **R** *PLS*

The title of this subclause does not follow the common format used elsewhere in 802.3 standards

SuggestedRemedy

Delete "Mapping of" from the title

Proposed Response *Response Status* **C**

REJECT. The primitives are defined in clause 6. This is not a definition of the primitives but a mapping of how the bit serial primitives are adapted to 10Gb/s parallel interfaces. The same titles are used in Clauses 22 and 35.

Cl **46** *SC* **46.2.2.5.3** *P* **220** *L* **27** # **612**

William G. Lane, CSU, Chico

Comment Type **E** *Comment Status* **A** *PLS*

The "Effect of receipt" subclause is missing

SuggestedRemedy

Add a new subclause "46.2.2.5.4 Effect of receipt" following line 27 with the following text "The effect of receipt of this primitive is unspecified by the Reconciliation sublayer."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See $705 for decision on Effect of Receipt

Cl **46** *SC* **46.2.3.1** *P* **220** *L* **32** # **731**

Thaler, Pat, Agilent Technologies

Comment Type **T** *Comment Status* **R** *No Text*

This subclause needs to also include a requirement to create a FrameCheckError when an E is detected in any lane on in the same transfer as the T character. If it doesn't, the error protection provided by the XGXS and 10GBASE-X is compromised.

SuggestedRemedy

Proposed Response *Response Status* **C**

REJECT. The PCS is required to propagate disparity errors and the like back into the frame (I.e., the column before the Terminate)

Cl **46** *SC* **46.2.3.1** *P* **220** *L* **33** # **1273**

Jonathan Thatcher, World Wide Packets

Comment Type **E** *Comment Status* **A**

Change "This requirements may be" to "This requirement may be"

SuggestedRemedy

see comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **46** *SC* **46.2.3.3** *P* **220** *L* **51-54** # **252**

Shimon Muller — Sun Microsystems, Inc

Comment Type **T** *Comment Status* **A** *Start*

The error detection requirements specified in this sub-clause are superfluous. Preamble length enforcement is a MAC function and it does not belong in the Reconciliation sublayer. Furthermore, 802.3 traditionally left the burden of enforcing the Preamble and IPG parameters on the transmitter, while leaving the receiver tolerant to changes in these parameters. This allowed MAC implementors the flexibility to come up with "creative" interoperable implementations. I can see no good reason why we should do anything different this time. Requiring a fixed Preamble length neither improves the error robustness nor does it simplify the MAC implementation.
What is important in the context of the current standard is the enforcement of the lane alignment of the frame delimiters (both the Start control character and the SFD of the frame). This is a function that actually belongs in the RS and it should be made mandatory.

SuggestedRemedy

Replace the text in sub-clause 46.2.3.3 with the following:
"The Reconciliation sublayer shall verify proper lane alignment of all received frames. This includes the Start control character of a frame aligned on lane 0, and the SFD data character of a frame aligned on lane 3. The two characters may occur at the same edge of RX_CLK or several clock edges apart. Any deviation from the above requirements shall be treated as an error, and will result in a FrameCheckError in the MAC, using the same techniques specified in 46.2.3.1.".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Any change must be consistent with the resolution to comment #260.

The Start shall be in lane 0, otherwise, the RS does not indicate DATA_VALID to the MAC.

A MAC/RS implementation is not required to process a packet that has an SFD in a lane other than 3.

Editor to develop text.

Cl **46** *SC* **46.2.3.3** *P* **220** *L* **53** # **709**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *Start*

The first sentence does not precisely cover the sequence where a Start is followed by something other than 6 bytes of preamble and an SFD because the preamble and SFD are data characters.

SuggestedRemedy

Add the following sentence: "An RS may ensure a FrameCheckError in frames with invalid preamble sequences or may pass them to the MAC unaltered."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #252

Cl **46** *SC* **46.2.4** *P* **221** *L* **1** # **729**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *Rewrite*

The organization of 46.2.4 through 46.2.6 is awkward. It intertwines definition of the XGMII interface with definition of the RS behavior. Also, there is not a clean separation between the definition of the RS transmit requirements and receive requirements. I find it difficult to check that all necessary specifications have been included and it will be difficult for implementers to use. There is also quite a bit of redundancy.

SuggestedRemedy

Reorganize with separate subclauses on:
XGMII functional signal specifications - just describe the XGMII signals, don't put the RS requirements in it.Data stream - describe the order of transmission for a frame. Put the transmission figures here with figure 46-8RS functional requirements
Transmit - the rule for interpacket gap variation goes here
Receive - the rules for error propogation go here (46.2.3).

Proposed Response *Response Status* **C**

ACCEPT.
The Editor will attempt to make the changes as recommended without making any technical changes.

Cl **46** *SC* **46.2.4.1** *P* **221** *L* **10** # **253**

Shimon Muller — Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**

In order to avoid any misinterpretation, specify the exact frequency of TX_CLK.

SuggestedRemedy

Change the sentence to read as follows:
"The TX_CLK frequency shall be 156.25MHz, one-sixty-fourth of the nominal MAC transmit data rate."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #753
"The TX_CLK frequency is nominally 156.25MHz, one-sixty-fourth of the MAC transmit data rate."

Normitive "shall" will be in the electrical specifications
Add clock rows to Figure 46-11 (frequency, and duty cycle, and other parameters not covered by HSTL)

Cl **46** *SC* **46.2.4.1** *P* **221** *L* **10** # **753**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

We need a statement that the TX_CLK shall be 10 GHz/64 +/- 0.01%. The clock tolerance is not specified in Clause 4. It needs to be in the physical layer for each compatability interface.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #253.

Cl **46** *SC* **46.2.4.2** *P* **221** *L* **21-23** # **254**

Shimon Muller — Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**

The last sentence of the second paragraph is ambiguous. In order to avoid any misinterpretation, specify the exact frequency of RX_CLK.

SuggestedRemedy

Change the last sentence of the second paragraph to read as follows:
"Regardless of how it is derived, the RX_CLK frequency shall be 156.25MHz, one-sixty-fourth of the nominal MAC receive data rate."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #707
802.3z attempts to do as proposed drew significant comment. Inclusion of a "shall" in the receive text would require switching to a local clock if the recovered clock is out of tolerance. Replace with:

"The RX_CLK frequency is nominally 156.25 MHz, one-sixty-fourth of the receive data rate."

Cl **46** *SC* **46.2.4.2** *P* **221** *L* **22** # **707**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Should also say that if the received clock is not derived from the received signal then the receive clock shall be 10 GHz/64 +/- 0.01%.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #254

Cl **46** *SC* **46.2.4.2** *P* **221** *L* **31-36** # **255**

Shimon Muller — Sun Microsystems, Inc

Comment Type **T** *Comment Status* **A**

The description of RX_CLK transitioning from nominal to recovered and vice versa is flawed. The transition from nominal clock to recovered clock in the receive data path has the effect of extending the IPG at the expense of the preamble. In the past we did not have to specify a limit on this time, since we had plenty of clock edges during the preamble. This time things are different, and we need to tighten up the requirements. BTW, this is another good reason why we might want to allow the MAC detect a shorter preamble.

SuggestedRemedy

Replace this paragraph with the following:
"Transitions from nominal clock to recovered clock or from recovered clock to nominal clock shall be made only while RXC<3:0> are all asserted. During the interval between the detection of activity on the medium and the placing of the Start control character on the XGMII, and after the PHY has successfully locked onto the recovered clock, the PHY may extend a cycle of RX_CLK by holding it in either the high or the low condition for an interval that shall not exceed one nominal clock period. Following the assertion of all control signals RXC<3:0> at the end of a frame, the PHY may extend a cycle of RX_CLK by holding it in either the high or the low condition for an interval that shall not exceed one nominal clock period."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change to read:
"There is no need to transition between the recovered clock reference and a nominal clock reference on a frame-by-frame basis. If loss of received signal from the medium causes a PHY to lose the recovered RX_CLK reference, the PHY shall source the RX_CLK from a nominal clock reference. Transitions from nominal clock to recovered clock or from recovered clock to nominal clock shall not decrease the clock period."

Cl **46** *SC* **46.2.4.2** *P* **221** *L* **39** # **1108**

Finch, Stephen G. — Texas Instruments

Comment Type **E** *Comment Status* **A**

reference to clause 46.x

SuggestedRemedy

Fix to point to what was intended or remove. I don't know what was intended.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Delete the reference.

Cl **46** *SC* **46.2.4.2** *P* **221** *L* **39** # **1363**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

reference missing

SuggestedRemedy

insert proper cross-reference

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Delete the reference

Cl **46** *SC* **46.2.4.3** *P* **221** *L* **45** # **710**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

This says that the TXC signals remain de-asserted while all octets to be transmitted are presented on the XGMII but there are two problems with the statement. If the frame is not a multiple of 4 then some TXC signals are deasserted while the last 1 to 3 octets are being transmitted. The other problem is that one or more error character may be sent during the frame which causes the TXC signal to be temporarily deasserted.Also applies to text on p 223 l 30.

SuggestedRemedy

How about: "The TXC signal for a lane is desasserted when a data octet is being sent on those lines and asserted when a control character is being sent. The error character is the only control character that is sent during a frame."Actually only the first sentence of the existing clause, the first sentence above and the one about the signal being synchronous to the clock really need to be stated here. The others restate information that is elsewhere.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Add new second sentence:
"The TXC signal for a lane is deasserted when a data octet is being sent on the corresponding lane and asserted when a control character is being sent."
Add to start of third (currently second) sentence:
"In the absence of errors, . . . "
In fourth (currently third) sentence:
Add "errors or preamble" as conditions for TXC assertion.

Cl **46** *SC* **46.2.4.3** *P* **221** *L* **47** # **711**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

I don't understand the point of "including when no frame data is being transmitted by the MAC." When ordered sets are sent, some TXC signals are asserted even though no frame data is being transmitted.Also applies to p 223 l 32.

SuggestedRemedy

Delete from "including" to the end of the sentence.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **46** *SC* **46.2.4.3** *P* **221** *L* **48** # **714**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

"are driven by the Reconcilliation sublayer" Shouldn't this be "are driven by the Reconcilliation sublayer or the the PHY XGXS" because the XGMII can be at two places in the stack?

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Add "(or XGSX when the XAUI interface is implemented)"

Cl **46** *SC* **46.2.4.3** *P* **221** *L* **49** # **713**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Why "generic"

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Delete "generic".

Cl **46** *SC* **46.2.4.3** *P* **222** *L* **12** # **715**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

It would be appropriate to add a note to the table that the Pulse and Start encodings are only valid in Lane 0. Also to put the statement that Pulse and Start may be treated as a coding error if they are received on another lane.Also applies to p 224 l 32.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #39

Cl **46** *SC* **46.2.4.3** *P* **222** *L* **12-16** # **39**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

The Pulse and Start encodings of TXD & TXC can only occur in lane 0. This also applies to Table 46-3 on page 224.

SuggestedRemedy

Modify the table to indicate that these encodings are only valid in lane 0.

Proposed Response *Response Status* **C**

ACCEPT. See #715.
Add in the description column of Table 46-2 and Table 46-3 after Pulse and Start "(only valid in lane 0)".

Cl **46** *SC* **46.2.4.3** *P* **222** *L* **20** # **256**

Shimon Muller Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**

Although TRANSMIT_COMPLETE is a better name for this parameter, the rest of this clause uses the term DATA_COMPLETE.

SuggestedRemedy

Replace "TRANSMIT_COMPLETE" with "DATA_COMPLETE" in Table 46-2.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **46** *SC* **46.2.4.3** *P* **222** *L* **20** # **902**

Healey, Adam Agere Systems

Comment Type **E** *Comment Status* **A**

Table 46-2, PLS_DATA.request primitive column of Terminate row should read DATA_COMPLETE and not TRANSMIT_COMPLETE.

SuggestedRemedy

Change TRANSMIT_COMPLETE to DATA_COMPLETE.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **46** *SC* **46.2.4.3** *P* **222** *L* **8** # **1274**

Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **A**

Recommend that "Idle" be replace with "Idle (I)" that "Start" be replace with "Start (S)" etc. Or (/S/) as in 49.2.4. on pages 294, 295. Also, it is not clear if P1...P6 are Pulses or Preamble.

SuggestedRemedy

see comment

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The /S/ type of representation would be wrong. This is a diferent encoding of the start of packet delimiter. Adding (S) after every reference decreases readability. To link, add a legend to the four timing diagrams with expansion of the symbols in the figures 46-3, 46-4, 46-5 and 46-6.

Cl **46** *SC* **46.2.4.4** *P* **181** *L* **50** # **854**

Tom Mathey Independent

Comment Type **E** *Comment Status* **R**

Incorrect reference.

SuggestedRemedy

Change reference from Table 46-2 to Table 46-1.

Proposed Response *Response Status* **C**

REJECT. Can't find the text to which the comment was indended. See #1109.

Cl **46** *SC* **46.2.4.4** *P* **222** *L* **31** # **720**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

These signals may also be driven by the PHY XGXS sublayer.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Add "(or XGSX when the XAUI interface is implemented)"

Cl **46** *SC* **46.2.4.4** *P* **222** *L* **32** # **1109**

Finch, Stephen G. Texas Instruments

Comment Type **E** *Comment Status* **A**

Reference to Table 46-2 is wrong

SuggestedRemedy

Reference should be to Table 46-1

Proposed Response *Response Status* **C**

ACCEPT. See #716

Cl **46** *SC* **46.2.4.4** *P* **222** *L* **32** # **716**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Table 46-1 is the table that shows the association between lanes and TXC signals. Table 46-2 shows the encodings.Also applies to 223 l 49.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. See #1109

Cl **46** *SC* **46.2.4.4** *P* **222** *L* **32** # **717**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

The language for describing the synchronization to TX_CLK is different from that used for TXC (p 221 l 48). Make them match.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Make text on TXC and TXD read the same way on clocking.

Cl **46** *SC* **46.2.4.4** *P* **222** *L* **33** # **718**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Since we are source centered, shouldn't it be "For each TX_CLK transition," rather than "For each high or low TX_CLK period,"? Also applies to p 223 l 50.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Change "period" to "transition" in p.222 l.33 and p.223 l.50

Cl **46** *SC* **46.2.4.4** *P* **222** *L* **43** # **947**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

I prefer the approach of Clause 48 in labeling the preamble bytes. There they are each labeled Dp which is sensible since they all contain the same thing. Labeling them P1 through P6 suggests they each have an ordered content.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **46** *SC* **46.2.4.4** *P* **222** *L* **43** # **723**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Should add a note that P1 through P6 represent data octet with the preamble pattern and SFD is a data octet with the SFD pattern. The other designations are all in the table but those ones aren't. This also applies to figures 46-4 through 46-6.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #947

Cl **46** *SC* **46.2.4.4** *P* **222** *L* **52** # **1275**

Jonathan Thatcher — World Wide Packets

Comment Type **T** *Comment Status* **R**

Figure 46-3: "T" in lane 3 is not "normal."

SuggestedRemedy

Change "Normal frame transmission" to "Example normal frame transmission"

Proposed Response *Response Status* **C**

REJECT. The diagrams are all examples.

If accepted, need to add to all timing diagrams.

Cl **46** *SC* **46.2.4.4** *P* **223** *L* **2** # **719**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Missing comma after "Terminate"

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **46** *SC* **46.2.4.4** *P* **223** *L* **2** # **1276**

Jonathan Thatcher — World Wide Packets

Comment Type **E** *Comment Status* **R**

Recommend that all uses of Idle, Start... in text use Idle (I), Start (S), ...

SuggestedRemedy

Okay, perhaps this is a bit much, but I do think that we need to tie the single letter acronyms to the terms they define a little better.

Proposed Response *Response Status* **C**

REJECT. See #1274

Cl **46** *SC* **46.2.4.5** *P* **223** *L* **28** # **721**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

"driven by the PHY" in the case of an XGMII between a PCS and an XGXS, both sides are part of the PHY. Also applies to line 48.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Add "(or XGSX when the XAUI interface is implemented)"

Cl **46** *SC* **46.2.4.5** *P* **223** *L* **28** # **1110**

Finch, Stephen G. — Texas Instruments

Comment Type **E** *Comment Status* **A**

Wording of first sentence (below) seems to indicate that data and control characters are handled differently."RXC<3:0> are driven by the PHY to indicate that the PHY is presenting either recovered and decoded data or received control characters on the XGMII."

SuggestedRemedy

I suggest replacing the first sentence with:"RXC<3:0> are driven by the PHY to indicate that the PHY is presenting either data or control characters on the XGMII."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Delete "received" from p.223 l.29

Cl **46** *SC* **46.2.4.5** *P* **223** *L* **31** # **257**

Shimon Muller — Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**

Clarity and precision, see SuggestedRemedy.

SuggestedRemedy

In the second sentence of the paragraph insert "data" between "all" and "octets" to read as follows:
"... and remain de-asserted while all data octets received are presented on the lanes of the XGMII."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **46** *SC* **46.2.4.5** *P* **224** *L* # **40**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

On page 223, Table 46-3 is referenced before Figure 46-5 yet on page 224, the Figure appears before the Table.

SuggestedRemedy

Swap the order of appearance of Figure 46-5 and Table 46-3 to match their references.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The anchor for Table 46-3 is located on the page 223 line 41, and the anchor for Figure 46.5 is on page 223 line 42. If someone can direct the clause editor how to override whatever FrameMaker is doing to reverse the order of appearance, the clause editor will be happy to make the change.

Cl **46** *SC* **46.2.4.6** *P* **223** *L* **48** # **866**

Lynskey, Eric R — UNH IOL

Comment Type **E** *Comment Status* **A**

When talking about RXD, it lists RXD<7:0>, RXD<15:7>...This is incorrect, as it indicates an overlap between two of the lanes.

SuggestedRemedy

Change RXD<15:7> to RXD<15:8>.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **46** *SC* **46.2.4.6** *P* **223** *L* **49** # **1111**

Finch, Stephen G. — Texas Instruments

Comment Type **E** *Comment Status* **A**

Incorrect reference to Table 46-3

SuggestedRemedy

Change reference to Table 46-1

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
". . . signal as shown in Table 46-1 and encoded as sown in Table 46-3."
Also fix in p.222 l.32.
". . . signal as shown in Table 46-1 and encoded as sown in Table 46-2."

Cl **46** *SC* **46.2.4.6** *P* **223** *L* **53** # **722**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

The figure shows all the RXD and RXC signals, not just TXD<7:0>.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change to RXD<31:0>

Cl **46** *SC* **46.2.4.6** *P* **225** *L* **1** # **724**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *Start*

Shouldn't this be a complete preamble and SFD? Also, we are allowing but not requiring an RS to error out a frame with a bad preamble/SFD so perhaps it should say "In order to ensure a frame is received without error by the MAC sublayer, a complete preamble and SFD must be passed across the XGMII."

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Delete the entire paragraph. It is already handled by #252.

Cl **46** *SC* **46.2.4.6** *P* **225** *L* **11** # **1277**

Jonathan Thatcher — World Wide Packets

Comment Type **T** *Comment Status* **A**

Change "shows the behavior" to "shows one possible behavior"

SuggestedRemedy

see comment

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. For the illustrated case, it shows the only acceptable behavior. For improved clarity change to: ". . . an example frame . . ."

Cl **46** *SC* **46.2.4.6** *P* **225** *L* **32** # **1112**

Finch, Stephen G. — Texas Instruments

Comment Type **E** *Comment Status* **A**

"See 45.2.2.1.2" should be modified. The referenced clause is only one of several methods of loopback defined. Three options here: remove it, list all of the paragraphs containing loopback descriptions, or make the reference more generic. I suggest the last.

SuggestedRemedy

Change to "See clause 45."

Proposed Response *Response Status* **C**

ACCEPT. Also change the "loopback" to "a loopback".

Cl **46** *SC* **46.2.5** *P* **225** *L* **40** # **1365**
Booth, Brad Intel

Comment Type **E** *Comment Status* **R**
remove box from around figure

SuggestedRemedy
fix

Proposed Response *Response Status* **C**
REJECT. More comments were received on clause 35 to put a box around the data stream.

Cl **46** *SC* **46.2.5.1** *P* **226** *L* **29** # **1278**
Jonathan Thatcher World Wide Packets

Comment Type **T** *Comment Status* **A**
Somewhere there should be a "Start (S) control character shall always be aligned to lane 0." See 46.2.5.2. Should it be there?

SuggestedRemedy
see comment

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Add to p.219 l.16: "The first octet of preamble is converted to a start control character and aligned to lane 0." Add a "shall" to p.218 l.41. See 906 for placement of shall, and only locate in the most sensable location.

Cl **46** *SC* **46.2.5.1** *P* **226** *L* **33** # **725**
Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**
It would have to be the MAC that always inserted the additional idle characters since the Reconcilliation sublayer cannot always add more idles than the MAC sends. However, the MAC also does not send idle characters. About the only thing the MAC can do is ensure that preambles always start on a 4 octet boundary.

SuggestedRemedy

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Change list item 1) to read: "A MAC implementation may incorporate this RS function into its design and always insert additional idle characters to align the SOP on a four byte boundary. Note that . . ."

Cl **46** *SC* **46.2.5.1** *P* **226** *L* **33** # **1279**
Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **A**
Also line 36. Extra "1)"

SuggestedRemedy
Remove.

Proposed Response *Response Status* **C**
ACCEPT. See #41

Cl **46** *SC* **46.2.5.1** *P* **226** *L* **33** # **1366**
Booth, Brad Intel

Comment Type **E** *Comment Status* **A**
duplicate 1) and 2)

SuggestedRemedy
remove the duplicate

Proposed Response *Response Status* **C**
ACCEPT. See #41

Cl **46** *SC* **46.2.5.1** *P* **226** *L* **33** # **903**
Healey, Adam Agere Systems

Comment Type **E** *Comment Status* **A**
heading numbers duplicated.

SuggestedRemedy
Remove extra "1)" and "2)" from this section.

Proposed Response *Response Status* **C**
ACCEPT. See #41

Cl **46** *SC* **46.2.5.1** *P* **226** *L* **33, 36** # **258**
Shimon Muller Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**
Typos.

SuggestedRemedy
Fix the bullet numbering in two instances.

Proposed Response *Response Status* **C**
ACCEPT. See comment #41.

Cl **46** *SC* **46.2.5.1** *P* **226** *L* **33-36** # **41**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

Multiple numbers for list items

SuggestedRemedy

Remove second number for each list item

Proposed Response *Response Status* **C**

ACCEPT. See also comment # 258, 1279, 1366, 903

Cl **46** *SC* **46.2.5.1** *P* **226** *L* **38** # **726**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **R**

A reconcilliation sublayer does not need to maintain any count to ensure appropriate frame spacing. It merely needs to vary its delay to position the frame correctly. This text specifies unnecessary implementation details that are more appropriate to how the implementation is tested than to how it is implemented.

SuggestedRemedy

The RS may vary the delay of packets up to 3 octets over its minimum delay in order to align the Start character to lane 0. Note that this may cause the interframe spacing observed on the XGMII to be up to three octets shorter than the minimum produced by the MAC. Looked at over multiple frames, average interframe spacing will be equal or greater than the minimum. If an RS is using the second method, its conformance can be tested by observing the value of Deficit Idle Count (DIC). DIC is initiated at zero and calculated at the end of each interpacket gap as DIC = max(0, DIC + 12 + ifsStretchSize - IPG_length)where IPG_length is the observed interpacket gap in octets.For a conformant implementation, DIC will never exceed 3.

Proposed Response *Response Status* **C**

REJECT. The count is specified to ensure bounded buffer requirements for the WIS. The DIC equation unabiguously specifies that both the maximum deletion in an interframe gap is 3 bytes, as well as the maximum aggregate deletion over all interframe gaps is 3 bytes. This allows compatible independent implementations of the WIS and RS.

Cl **46** *SC* **46.2.5.1** *P* **226** *L* **48** # **855**

Tom Mathey Independent

Comment Type **E** *Comment Status* **A**

Incorrect spelling.

SuggestedRemedy

Change sink to link.

Proposed Response *Response Status* **C**

ACCEPT. See #42

Cl **46** *SC* **46.2.5.1** *P* **226** *L* **48** # **42**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

Misspelling

SuggestedRemedy

Replace "signal sink status" with "signal link status"

Proposed Response *Response Status* **C**

ACCEPT. See #904, 855, 727

Cl **46** *SC* **46.2.5.1** *P* **226** *L* **48** # **727**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

"to signal sink status information" isn't right. Did it mean "to signal and sink status information"? "to send and receive status information" would be better.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #42

Cl **46** *SC* **46.2.5.1** *P* **226** *L* **48** # **904**

Healey, Adam Agere Systems

Comment Type **E** *Comment Status* **A**

"The inter-frame <inter-frame> period is also used to signal sink status information (see. 46.2.6). "Sink status" should be "synchronization status".

SuggestedRemedy

Change to: "The inter-frame <inter-frame> period is also used to signal synchronization status information (see. 46.2.6)."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #42. The pulse status messages cover more than just synchronization. Change "sink" to "link".

Cl **46** *SC* **46.2.5.1** *P* **226** *L* **48** # **728**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **R**

The time during which the status information is sent and received is an idle, but it is not really the interframe spacing period being discussed in this clause as the RS stops sending packets when the fault condition is occurring. This information does not belong here. If any of this paragraph is not covered in 46.2.6, then put it there.

SuggestedRemedy

Proposed Response *Response Status* **C**

REJECT. The <inter-frame> is not the same as MAC interframe spacing. It is the XGMII data stream of idle.

Cl **46** *SC* **46.2.5.1** *P* **226** *L* **51** # **259**

Shimon Muller — Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**

Typo.

SuggestedRemedy

Replace "0x01" with "0x02" in the last sentence of the paragraph.

Proposed Response *Response Status* **C**

ACCEPT. See comment #43.

Cl **46** *SC* **46.2.5.1** *P* **226** *L* **51** # **317**

Edwards, Gareth D — Xilinx

Comment Type **T** *Comment Status* **A**

"Reception of a Pulse control character in lane 0 with data characters of 0x00 in lanes 1 and 2 plus a data character of 0x01 in lane 3 signals the detection of a remote fault indicated by the link partner DTE." disagrees with table 46-4 on page 228, which states a remote fault is signalled as above but with a data character in lane 3 of 0x02.

SuggestedRemedy

Change sentence in subclause 46.2.5.1 starting on line 50 to read "Reception of a Pulse control character in lane 0 with data characters of 0x00 in lanes 1 and 2 plus a data character of 0x02 in lane 3 signals the detection of a remote fault indicated by the link partner DTE."

Proposed Response *Response Status* **C**

ACCEPT. See comment #43.

Cl **46** *SC* **46.2.5.1** *P* **226** *L* **51** # **1113**

Finch, Stephen G. — Texas Instruments

Comment Type **E** *Comment Status* **A**

The coding for Local Fault and Remote Fault are identical. I believe this is a typographical error and that encodings in Table 46-4 are correct. For this reason, I've marked this as editorial.

SuggestedRemedy

Change to read:"Reception of a Pulse control character in lane 0 with data characters of 0x00 in lanes 1 and 2 plus a data character of 0x02 in lane 3 signals the detectionof a remote fault indicated by the link partner DTE."

Proposed Response *Response Status* **C**

ACCEPT. See #43

Cl **46** *SC* **46.2.5.1** *P* **226** *L* **51** # **856**

Tom Mathey — Independent

Comment Type **T** *Comment Status* **A**

Incorrect encoding.

SuggestedRemedy

The encoding here to not match those shown in Table 46-4. Remote fault is 0x02 in lane 3.

Proposed Response *Response Status* **C**

ACCEPT. See #43

Cl **46** *SC* **46.2.5.1** *P* **226** *L* **51** # **905**

Healey, Adam — Agere Systems

Comment Type **E** *Comment Status* **A**

"Reception of a Pulse control character in lane 0 with data characters of 0x00 in lanes 1 and 2 plus a data character of 0x01 in lane 3 signals the detection of a remote fault indicated by the link partner DTE." 0x01 should be 0x02 in accordance with Table 46-4.

SuggestedRemedy

Change to: "...plus a data character of 0x02 in lane 3 signals the detection of a remote fault indicated by the link partner DTE."

Proposed Response *Response Status* **C**

ACCEPT. See #43

Cl **46** *SC* **46.2.5.1** *P* **226** *L* **51** # **1367**

Booth, Brad Intel

Comment Type **T** *Comment Status* **A**

incorrect code for RF

SuggestedRemedy

change code to 0x02

Proposed Response *Response Status* **C**

ACCEPT. See #43

Cl **46** *SC* **46.2.5.1** *P* **226** *L* **51** # **43**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

Incorrect encoding for remote fault

SuggestedRemedy

Replace "0x01" with "0x02" for encoding of lane 3 for remote fault.

Proposed Response *Response Status* **C**

ACCEPT. See comment #317, 259, 1367, 1113, 905, 856.

Cl **46** *SC* **46.2.5.2** *P* **227** *L* **1** # **44**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

Incorrect words for SFD

SuggestedRemedy

In subclause heading, replace "start of frame delimiter" with "Start Frame Delimiter"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The text and capitalization is consistent with clauses 22 and 35. This can be (and as the editor recalls was for 802.3z) viewed as one of the charming idiosyncrasies of IEEE Std. 802.3. For any change to be considered, it should address all three clause, and probably should also reconcile why both capitalization and hypenation of the two delimiters differ ("start of frame delimiter" and "End-of-Frame delimiter").

Make the two agree in style.

Cl **46** *SC* **46.2.5.2** *P* **227** *L* **3** # **906**

Healey, Adam Agere Systems

Comment Type **T** *Comment Status* **A**

"On transmit, the Reconciliation layer converts the first data octet of preamble transferred from the MAC into a Start control character. On receive, the Reconciliation layer will convert the Start control character into a preamble data octet. The start control character is aligned to lane 0 of the XGMII by the Reconciliation layer on transmit and by the PHY on receive."These are conformance requirements for the RS and should be expressed in terms of "shall".

SuggestedRemedy

"On transmit, the Reconciliation layer shall convert the first data octet of preamble transferred from the MAC into a Start control character. On receive, the Reconciliation layer shall convert the Start control characterinto a preamble data octet. The Reconciliation layer shall align the start control character to lane 0 on transmit. The PHY aligns the start control character to lane 0 on receive."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Verify the shall for this function is only in one place either as accepted in #1278 or here.

Cl **46** *SC* **46.2.5.2** *P* **227** *L* **6** # **857**

Tom Mathey Independent

Comment Type **T** *Comment Status* **A**

Aline text with Figure 46-3 and specify in text which edge of the clock is used to source/sample the START character

SuggestedRemedy

Add/replace text with something like:
The start control character is sourced by the Reconciliation sublayer on transmit, is aligned to lane 0, is driven valid by the falling edge of TX_CLK, and is sampled on the rising edge of TX_CLK by the PHY.
The start control character is sourced by the PHY on receive, is aligned to lane 0, is driven valid by the falling edge of RX_CLK, and is sampled on the rising edge of RX_CLK by the Reconciliation sublayer.
Text on line 29 for “next” may need to say “falling”.
Text in 45.2.5.2.2 may need tweaking.

Text in 45.2.5.4, line53 may need to have text “and on any clock edge” added.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. 46.2.4.1 and 46.2.4.2 clearly state that both edges of the clock are used. There is no preference of which edge of the clock a Start aligns, and the edge possibly varys from frame to frame. This use of both clock edges can be clearly illustrated in the example frame Figures. Shift edge in some of the figures.

Cl **46** *SC* **46.2.5.2.2** *P* **227** *L* **36** # **730**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

This is a simplified and somewhat inaccurate description of what the Phy does when receiving the preamble. This clause should be deleted. The phy clauses specify the necessary phy behavior. For instance, second sentence can be read as saying that the PHY aligns the start character to lane 0 but it doesn't. If a start delimiter is in the wrong place, the PHYs will either turn it into an error or leave it as it is. The "Transmit case" subclause describes a well-formed packet start at transmitter or receiver.

SuggestedRemedy

Delete the header for "Transmit case" and the subclause for "Receive case". That will leave just one subclause describing the preamble and SFD.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **46** *SC* **46.2.5.2.2** *P* **227** *L* **40-42** # **260**

Shimon Muller — Sun Microsystems, Inc

Comment Type **T** *Comment Status* **A**

The error detection requirements specified in this sub-clause are superfluous. See my comment against sub-clause 46.2.3.3.

SuggestedRemedy

Delete the 4-th sentence in this paragraph. Change the 5-th (last) sentence to read as follows: "The SFD shall always occur on lane 3 of a well-formed frame. The two characters (Start and SFD) may occur at the same edge of RX_CLK or several clock edges apart."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #730 the text is removed. See #252 for resolution of the generic start sequence problem.

Cl **46** *SC* **46.2.5.5** *P* **228** *L* **3** # **732**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **R**

There does not seem to be a spec for what happens if data starts without an S. It should result in a CRC errored frame.

SuggestedRemedy

Proposed Response *Response Status* **C**

REJECT. The behavior in Gigabit is to ignore the frame as is the case for 10 GbE. See #252 for related resolution.

Cl **46** *SC* **46.2.6** *P* **228** *L* **14** # **319**

Anafi, Yariv — Galileo

Comment Type **E** *Comment Status* **A**

There is no closing parentheses

SuggestedRemedy

Fix

Proposed Response *Response Status* **C**

ACCEPT. See comment #45.

Cl **46** *SC* **46.2.6** *P* **228** *L* **14** # **45**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

Missing close-parenthesis

SuggestedRemedy

add close parenthesis before period at the end of the sentence.

Proposed Response *Response Status* **C**

ACCEPT. See comment #733, 319, 1368.

Cl **46** *SC* **46.2.6** *P* **228** *L* **14** # **733**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Unmatched parenthesis.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. See #45

Cl **46** *SC* **46.2.6** *P* **228** *L* **14** # **1368**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

missing closing bracket

SuggestedRemedy

change to read: "... a fault (and consequently will not transmit frames)."

Proposed Response *Response Status* **C**

ACCEPT. See #45

Cl **46** *SC* **46.2.6** *P* **228** *L* **16** # **1164**
Booth, Brad Intel

Comment Type **E** *Comment Status* **A**
spelling mistake

SuggestedRemedy
change "sttus" to "status"

Proposed Response *Response Status* **C**
ACCEPT. See #46

Cl **46** *SC* **46.2.6** *P* **228** *L* **16** # **738**
Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**
sttus should be status

SuggestedRemedy

Proposed Response *Response Status* **C**
ACCEPT. See #46

Cl **46** *SC* **46.2.6** *P* **228** *L* **16** # **46**
Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**
Misspelling

SuggestedRemedy
Replace "sttus" with "status"

Proposed Response *Response Status* **C**
ACCEPT. See comment #907, 738, 1164, 1280.

Cl **46** *SC* **46.2.6** *P* **228** *L* **16** # **907**
Healey, Adam Agere Systems

Comment Type **E** *Comment Status* **A**
Typographical errors: "The sttus message..." (~ 16), and "failures cause..." (~ 32).

SuggestedRemedy
Change to: "The status message..." and "Failures cause..."

Proposed Response *Response Status* **C**
ACCEPT. See #46

Cl **46** *SC* **46.2.6** *P* **228** *L* **16** # **1280**
Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **A**
Did you mean "sttus"?

SuggestedRemedy
see comment

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. See #46

Cl **46** *SC* **46.2.6** *P* **228** *L* **22** # **1281**
Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **A**
Recommend adding a column to front of table 46-6 showing Lane 0 with Pulse characters in the cells

SuggestedRemedy
see comment

Proposed Response *Response Status* **C**
ACCEPT. Comment should have referenced Table 46-4

Cl **46** *SC* **46.2.6** *P* **228** *L* **32** # **735**
Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**
"failures" should be "Failures".

SuggestedRemedy

Proposed Response *Response Status* **C**
ACCEPT. See #267

Cl **46** *SC* **46.2.6** *P* **228** *L* **32** # **1165**
Booth, Brad Intel

Comment Type **E** *Comment Status* **A**
confusing sentence and missing capitalization

SuggestedRemedy
change to read as follows:"Failures cause continuous generation of alternating Idle and status messages; therefore, insufficient reception of status messages will cause the ..."

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. See #267

Cl **46** *SC* **46.2.6** *P* **228** *L* **32** # **47**
Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**
Missing uppercase at start of sentence

SuggestedRemedy
Replace "failed. failures cause" with "failed. Failures cause"

Proposed Response *Response Status* **C**
ACCEPT. See comment #267.

Cl **46** *SC* **46.2.6** *P* **228** *L* **32** # **1282**
Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **A**
"...failed. failures..." should be "...failed. Failures..."

SuggestedRemedy
see comment

Proposed Response *Response Status* **C**
ACCEPT. See #267

Cl **46** *SC* **46.2.6** *P* **228** *L* **33** # **736**
Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A** *Fault*
Received fault messages may be farther apart than indicated here since the 8B/10B code sublayers send them after each A column rather than every other column.

SuggestedRemedy

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. See #267

Cl **46** *SC* **46.2.6** *P* **228** *L* **35** # **1166**
Booth, Brad Intel

Comment Type **E** *Comment Status* **A**
spelling mistake

SuggestedRemedy
change "messeges" to "messages"

Proposed Response *Response Status* **C**
ACCEPT. See #267

Cl **46** *SC* **46.2.6** *P* **228** *L* **36** # **739**
Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A** *Fault*
The same rules should also apply to recognizing the Remote Fault condition. Though it does not change behavior, it needs to be detected for management purposes.

SuggestedRemedy

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. See #267. The detection requirement should be consistent. Though there is no management access to the RS, the consistency is appropriate since local and remote faults are equally probable.

Cl **46** *SC* **46.2.6** *P* **228** *L* **36** # **1283**
Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **A**
"...layer set the value..." should be "...layer sets the value..."

SuggestedRemedy
see comment

Proposed Response *Response Status* **C**
ACCEPT. See #267

Cl **46** *SC* **46.2.6** *P* **228** *L* **36** # **320**
Anafi, Yariv Galileo

Comment Type **T** *Comment Status* **A** *Fault*
It is written in this line "Upon reception of three local fault status messeges, ? " is it 3 in a row?Do you mean 3 per some time period? It is not cleared.In this section the text is referring to reception of "local fault" what about remote fault?

SuggestedRemedy
Clarify

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Insufficient Suggested Remedy. See comment #267.

Cl **46** *SC* **46.2.6** *P* **228** *L* **36** # **737**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *Fault*

This should say the time period during which the three local fault status messages shall be received. Because they are sent after A's on XAUI and 10GBASE-X, it should be within 64 columns after the receipt of the first message. The period for absence of local fault status messages should be at least 64 columns (it should keep active even if one message is missed due to an error).

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #267

Cl **46** *SC* **46.2.6** *P* **228** *L* **36** # **967**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *Fault*

This is an amendment to the the comment: This should say the time period during which the three local fault status messages shall be received. Because they are sent after A's on XAUI and 10GBASE-X, it should be within 64 columns after the receipt of the first message. The period for absence of local fault status messages should be at least 64 columns (it should keep active even if one message is missed due to an error). We need to pad the number of columns up because Rs may be inserted for clock compensation. Perhaps 70 columns.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #267

Cl **46** *SC* **46.2.6** *P* **228** *L* **36** # **867**

Lynskey, Eric R — UNH IOL

Comment Type **T** *Comment Status* **A** *Fault*

The draft says that upon reception of three local fault status messages, the Reconciliation sublayer set the value of link_fail=1. The absence of local fault status messages for six RX_CLK periods resets the value of link_fail=0.There is no indication of the spacing between the reception of local fault status messages. Thus, reception of three local fault status messages, each with an arbitrarily large gap between them will still cause the RS to set link_fail=1. A spacing between local status messages should be defined. Perhaps the same spacing used to reset link_fail=0 can be used.

SuggestedRemedy

Change the text to read "upon reception of three local fault status messages in any six consecutive RX_CLK periods, the Reconcilliation sublayer set the value of link_fail=1."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #267. The propsed window for detecting the status message is too tight for immediate detection of the signal. Any idle insertion in the 6 word pattern would fail the requested criteria for 8b10b PHYs.

Cl **46** *SC* **46.2.6** *P* **228** *L* **36** # **868**

Lynskey, Eric R — UNH IOL

Comment Type **T** *Comment Status* **A** *Fault*

The draft says, "the Reconciliation sublayer set the value of link_fail=1. The absence of local fault status messages for six RX_CLK periods resets the value of link_fail=0."The variable link_fail is not defined anywhere else in the standard, and the definition given here does not explicitly specify what happens when link_fail=0 occurs.

SuggestedRemedy

Change the text to reomve all references to link_fail as follows:Upon reception...the Reconciliation sublayer inhibit the transmission of MAC frames by alternately transmitting remote fault status messages and Idles. The absence of local fault status messages for six RX_CLK periods allows the Reconciliation sublayer to stop transmitting remote fault status messages and Idles, and to allow the transmission of MAC frames.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See comment #267

Cl **46** *SC* **46.2.6** *P* **228** *L* **8-39** # **267**

Shimon Muller Sun Microsystems, Inc

Comment Type **T** *Comment Status* **A** *Fault*

I find the text in this sub-clause quite confusing. It lacks the definition of what Local and Remote Faults are, and what specific actions the Reconciliation sublayer should take in the presence of Remote Fault. There are also other minor technical and editorial issues.

SuggestedRemedy

I would like to respectfully propose to the editor the following text for this sub-clause as the basis for further word-smithing:

"46.2.6 Link fault signaling

Two link fault conditions are specified for 10Gb/s operation: Local Fault and Remote Fault. The Local Fault condition indicates that a link failure has been detected on the receive path by the local DTE. The source of the failure could be at the remote transmitter, the interconnect between the two DTEs, at one of the local DTE's devices or the interconnect between the local DTE's devices. The Remote Fault condition indicates that a link failure has been detected on the receive path by the remote DTE. The source of the failure could be at the local transmitter, the interconnect between the two DTEs, at one of the remote DTE's devices or the interconnect between the remote DTE's devices.

Fault conditions are conveyed over the XGMII using status messages. All status messages are four bytes in length, and are sent on a single XGMII clock edge. A status message is indicated by a Pulse control character aligned to lane 0, with the status condition encoded in the three data bytes of lanes 1, 2 and 3. The status encodings are shown in Table 46-4:

<Table 46-4>
<For the sake of completeness, also show Lane 0 encoding>

A PHY indicates Fault conditions (both Local and Remote) to the Reconciliation sublayer by alternating the corresponding status message with Idle characters on RXC<3:0> and RXD<31:0>. The Reconciliation sublayer sends the Remote Fault indication to the remote DTE by alternating the Remote Fault message with Idle characters on TXC<3:0> and TXD<31:0>.

The Reconciliation sublayer shall continuously monitor RXC<3:0> and RXD<31:0> for status messages. The reception of 4 status messages of the same type shall indicate that the corresponding fault condition has occurred. The reception of 8 consecutive Idle characters on all 4 lanes shall clear all fault conditions.

Upon detection of a Local Fault condition, the Reconciliation sublayer shall:
1) Set the link_fail status indication.
2) Inhibit the transmission of MAC frames.
3) Continuously send alternating Remote Fault messages and Idle characters.

Upon detection of a Remote Fault condition, the Reconciliation sublayer shall:
1) Set the link_fail status indication.
2) Inhibit the transmission of MAC frames.
3) Continuously send Idle characters.

After detecting that the Fault condition has cleared (both Local and Remote), the Reconciliation sublayer shall:
1) Clear the link_fail status indication.
2) Enable the transmission of MAC frames."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Mr. Muller is commended for both the quality and detail of the Suggested Remedy. The comments #45, 46, 47, 319, 320, 733, 735, 736, 737, 738, 739, 867, 868, 907, 967, 1164, 1165, 1166, 1280, 1281, 1282, 1283, 1368.

Add the proposed state machine to the draft with the following supporting text describing the actions of the state machine.

"The Fault variable is set to the value of a received Pulse ordered set when the following conditions have been met:
Four Pulse ordered sets containing the same value have been received
Without any intervening Pulse ordered sets of a different value, and
Without any intervening period of 128 columns not containing a
Pulse ordered set.
The fault variable is set to OK following any interval of 128 columns not containing a Pulse ordered set."

Task the editor with providing supporting text. Implement any editorial changes from other comments still appropriate (adding a column to the table). Assure that a P which is not an LF or RF will reset Fault (map MAC PLS requests), otherwise the value of P determines the RS output (RF or Idle).

Cl **46** *SC* **46.2.7** *P* **229** *L* **1-16** # **261**

Shimon Muller Sun Microsystems, Inc

Comment Type **T** *Comment Status* **R** *Delay*

The MAC delay constraints specified in this sub-clause make no sense whatsoever, for the following reasons:
1. The 256 bit-time values are way too restrictive and unnecessarily constrain the implementations.
2. These requirements cannot be enforced, since we have no way for defining a conformance test for measuring them:
- The MAC Control interface is not defined at the signal level and is usually buried inside an ASIC.
- The XGMII is defined as a chip-to-chip interface and is not exposed.
3. These constraints are not needed at the XGMII level for 10Gb/s operation. Since 10 Gigabit Ethernet only supports the full duplex mode, the MAC delay constraints only affect the operation of the full duplex flow control (Pause) operation. Traditionally we specified all the parameters that affect Pause operation in Clause 31 and its associated annexes 31A and 31B. This time it is no different, only ten times faster. In Annex 31B, sub-clause 31B.3.7, I added a paragraph that takes care of this issue. Therefore, there is no need to specify anything else in this clause.

SuggestedRemedy

My preference would be to delete sub-clause 46.2.7.
However, if there is a strong desire to have something in this clause, the only thing that may make sense here is a reference to 31B.3.7.

Proposed Response *Response Status* **C**

REJECT. The delay specification has been on the editor's minor issues list for some time. The specification of delay is a multiclause issue, but the delay allocation to different components has been and should be maintained to allow a DTE to be constructed with components from different vendors.

Because this is a multiclause issue, the editors should implement a consistent specification of delay for the next draft. This should solution should provide an appropriate breakdown of component delay for independent implementation of sublayers.

Cl **46** *SC* **46.3** *P* **229** *L* **25** # **740**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A** *MDIO*

MDIO interface is a separate interface for 802.3ae and not part of the XGMII. This was necessary because it exists in components that do not have an XGMII. Therefore, 46.3 should be deleted.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Remove references to MDC/MDIO

Cl **46** *SC* **46.3** *P* **229** *L* **26-27** # **262**

Shimon Muller Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**

The second sentence of this paragraph implies that the management interface will operate at 10Gb/s, which is not true.

SuggestedRemedy

Change the second sentence of this paragraph to read as follows:
"The extension of this interface for 10 Gigabit Ethernet and the definition of its signals are specified in Clause 45."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The text is deleted.

Cl **46** *SC* **46.3** *P* **229** *L* **27** # **1114**

Finch, Stephen G. Texas Instruments

Comment Type **E** *Comment Status* **A**

Gee, what a fast MDC/MDIO we have:"The XGMII uses a management interface common with the MII and GMII. This interface operating at 10 Gb/s and definition of its signals, MDC and MDIO, are specified in 45.2."

SuggestedRemedy

Change to:"The XGMII uses a management interface common with the MII and GMII. This interface and its signals, MDC and MDIO, are specified in 45.2."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. MDC/MDIO references to be removed

Cl **46** *SC* **46.4** *P* **229** *L* **33** # **750**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A** *Electrical*

Isn't it necessary to say something about the channel. At a minimum, I would expect a number to be included on the amount of skew that the channel may introduce between each data line and its clock.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #1090

Cl **46** *SC* **46.4** *P* **229** *L* **33** # **745**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

46.4 XGMII electrical characteristics
46.4.1 Electrical characteristics
46.4.2 Signal timing measurements
doesn't really make sense since if timing is part of the electrical characteristics it would be part of 46.4.1 and if it isn't it doesn't belong in 46.4.

SuggestedRemedy

Change to:
46.4 XGMII electrical characteristics
46.5 XGMII timing characteristics

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Remove both subheadings.

Cl **46** *SC* **46.4** *P* **229** *L* **37** # **741**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A** *MDIO*

Delete "except MDIO and MDC" as well as the sentence after it. The MDIO interface is not part of the XGMII so this is not necessary.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **46** *SC* **46.4** *P* **230** *L* **40** # **1090**

Haluk Aytac — Velio Communications

Comment Type **T** *Comment Status* **R** *Electrical*

Figure 46-11 shows symmetrical setup and hold for both Tx and Rx directions.

We suggest the transmit and receive directions be split apart.

The Transmit direction setup and hold times at the receiver can benefit from not being symmetrical. The reason is as follows:

The tx_clk has a 40-60% duty cycle (in the absence of finding the duty cycle spec'ed). This makes the minimum 1/2 cycle time = 6.2ns * .5 * .8 = 2.56ns. To assure stability at the sampling point, ASIC design techniques need to create a delay from the edge of the tx_clk, which we define as t_delay. 1x of this sampling delay must be greater than t_hold. 2x of this sampling delay must be less than (2.56- t_setup). Note the 2x number comes from normal delay variation range.

To keep t_setup + t_hold unchanged, it is best if t_setup is permitted to increase, and t_hold is permitted to drop by the corresponding amount. This should ease ASIC design.

SuggestedRemedy

Therefore our request is that for the transmit direction, the following be put into 46-11

		Driver	Receiver
Receive	tsetup	960	480
	thold	960	480
Transmitter	tsetup	1280	800
	thold	640	160

To illustrate, the current spec provide 2560ps - 960ps = 1600ps (max delay), with the min delay being 960ps, for a ratio of 1600/960 = 1.67, which is hard to do.

Our suggestion creates the result of 2560-1280=1280 for a ratio of 1280/640=2 (max delay / min delay), which is much more feasible.

Proposed Response *Response Status* **C**

REJECT. Also resolves # 750

Cl **46** *SC* **46.4.1** *P* **229** *L* **41** # **1151**

Nader, Vijeh — Lantern Communicatio

Comment Type **T** *Comment Status* **R** *Electrical*

A number of current implementations use SSTL_2. While HSTL will be preferable at some point in the future, SSTL_2 implementations should not be excluded.

SuggestedRemedy

Change ""the XGMII uses High Speed Transceiver Logic, specified for ... (HSTL)"" to ""the XGMII uses either High Speed Transceiver Logic, specified for ... (HSTL) or Stub Series Terminated Logic for 2.5V (SSTL_2) as specified by EIA/JEDEC standard EIA/JESD8-9 using class I output buffers.""

Proposed Response *Response Status* **C**

REJECT. The interface is optional, an implementer may therefore use an alternate electrical interface and the resultant DTE will still be compliant with the standard when approved. Specification of only one electrical interface provides guidance of the direction for implementations for interoperability.

Motion

Reopen the comment and include both HSTL and SSTL specifications
M: Goergen S:Brikovskis

All in the room
Y: 4, N: 35, A: 13
802.3 voters
Y: 5, N: 18, A: 7
Failed

Cl **46** *SC* **46.4.1** *P* **229** *L* **42** # **584**

Vinu Arumugham — Cisco Systems, Inc.

Comment Type **T** *Comment Status* **A** *Electrical*

EIA/JESD8-6 (HSTL) does not place an upper limit on the drive strength of an HSTL Class I buffer. This means, the need for termination could vary from vendor to vendor. Such variation, especially in pin compatible devices will result in system level problems.

SuggestedRemedy

Specify that the output impedance shall not be less than 38 ohm on the HSTL Class I buffer for XGMII compliance.
Recommend unterminated interconnection.
The output impedance will ensure unterminated operation with acceptable overshoot/undershoot. The timing specified in 46.4.2 accounts for the extra inter symbol interference expected in such unterminated operation.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **46** *SC* **46.4.1** *P* **231** *L* **6** # **744**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A** *Electrical*

A table row that only contains n/a entries doesn't seem to serve any purpose. Can this row be deleted?

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Delete the row

Cl **46** *SC* **46.4.2** *P* **229** *L* **51** # **585**

Vinu Arumugham — Cisco Systems, Inc.

Comment Type **T** *Comment Status* **A** *Electrical*

Compliance with the output timing spec. of Tsetup = 960 ps and Thold = 960 ps cannot be reliably determined by performing measurements at the receiver input, as specified in 46.4.2.

SuggestedRemedy

Specify Tsetup = 960 ps and Thold = 960 ps driving a 10pF capacitive load under worst case simultaneous switching noise conditions.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #742
This comment was referred to a group to propose additional text. That proposal was:
With the use of HSTL driving the defined load in conjunction with a 10 pF shunt parasitic, the parasitic capacitance of the measurement probe plus the capacitance of the measurement pads plus vias (if any) are to be considered as contributory to the 10pF parasitic limit.

After discussion, the group decided that all that should be placed in the standard is that the 10pF includes capacitance contributions from all sources.

Cl **46** *SC* **46.4.2** *P* **229** *L* **53** # **908**

Healey, Adam — Agere Systems

Comment Type **T** *Comment Status* **A** *Electrical*

"All XGMII timing measurements are made at the XGMII receiver input and are specified relative to the V IL_AC(max) and V IH_AC(min) thresholds as shown in Figure 46?11."This statement represents a conformance requirement and should be expressed in terms of "shall".

SuggestedRemedy

"The XGMII chip-to-chip signals shall meet the timing requirements shown in Figure 46-11. All XGMII timing measurements are made at the XGMII receiver input and are specified relative to the V IL_AC(max) and V IH_AC(min) thresholds as shown in Figure 46?11."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **46** *SC* **46.4.2** *P* **229** *L* **53** # **742**
Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *Electrical*

If the timing is specified at the receiver, how does one test the transmitter for compliance? Either we need a channel spec for testing or timing specs at the transmitter.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See #585

Cl **46** *SC* **46.4.2** *P* **230** *L* **31** # **1284**
Jonathan Thatcher — World Wide Packets

Comment Type **E** *Comment Status* **A**

Add words "Clock" and "Data" to Figure 46-11 adjacent to timing diagram

SuggestedRemedy

see comment

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Label with: TX_CLK, RX_CLK, TXD, RXD

Cl **46** *SC* **46.5** *P* **232** *L* **1** # **734**
Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

PICS needs to be provided before working group ballot.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Adam Healy has provided some review, but the clause needs to be reviewed for proper usage of shall. This should be a focus of the recirculation.

Cl **46** *SC* **all** *P* *L* # **1364**
Booth, Brad — Intel

Comment Type **T** *Comment Status* **R** *Fault*

Move RF and LF capabilities out of RS and XGMII. There is no management means of accessing this information within the context of this draft.

SuggestedRemedy

Move RF and LF information to 64b/66b and 8B/10B PCS. Eliminate XGMII pulse signal.

Proposed Response *Response Status* **C**

REJECT. RS is the proper location for this function providing a single point for link failure detection and control. Implementation of the protocol does not require management control, and status can be learned from lower layers or through the same mechanism used for MAC with the current architecture.

Cl **46** *SC* **Figure 46.1** *P* **216** *L* **31** # **852**
Tom Mathey — Independent

Comment Type **T** *Comment Status* **A**

The text in 46.1 refers to XAUI. However, XAUI is not shown in Figure 46-1.

SuggestedRemedy

Crib the piece from Figure 47-1 which shows “Optional XGMII Extender” and place in Figure 46-1.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The simple interface as illustrated is valuable. Because the clause does describe how some signals are driven by either the PHY or XGSX the figure should show both stacks, one with XAUI and one without.

Cl **47** *SC* **47.** *P* **233** *L* **1** # **762**
Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Delay constraints for the XGXS need to be added.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Task the clause editors to agree on a consistent specification of delay and propose numbers.

The following shall be added to 47.2:
"The XGMII Extender shall meet the delay constraints in 48.5. The contribution of the XAUI interconnect is included in these delay constraints."

Cl **47** *SC* **47.0** *P* **233** *L* **1** # **1167**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

change title

SuggestedRemedy

change title to read as follows:"XGMII Extender Sublayer (XGXS) and 10 Gigabit Attachment Unit Interface (XAUI)"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.1** *P* **234** *L* **1** # **1287**

Jonathan Thatcher — World Wide Packets

Comment Type **T** *Comment Status* **A**

This clause does not fully define the function of the XGXS (in fact, it hardly even starts). The reader must somehow know, apriori, that all functional information is to be found in clause 48. Clause 47 needs to stand on its own.

SuggestedRemedy

Remedy 1: reference all relevant requirements from clause 48. This needs to be very explicit. Remedy 2: copy same.Either way, someone is going to have to be able to read the PICs and directly see all the SHALLs required for proper implementation of the clause.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Requires coordination with clause 48. Related comments: 264, 1287, 749, 1171, 920 and 1143. The editors will address and develop appropriate text at the editorial meeting.

See resolution to comment #920.

Cl **47** *SC* **47.1** *P* **234** *L* **24** # **1168**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

Changes in Figure 47-1.

SuggestedRemedy

Shift OSI layers down so that dashed line at bottom of OSI PHYSICAL lines up with the top of MEDIUM in the 802.3 stack.Change LAN CSMA/CD to 802.3.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Not changing LAN CSMA/CD to 802.3.

Cl **47** *SC* **47.1** *P* **234** *L* **26-32** # **263**

Shimon Muller — Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**

The representation for the MEDIUM block on Figure 47-1 is not consistent with other clauses.

SuggestedRemedy

Change the block for the MEDIUM to be the same as in Figure 1-1.
Also, use capital letters for the definition of the XGXS acronym.

Proposed Response *Response Status* **C**

ACCEPT. Editor will search for "xgxs"

Cl **47** *SC* **47.1** *P* **234** *L* **3** # **1169**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

First paragraph needs some corrections.

SuggestedRemedy

Change to read as follows:"... for the optional XGMII Extender Sublayer (XGXS) and Ten Gigabit Attachment Unit Interface (XAUI). Figure 47-1 shows the relationship of the XGMII, XGXS and XAUI."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.1** *P* **234** *L* **35** # **1359**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

Add information relative to what a XGMII Extender is. This is based upon acceptance of previous comment that deleted the information from the first paragraph.

SuggestedRemedy

change first sentence of paragraph to read:"The purpose of the XGMII Extender, which is comprised of a DTE XGXS, a PHY XGXS and a XAUI between them, is to extend..."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.1** *P* **234** *L* **43** # **743**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

"delimiters" might be better "control" because only some of the control signals are delimiters.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.1** *P* **234** *L* **43** # **49**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

Wrong word in list item c)

SuggestedRemedy

Replace "data and delimiters" with "data and control"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.1** *P* **234** *L* **48** # **1285**

Jonathan Thatcher — World Wide Packets

Comment Type **E** *Comment Status* **A**

Add "utilizes 8B/10B coding" to the characteristic list.

SuggestedRemedy

see comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.1** *P* **234** *L* **49** # **264**

Shimon Muller — Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**

Need to clarify the relationship between this clause and clause 48.

SuggestedRemedy

At the end of sub-clause 47.1 add the following paragraph:
"This clause provides the required specifications for the XAUI interconnect. The complete specification for the XGXS sublayer is provided in clause 48."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Requires coordination with clause 48. Related comments: 264, 1287, 749, 1171, 920 and 1143. The editors will address and develop appropriate text at the editorial meeting

See resolution to comment #749.

Cl **47** *SC* **47.1.1** *P* **234** *L* **43** # **756**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

"link" should probably be "lane". Link has a pretty specific meaning defined in 802.3 and one lane of an interface doesn't meet it. Also, on the next page you use "link" meaning all 4 lanes.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Modify suggestion to replace "serial links" with "lanes"

Cl **47** *SC* **47.1.1** *P* **235** *L* **11** # **749**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Perhaps it would be more enlightening to the reader to say "The XGXS uses the same code and coding rules as the 10GBASE-X 8B/10B PCS." It would also be kind to the reader state that the common features are specified in clause 48 and referenced from this clause.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Requires coordination with clause 48. Related comments: 264, 1287, 749, 1171, 920 and 1143. The editors will address and develop appropriate text at the editorial meeting

Editors decided to make the following change to 47.1.1, sub-bullet e):
"The XGXS uses the same code and coding rules as the 10GBASE-X PCS and PMA."

Cl **47** *SC* **47.1.1** *P* **235** *L* **2** # **747**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

This subclause contains a number of "shall" statements. In all other cases, "Summary of major concepts" subclauses provide an overview of the layer and do not have any shall statements. The requirements are covered in the detail sections that follow. The shalls here should be removed. For instance, "The source XGXS converts bytes .... Each of the four XGMII lanes is transmitted...."

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.1.1** *P* **235** *L* **3** # **1286**

Jonathan Thatcher — World Wide Packets

Comment Type **T** *Comment Status* **A**

Also see line 11.Note: this comment applies to the entire document....We need to have 8b/10b or 8B/10B used consistently throughout the document. This includes all existing clauses.

SuggestedRemedy

Simple remedy: change all usage to 8B/10B (don't open existing clauses). Complicated remedy: change all usage to 8b/10b (fix clause 1,... 36, 37, 38....)

Proposed Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.1.1** *P* **235** *L* **6** # **746**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

The four lanes aren't truely "independently clocked". They all need to be clocked at the same clock frequency. It is just that by the time they get to the receiver they may not have the same phase.

SuggestedRemedy

"The destination XGXS shall recover clock and data from each XAUI lane and deskew the four XAUI lanes into the single-clock XGMII"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.1.1** *P* **235** *L* **7** # **748**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A** *XGXS*

Don't we allow the source XGXS to also delete and insert idles? I did not think we were requiring the source to generate a clock locked to its XGMII clock.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Text does not prohibit. No remedy proposed, No change to the document.

Cl **47** *SC* **47.1.1** *P* **243** *L* **18** # **1068**

Ali Ghiasi — Broadcom

Comment Type **T** *Comment Status* **A** *Jitter*

0.41 UI of DJ with addition of SJ will exceed 0.5 UI

SuggestedRemedy

POssibly reducing 0.41 UI DJ.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Proposed solution is to reduce reciever DJ from 0.41 to 0.36 UI and TJ from 0.65 to 0.60, add receive tolerance SJ of 0.1 UI to 20 MHz, add jitter tolerance mask presented in XAUI Jitter Ad Hoc meeting of Jan 11 with upper frequency limit of 20 MHz. These changes affect sec. 47.3.4.4, table 47-4 and table 47-5. XAUI Jitter Ad Hoc approved this proposal by 33:0:8 on Jan 11.

Will be speced with SJ included in TJ.

Cl **47** *SC* **47.1.3** *P* **235** *L* **22** # **752**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **R**

Should this also include data rate tolerance or is it adequately covered elsewhere?

SuggestedRemedy

Proposed Response *Response Status* **C**

REJECT. This clause should not specify any shall or tolerance on the XGMII data rate. Related comments: 752, 763, 1288

Cl **47** *SC* **47.1.3** *P* **235** *L* **25-26** # **50**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

Add some context

SuggestedRemedy

Replace "XGMII Extender and the XGXS at the RS end" with "XGMII Extender (PHY XGXS) and the XGXS at the RS end (DTE XGXS)"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.1.4** *P* **235** *L* **30** # **754**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

There seems to be an excess of shalls here. The transparency of the XGMII extender is provided for by following the rules that will be specified later. I do not understand what is accomplished by requiring "operate symmetrically with similar functions on the DTE transmit and receive data paths." How does one determine if the functions are similar enough? The next shall is even more of a problem since an XAUI can have an XGXS on one side and a 10GBASE-X PMA on the other side. There may not be two full blown XGXS sublayers paired.

SuggestedRemedy

Remove the shalls in this subclause.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.1.4** *P* **235** *L* **32** # **51**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

The word XGXS's should be plural not possesive. Same thing in subclause 47.2.3, page 236, line 17

SuggestedRemedy

Replace "XGXS's" with "XGXSs"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.1.4** *P* **235** *L* **35** # **757**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

"link" used again to refer to a single "lane" and not consistant with 802.3 usage of "link".

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change "link" to "lane"

Cl **47** *SC* **47.1.4** *P* **235** *L* **38** # **930**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

If the XGXS is providing the PCS and PMA functionality, we need to add signal detect line to the XGXS interface because a PHY end that is a simple retimer is unlikely to want to generate LF codes.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Requires coordination with clause 48. The editors will address and develop appropriate text at the editorial meeting

Editors decided to add squelch text following the precedence of clause 39. Editor's note will call attention to this decision.

Cl **47** *SC* **47.1.4** *P* **235** *L* **38** # **1241**

Rich Taborek nSerial Corporation

Comment Type **E** *Comment Status* **A**

Wrong PHY type

SuggestedRemedy

Change 10GBASE-LX to 10GBASE-LX4

Proposed Response *Response Status* **C**

ACCEPT. Same as 1170

Cl **47** *SC* **47.1.4** *P* **235** *L* **38** # **1170**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

missing number

SuggestedRemedy

change "10GBASE-LX" to "10GBASE-LX4"

Proposed Response *Response Status* **C**

ACCEPT. Same as 1241

Cl **47** *SC* **47.2** *P* **235** *L* **44** # **1171**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

Insert an overall statement that XGXS functionality is defined in clause 48.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Requires coordination with clause 48. Related comments: 264, 1287, 749, 1171, 920 and 1143. The editors will address and develop appropriate text at the editorial meeting

See resolution to comment #920.

Cl **47** *SC* **47.2** *P* **235** *L* **45** # **920**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

Clause 47 references clause 48.2 for the functional specifications of the XGXS. However, 48.2 describes just the PCS which does not perform serialization and deserialization. Clause 48 defines that as part of the PMA functionality. Since the XGXS must perform serialization and deserialization, we need to also add normative references to parts of 48.3 or we need to put the serialization and deserialization requirements in this clause.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Requires coordination with clause 48. Related comments: 264, 1287, 749, 1171, 920 and 1143. The editors will address and develop appropriate text at the editorial meeting

The editors decided to add the following to the end of 47.2:
"All the requirements of 48.2 and 48.3 shall be met by the XGXS."
Delete 47.2.1, 47.2.2, 47.2.3.

Cl **47** *SC* **47.2** *P* **235** *L* **46** # **758**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

This does not fit the 802.3 definition for a link. How about "On the source side of a XAUI connection ..." and similarly on line 48.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Accept remedy if replace "connection" with "interface"

Cl **47** *SC* **47.2** *P* **235** *L* **46** # **755**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

Delete the first sentence. It is not a compliance requirement on any device since a device has no way to ensure that another device is performing the same functions as it and it doesn't add anything.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.2** *P* **235** *L* **47-50** # **52**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

Missing words

SuggestedRemedy

On both lines, replace "XGMII control characters" with "XGMII data and control characters"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.2** *P* **236** *L* **1** # **759**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Subclauses 47.2.1 through 47.2.3 have a small number of shalls and refence specific portions of 48.2 (encode and decode control characters, skew margin, deskew function and clock compensation) while leaving out other essential functionality such as Transmit, Receive, and Synchronization processes; transmit and receive lane associations; data coding; error detection; etc.

SuggestedRemedy

Delete 47.2.1 through 47.2.3. Add a statement to 47.2 that an XGXS shall meet all requirements of 48.2. (If there are some portions of 48.2 that don't apply specific exclusions can be added to this statement or they can be made in 48.2 but I think that all of 48.2 does apply here.)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Requires coordination with clause 48. Related comments: 759, 190, 858, 1242, 1243. The editors will address and develop appropriate text at the editorial meeting

See resolution to comment #920.

Cl **47** *SC* **47.2.1** *P* **236** *L* # **190**

Don Alderrou — nSerial

Comment Type **T** *Comment Status* **A**

Clause 47.2.1 on page 236 should have a sentence for the mapping of Pulse control character/ordered set. There is not a /P/ defined in Table 48-3 on page 146, so one may need to be added or the mapping in 47.2.1 should say ||P||.

SuggestedRemedy

Add the sentence "Status messages shall be mapped to a ||P|| ordered set." to clause 47.2.1.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Requires coordination with clause 48. Related comments: 759, 190, 858, 1242, 1243. The editors will address and develop appropriate text at the editorial meeting

See response to comment #920.

Cl **47** *SC* **47.2.1** *P* **236** *L* **1** # **858**

Tom Mathey — Independent

Comment Type **E** *Comment Status* **A**

The editor may want to say something here about “Pulse” control characters

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Requires coordination with clause 48. Related comments: 759, 190, 858, 1242, 1243. The editors will address and develop appropriate text at the editorial meeting

See response to comment #920.

Cl **47** *SC* **47.2.1** *P* **236** *L* **4** # **1242**

Rich Taborek — nSerial Corporation

Comment Type **T** *Comment Status* **A**

The sentence: "Idle control characters shall be mapped to /A/, /K/ and /R/ symbols in a sequence that allows for code-group deletion or addition and for deskew of the four lanes at the received end of the link." is inaccurate.

SuggestedRemedy

Change sentenceto: "Idle control characters shall be mapped to /A/, /K/ and /R/ code-groups in a sequence that allows for lane synchronization, lane-to-lane deskew and code-group deletion or addition."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Requires coordination with clause 48. Related comments: 759, 190, 858, 1242, 1243. The editors will address and develop appropriate text at the editorial meeting

See response to comment #920.

Cl **47** *SC* **47.2.1** *P* **236** *L* **6** # **1243**

Rich Taborek — nSerial Corporation

Comment Type **E** *Comment Status* **A**

The sentence: "The encode and decode are specified in 48.2." is inaccurate.

SuggestedRemedy

Change sentence to: "The XGMII control character to code-group mappings are specified in 48.2."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Requires coordination with clause 48. Related comments: 759, 190, 858, 1242, 1243. The editors will address and develop appropriate text at the editorial meeting.

See response to comment #920.

Cl **47** *SC* **47.3** *P* **236** *L* **23** # **931**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Something that seems to be missing and which we normally provide for a compatablity interface is names for the signals. Since Clause 48 only treats these as logical signals, it does not name the positive and negative differential lines and perhaps XAUI signals should have their own names. Also, a diagram like figure 46-2 but showing XGMII to XAUI signals would be nice.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.3** *P* **236** *L* **24** # **760**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

There is some kind of hyphen in front of 10GBASE that should be removed. Also, our terminology does not use 10GBASE by itself - only as 10GBASE-something. I suggest replacing it here with "10Gb/s Ethernet"

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.3** *P* **236** *L* **25** # **53**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

Extra hyphen

SuggestedRemedy

Replace "of-10GBASE" with "of 10GBASE"

Proposed Response *Response Status* **C**

ACCEPT. Related comments: 265, 53

Cl **47** *SC* **47.3** *P* **236** *L* **25** # **265**

Shimon Muller — Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**

Typo.

SuggestedRemedy

Delete the "-" between "of" and "10GBASE".

Proposed Response *Response Status* **C**

ACCEPT. Related comments: 265, 53

Cl **47** *SC* **47.3** *P* **242, 243** *L* **7, 8** # **1091**

Haluk Aytac — Velio Communications

Comment Type **T** *Comment Status* **R** *Driver*

We need to design a standard that is able to grow with industry capability in the future. In addition to designing a standard to accomdate the future, Velio is able to demonstrate all of these features today.

Receive sensitivity should be reduced from 200mv to 100mv in table 47-4. This is important for a number of reasons. Input sensitivity and power are directly related. As input sensitivity is reduced, the amplitude of the output required scales.

The other option relates to the use of 'back terminated' transmitters. The current clause 47 does not address this topic directly. However Table 47-3 requires a near end eye amplitude of 800mV differential. This, in effect, eliminates the potential for back termination at reasonable power. We would like this amplitude reduced to 600mV differential.

The reduction to 600mV should be acceptable. What we want to avoid having the spec eliminate measures that reduce implementation power by artificially forcing output amplitude to be 800mV minimum, if techniques such as back termination and pre-emphasis can generate a compliant XAUI link.

The full rationalization of why these two provisions are important, and the argument for interoperability, will be made in Irvine.

SuggestedRemedy

Figure 47-7: +400 mV -> +300mV
-400mV -> -300mV
Table 47-4: Diff. Input Amplitude
minimum: 200mV -> 100mV

Proposed Response *Response Status* **C**

REJECT. There are a large number of companies that have been working with the existing numbers, and see no reason to change. (Unanimous)

Cl **47** *SC* **47.3.1** *P* **236** *L* **32** # **54**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

misspelling

SuggestedRemedy

Replace "signalling" with "signaling"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.3.1** *P* **236** *L* **35** # **266**

Shimon Muller — Sun Microsystems, Inc

Comment Type **E** *Comment Status* **A**

Spelling.

SuggestedRemedy

Replace "loses" with "losses".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.3.3** *P* **236** *L* **45** # **964**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

We need an entry for lane to lane driver skew or we need to have XGXS lane-to-lane skew added to the table in 48.2.4.2.2.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Lane-to-lane skew should be spec'ed somewhere. Unclear which table is commented on. Requires coordination with Cl. 48

Resolved by comment #963.

Cl **47** *SC* **47.3.3** *P* **236** *L* **47** # **763**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Specifiy a tolerance on the rate.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Use +/- 100 ppm. Related comments: 752, 763, 1288

Cl **47** *SC* **47.3.3** *P* **236** *L* **47** # **56**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

Inconsistent spelling of GBaud

SuggestedRemedy

Replace "Gbaud" with "GBaud"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.3.3** *P* **237** *L* **1** # **628**

Michael O. Jenkins — LSI Logic

Comment Type **T** *Comment Status* **A** *Driver*

In Table 47-1--Driver characteristics, Absolute output voltage limits are 2.3 V maximum and -0.3 V minimum. I believe this will exclude some potentially valuable implementations. The maximum spec will exclude many (most?) implementations with 2.5 V and 3.3 V power supplies. The minimum spec will needlessly(?) exclude the elegant, albeit technically difficult, solution of swinging around ground.

SuggestedRemedy

Increase the maximum limit AT LEAST to 2.5V+10%+max_Vswing(z-p), which is 3.15V. (I'm aware that a value of 3.4V has been proposed, which would be acceptable.)

Decrease the minimum limit AT LEAST to 0V-max_Vswing(z-p), which is -0.4V. A limit of -0.5V would seem easy and accommodate any issues like tolerance and ground shift without risk of turning on any substrate diodes.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Upper limit change rejected since limits integration of cap's in future IC technologies (breakout vote: 11:14). Accept lower limit change to -0.4V (breakout vote: 12:3). Related comments: 628, 430.

Cl **47** *SC* **47.3.3** *P* **237** *L* **10** # **430**

Lysdal, Henning — Giga

Comment Type **T** *Comment Status* **R** *Driver*

Absolute output voltage limits, maximum: 2.3V. The XAUI link is AC-coupled, so the receiver implementer can choose his own biaspoint. Thus the output maximum voltage specification is only used to limit the voltage over the coupling capacitor. With this in mind, the value should be increased to 3.4V to allow operation of a 3.3V supply.

SuggestedRemedy

Change Absolute voltage limit maximum to 3.4V.

Proposed Response *Response Status* **C**

REJECT. Upper limit change rejected since limits integration of cap's in future IC technologies (breakout vote: 11:14). Related comments: 628, 430.

Cl **47** *SC* **47.3.3** *P* **237** *L* **3** # **1288**

Jonathan Thatcher — World Wide Packets

Comment Type **T** *Comment Status* **A**

Baud rate must have +/- 100 ppm.

SuggestedRemedy

see comment

Proposed Response *Response Status* **C**

ACCEPT. Related comments: 752, 763, 1288

Cl **47** *SC* **47.3.3** *P* **242** *L* **32** # **1069**

Ali Ghiasi — Broadcom

Comment Type **T** *Comment Status* **A** *Jitter*

Value of X2 is too large with addtion of channel ISI the RX mask may not be met.

Value of X1 is wrong

SuggestedRemedy

The value of X2 should be about 0.39-0.4 UI

The value of X1 need to be 1/2 the 0.35 UI TJ.

You should also specify the mask is the contour of 1E-12.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change X1 to 0.175. Change X2 to 0.39 as compromise until further analysis indicates otherwise. Related comments: 1069, 629.

Cl **47** *SC* **47.3.3.1** *P* **237** *L* **22** # **764**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Figure 47-2 does not actually identify anything as the differential peak-to-peak amplitude. It is presumably the difference between the 0% and the 100% lines. We could add Vp-p between the two lines with arrows to the lines to indicate the span of Vp-p.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.3.3.1** *P* **238** *L* **25** # **765**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

The waveform drawn here has a Vp-p of roughly 4.6 V which would be well out of spec. Rescale the waveform or the lines so that it looks more like an in spec waveform would. Also, this figure is suppose to be defining absolute voltage but nothing on it is so identified. Add a line touching the top of the waveform labeled maximum absolute voltage and a line touching the bottom labeled minimum absolute voltage.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.3.3.2** *P* **238** *L* **39** # **766**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

"increase" would be nore accurate than "degrade".

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Related commets: 766, 1289

Cl **47** *SC* **47.3.3.2** *P* **238** *L* **39** # **1289**

Jonathan Thatcher — World Wide Packets

Comment Type **E** *Comment Status* **A**

Change word "degrade" to "increase"

SuggestedRemedy

see comment

Proposed Response *Response Status* **C**

ACCEPT. Related commets: 766, 1289

Cl **47** *SC* **47.3.3.4** *P* **238** *L* **49** # **898**

Tom Gray — Tality

Comment Type **T** *Comment Status* **R** *Driver*

The driver differential return loss of 10 dB appears to be very difficult to meet with reasonable driver implementations. The current number of 10 dB would require a parasitic driver capacitance of less than ~425fF which would be very difficult to meet in processes that XAUI will be typically implemented (ie. <=0.18um CMOS).

SuggestedRemedy

One of two solutions:
1. reduce the driver return loss number to something like 6dB (determination of actual number would require further study)
2. make the return loss frequency dependent such that it may still be 10dB at DC but lower at higher frequencies. For example, this approach was used in 100BaseTX.

Proposed Response *Response Status* **C**

REJECT. Analysis needed to address technological feasability and impact on receive signal; more specific proposal needed.

Cl **47** *SC* **47.3.3.4** *P* **238** *L* **50** # **47001**

SubTaskforce

Comment Type **E** *Comment Status* **A**

6 dB number is only a placeholder

SuggestedRemedy

See response

Proposed Response *Response Status* **C**

ACCEPT. Remove editors note concerning 6dB number.

Cl **47** *SC* **47.3.3.5** *P* *L* # **629**

Michael O. Jenkins LSI Logic

Comment Type **T** *Comment Status* **A** *Jitter*

In Table 47-3--Near-end template intervals, X1 is listed as 0.325 UI, which is, I believe, an error. The correct value should be half the specified peak-peak jitter.

The value of X2 is listed as 0.450, which is also in error.

SuggestedRemedy

Change the value of X1 to 0.175 UI, which is half the proposed TX jitter spec of 0.35 UI.

Change the value of X2 to 0.380 UI, which is the value of X1 (above proposed) plus half the 20%-80% risetime of a half-bitrate sinusoid (i.e., a ...010101... data pattern).

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change X1 to 0.175. Change X2 to 0.39 as compromise until further analysis indicates otherwise. Related comments: 1069, 629.

Cl **47** *SC* **47.3.3.5** *P* **239** *L* **13** # **1290**

Jonathan Thatcher World Wide Packets

Comment Type **T** *Comment Status* **R** *Jitter*

The filter is under specified.

SuggestedRemedy

Include, as we did in FC and 1GbE a 4th order BT filter or equivalent.

Proposed Response *Response Status* **C**

REJECT. This filter is similar to that used for the GbE golden PLL and is specified similarly; it is not the 4th order filter used for optical testing.

Cl **47** *SC* **47.3.3.5** *P* **239** *L* **14** # **47002**

Subtaskforce

Comment Type **E** *Comment Status* **A**

TBD needs value

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Use 1875 MHz.

Cl **47** *SC* **47.3.3.5** *P* **239** *L* **14** # **1173**

Booth, Brad Intel

Comment Type **T** *Comment Status* **A** *Jitter*

value is missing

SuggestedRemedy

need to add this value

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Replace TBD with 1.875 MHz.

Cl **47** *SC* **47.3.3.5** *P* **239** *L* **19** # **1174**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A** *Channel*

information about FR4 epoxy PCB

SuggestedRemedy

should there be a reference to this?

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Need to describe target channel, either here, in section 47.3.5. Editor to generate description.

Cl **47** *SC* **47.3.3.5** *P* **239** *L* **22** # **47003**

Subtaskforce

Comment Type **E** *Comment Status* **A**

Equation incorrect

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Editor will fix equation per breakout meeting decision.

Cl **47** *SC* **47.3.3.5** *P* **239** *L* **23** # **796**

Israel Greiss MystiCom

Comment Type **T** *Comment Status* **A** *Channel*

The equation for S21 is wrong. Calculating the ISI loss with it, gives 0.4685 dB instead of 4 dB.

SuggestedRemedy

Change the equation to:
20*log10(|S21|) <= - [1.5e-5 * f ^ 0.5 + 3.5e-9 * f + 0.068] [dB]
(It gives ISI loss of 4.68 dB)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Accept use "20*log(e)" instead of "20*log10". Also adjust constants to fit compliance channel approved by XAUI Channel breakout on Jan 11.

Cl **47** *SC* **47.3.3.5** *P* **239** *L* **25** # **47004**

Subtaskforce

Comment Type **E** *Comment Status* **A**

4dB number is a placeholder

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Remove editors note concerning 4dB number.

Cl **47** *SC* **47.3.3.5** *P* **239** *L* **27** # **1175**

Booth, Brad Intel

Comment Type **T** *Comment Status* **A** *Channel*

TBD

SuggestedRemedy

need a number here

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Group elay shall vary less than 80ps peak-to-peak from 100kHz up to fBaud/2

Cl **47** *SC* **47.3.3.5** *P* **239** *L* **27** # **47005**

Subtaskforce

Comment Type **E** *Comment Status* **A**

TBD needs a value

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. TBD becomes <80 ps peak-to-peak from 100 KHz to 1.56 GHz with an aperture window less than 3% of span.

Cl **47** *SC* **47.3.3.5** *P* **240** *L* **20** # **1291**

Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **A**

How did you get FrameMaker to do that to the "Figure" tag?

SuggestedRemedy

???

Proposed Response *Response Status* **C**

ACCEPT. Related comment as 1291, 767, 1176. Will add shift return in title.

Cl **47** *SC* **47.3.3.5** *P* **240** *L* **20** # **767**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

"igure" should be "Figure"

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Related comment as 1291, 767, 1176

Cl **47** *SC* **47.3.3.5** *P* **240** *L* **5** # **467**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

The y axis is labeled mVp-p but peak to peak is a measurement of the waveform across time. The differential voltage of the signal should be just in mV.

SuggestedRemedy

Change mVp-p to mV.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.3.4** *P* **243** *L* **5** # **769**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

Baud rate tolerance should also be specified.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **47.3.4.1** *P* **242** *L* **45** # **1292**

Jonathan Thatcher World Wide Packets

Comment Type **T** *Comment Status* **R** *Jitter*

If a link has one fiber length and two XAUI interfaces, then according to this specification, the overall BER will be 3x10e-12.

SuggestedRemedy

Change XAUI BER to 10e-13. Same time to text as 1 Gig at 10e-12.

Proposed Response *Response Status* **C**

REJECT. The specification on SJ will impose a tighter performance requirement. 10-13 is an unrealistic test time requirement. There is a precedent for doing this in previous versions of Ethernet (multisegment).

Cl **47** *SC* **47.3.4.1** *P* **242** *L* **46** # **768**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A** *Channel*

Is there a source impedance specified for the input signal. If there isn't, then it will be pretty difficult for a receiver designer to anticipate what the waveform will look like when the load is replaced by the receiver.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Source impedience is 100 ohms plus of minus 5%

Cl **47** *SC* **47.3.4.1** *P* **242** *L* **47** # **47006**

NoName

Comment Type **E** *Comment Status* **A**

Need to specify source impedance

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. 100ohm plus or minus 5%

Cl **47** *SC* **47.3.4.2** *P* **242** *L* **54** # **47007**

Subtaskforce

Comment Type **E** *Comment Status* **A**

6dB num ber is a placeholder

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Remove editors note on 6dB

Cl **47** *SC* **47.3.4.3** *P* **243** *L* **35** # **1067**

Ali Ghiasi Broadcom

Comment Type **E** *Comment Status* **A**

Differential Skew of 75 ps include ISI

SuggestedRemedy

It should read "Differential Skew and ISI"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Accept if add sentence, "This skew includes the effects of ISI" instead of changing the section title.

Cl **47** *SC* **47.3.4.4** *P* **243** *L* **38** # **47008**

Subtaskforce

Comment Type **E** *Comment Status* **A**

Jitter measurement is undefined

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Remove editors note. Add new subclause on jitter measurement using the proposed text of the XAUI Jitter Ad Hoc Chairperson in an editors note.

Cl **47** *SC* **47.3.4.4** *P* **243** *L* **44** # **770**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **R** *Jitter*

What is the purpose of the last two sentences of this paragraph? They don't seem to add necessary information.

SuggestedRemedy

Delete the last two sentences.

Proposed Response *Response Status* **C**

REJECT. This same information is provided in the GbE standard. Related comments: 770, 1293

Cl **47** SC **47.3.4.4** P **243** L **46** # **1293**
Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **R** *Jitter*

What is a "maximum peak-to-peak ... RMS"?

SuggestedRemedy

?

Proposed Response *Response Status* **C**

REJECT. This same information is provide in the GbE standard. Related comments: 770, 1293

Cl **47** SC **47.3.5** P **244** L **12** # **1070**
Ali Ghiasi Broadcom

Comment Type **T** *Comment Status* **A** *Table 47-5*

The table for loss and jitter need to be separated there is no reason to add more jitter compliance point.

The PCB loss of 8.2 dB is too high.

Only one connector specified

SuggestedRemedy

Make PCB loss 6 dB and increase number of connector to 2.

Add a separate jitter table and remove reference to Next,Fext,connector.
Just add a line for channel jitter.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Do not separate jitter and loss tables. Combine PCB and connector rows and label as "Channel". Relabel "NEXT,FEXT" row as "Other". Channel row has 7.5 dB loss (or close to this value as determined by compliance channel model). Other row has 2.5 dB loss. Note that loss is at f_baud/2. Correct values for DJ and TJ. Add "informative" to tabel title. Related comments: 1070, 965, 1294, and 1295

Cl **47** SC **47.3.5** P **244** L **13** # **965**
Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A** *Table 47-5*

The table seems to be missing significant numbers like differential skew and lane-to-lane skew. Does the 1 UI budgeted in 48.2.4.2.2 cover lane-to-lane skew for 50 cm?

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Differential skew is to be added to 47.3.5 and diferential skew of 60ps. Lane skew is not pertinent to jitter and loss. Related comments: 1070, 965, 1294, and 1295

Cl **47** SC **47.3.5** P **244** L **8** # **1294**
Jonathan Thatcher World Wide Packets

Comment Type **T** *Comment Status* **A** *Table 47-5*

Add word "(Informative)" to title of Table 47-5

SuggestedRemedy

see comment

Proposed Response *Response Status* **C**

ACCEPT. Related comments: 1070, 965, 1294, and 1295

Cl **47** SC **47.3.5.2** P **244** L **28** # **1295**
Jonathan Thatcher World Wide Packets

Comment Type **T** *Comment Status* **R** *Table 47-5*

When did a XAUI connector sneak into the document? Was that ever approved / voted on by the committee? My recollection is that numerous times during the course of the discussion it was said that XAUI was not intended to be used with copper cables. Was I on drugs?

SuggestedRemedy

Justify

Proposed Response *Response Status* **C**

REJECT. The connector information was in the approved proposal. No cable is being considered here.

Cl **47** SC **47.3.5.2** P **244** L **31** # **771**
Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A** *Jitter*

Has the effect of this impedence on jitter been calculated?

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. No aternative provided. XAUI Jitter Ad Hoc will continue to valadate current specifications.

Cl **47** SC **Fig 47-2** P **238** L **1** # **1172**
Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

Figures 47-2 and 47-3 seem to be joined or linked.

SuggestedRemedy

re-format so that 47-2 can be on the previous page

Proposed Response *Response Status* **C**

ACCEPT.

Cl **47** *SC* **Fig 47-4** *P* **240** *L* **20** # **1176**
Booth, Brad Intel

Comment Type **E** *Comment Status* **A**
Figure title cut off.

SuggestedRemedy
Fix.

Proposed Response *Response Status* **C**
ACCEPT. Related comment as 1291, 767, 1176

Cl **47** *SC* **Fig 47-5** *P* **241** *L* **3** # **1177**
Booth, Brad Intel

Comment Type **T** *Comment Status* **A** *Channel*
sample figure

SuggestedRemedy
need real figure

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Editor to generate plot.

Cl **47** *SC* **Fig 47-6** *P* **241** *L* **25** # **1178**
Booth, Brad Intel

Comment Type **T** *Comment Status* **A** *Channel*
sample figure

SuggestedRemedy
need real figure

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Editor will update per other coment resolutions

Cl **47** *SC* **Table 47-4** *P* **243** *L* **1** # **1179**
Booth, Brad Intel

Comment Type **E** *Comment Status* **A**
table in middle of text

SuggestedRemedy
re-format to not break up text

Proposed Response *Response Status* **C**
ACCEPT. Move anchor.

Cl **48** *SC* *P* *L* # **18**
Brown, Ben AMCC

Comment Type **T** *Comment Status* **A**
General comment to the entire document: Lifted from the email archive as provided by Mr. Mark Ritter of IBM: Some history might help to resolve this thread. The '8B/10B' acronym demonstrably does not trace back to IBM. We simply adopted the code classification scheme mX/nY which had been widely used in technical literature long before the Fibre Channel code was developed. X and Y stand for the number of transmission levels (Binary for two, Ternary for three, etc.), m and n indicated the number of symbols at the respective levels. So 8B/10B implies that 8 binary symbols are translated into 10 binary symbols. Codes of the class 4B/3T translate 4 binary symbols into three ternary symbols. This notation is used in major textbooks and IEEE publications as any search for the terms quickly reveals.

SuggestedRemedy
Replace all instances of "8b/10b" and "64b/66b" with "8B/10B" and "64B/66B" throughout the entire document

Proposed Response *Response Status* **C**
ACCEPT.

Cl **48** *SC* *P* *L* # **1030**
Robert Grow Intel

Comment Type **E** *Comment Status* **A**
The IEEE Style Manual indicates all numbers less than 10 be spelled out, implying that numbers 10 or greater be writen as numbers.

SuggestedRemedy
Change all text with "ten gigabits" to "10 Gigabits"
Change names of architectural components (i.e., 10 Gigabit Media Independent Interface, 10 Gigabit Attachment Unit Interface, 10 Gigabit Sixteen-Bit Interface)

Proposed Response *Response Status* **C**
ACCEPT.

Cl **48** *SC* **48.** *P* **247** *L* **1** # **1143**

Bottorff, Paul A — Nortel Networks

Comment Type **T** *Comment Status* **R** *Hot Topic*

The 8b/10b PCS and LX4 PMA specified in clause 48 was never voted into the standard. Only XAUI(an alternative to XGMII) based on toborek_2_0500 was approved for inclusion at the July 2000 meeting. Inclusion of clause 48 creates 2 PCS layers where one would be sufficient. The approved 64b/66b is addequate to support of all the approved PMD types.

SuggestedRemedy

Either the committee should vote to support 8b/10b PCS and LX4-PMA for the 10GBASE-LX4 PHY family or drop them from the standard. To drop clause 48 the material from 48.2 would be included in clause 47, all reference to 10GBASE-X would be removed and replaced with 10GBASE-LR4, and clause 53 can used to support 10GBASE-LR4 as LAN WWDM.

Proposed Response *Response Status* **Z**

REJECT. Both the XAUI/XGXS and the 10GBASE-LX4 PMD were approved as P802.3ae baseline proposals. It is clearly indicated in taborek_2_0500 and prior proposals to it that the XAUI/XGXS is the PCS/PMA agent for the WWDM PHY type. All early WWDM PMD proposals clearly indicate a preference for a line rate of 3.125 Gbaud via 8B/10B coding over 4 lanes. It was clear by a show of hands on 1/10/2001 that not a single person in the 802.3ae Task Force, with the exception of the commentor, is confused by the exlusive use of 8B/10B as the PCS and PMA for the 10GBASE-LX4 PHY. The 10GBASE-LX4 PHY is a simple 2.5 X data rate by 4 lane extension of the technical complete, simple, robust, reliable and highly successful 1000BASE-X Ethernet PHY with proven technical feasibility and multiple vendor support. None of the same is evident of the suggested remedy. Note also that Clause 47 specifications are only applicable to clause 48 and not to clause 53.

Cl **48** *SC* **48.1** *P* **249** *L* **12** # **1296**

Jonathan Thatcher — World Wide Packets

Comment Type **E** *Comment Status* **A**

Make it clear that while the XGMII is optional, it is used as a basis for defining this clause.

SuggestedRemedy

see comment.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Text to be modified as necessary to make clarification.

Cl **48** *SC* **48.1** *P* **249** *L* **12** # **1369**

Booth, Brad — Intel

Comment Type **T** *Comment Status* **A**

Last sentence needs a qualifier.

SuggestedRemedy

Add to the end of the last sentence: "but that is beyond the scope of this standard."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.1** *P* **249** *L* **8** # **772**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

"The 8B/10B coding functions specified in this clause are also utilized by the XGXS specified in Clause 47." or XGMII extender could be used in place of XGXS.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.1** *P* **249** *L* **8** # **55**

Brown, Benjamin J — AMCC

Comment Type **T** *Comment Status* **A**

These sublayers are used in an XGXS not in a XAUI.

SuggestedRemedy

Replace "XAUI" with "XGXS"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.1** *P* **251** *L* **25** # **859**

Tom Mathey — Independent

Comment Type **E** *Comment Status* **A**

The sentence subject of “implementation” is singular, the verb of “are” is plural.

SuggestedRemedy

Change are to is.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.1.1** *P* **249** *L* **16** # **773**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *Hot Topic*

One part of the standard can't assume the use of another part such as the MDIO interface when that part is independently optional. This sentence should be deleted. (Also, if it was not deleted, MII management interface should be MDIO interface.)

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Changed to MDIO interface as suggested. No statement is made about the mandatory or optional nature of this functionality.

Cl **48** *SC* **48.1.3** *P* **250** *L* **23-25** # **1042**
Robert Grow Intel

Comment Type **E** *Comment Status* **A**

The expansion of acronyms is in random order. Though there may be historical reasons for this (i.e., higher layers to lower layers when there was one protocol stack) there is no descernable reason for order in the current pictures.

SuggestedRemedy

Put in alphabetical order

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.1.3.1** *P* **250** *L* **43** # **774**
Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

MII management interface should be MDIO interface.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.1.3.1** *P* **250** *L* **49** # **775**
Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

delete "of"

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.1.3.3** *P* **251** *L* **12** # **1371**
Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

no such PMD

SuggestedRemedy

change to "10GBASE-LX4"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.1.3.3** *P* **251** *L* **18** # **1372**
Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

there is only one PMD sublayer for 10GBASE-X

SuggestedRemedy

change "sublayer(s)" to "sublayer"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The comment is valid, however, the entire sentence can be deleted instead of being corrected. Related comment: 923.

Cl **48** *SC* **48.1.3.3** *P* **251** *L* **18** # **923**
Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

"sublayer(s)" should be just "sublayer". In any case, there is already a reference to the figure at the beginning of 48.1.3 so the sentence should be deleted.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Related comment: 1372.

Cl **48** *SC* **48.1.4** *P* **251** *L* **20** # **924**
Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

An Application subclause normally talks about the circumstance in which the clause applies. In this case it would answer the question "Why is the 10GBASE-X PCS/PMA used?" This text doesn't seem to address that question and has grammar problems. It could be deleted (clause 36 doesn't have such a subclause). If it is retained, it should be rewritten to speak to its subject.Problems with the clause that need to be addressed: It currently says this clause specifies stuff between the RS and PMD which is usually in chips that are connected to each other but doesn't say anything about that stuff does. First sentence would be better saying what the clause specifies. 2nd and 3rd sentence state the obvious. "implmentation...are...." should be "implementation...is...." and anyway, the interface specs already say that so it seems unnecessary here. The specification is not a set of service interfaces. The specification describes behavior between (or with respect to) service interfaces which is what practically every part of 802.3 (and most other networking standard) does so it isn't very informative.

SuggestedRemedy

Delete the clause or put content in it such as that the 10GBASE-X PCS and PMA support 10Gb/s communication over 4-lane self-clocked serial paths which allows greater distances to be achieved on a given media than a single serial path or a clocked bus can achieve. The sentence on line 44 says about the righ thing.

Proposed Response *Response Status* **C**

ACCEPT. Deleted subclause

Cl **48** *SC* **48.1.5** *P* **251** *L* **31** # **925**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Generally, it is good editorial practice to avoid using "/" to mean "or". Also, "10Gb/s MAC and XGMII/RS data rate" is not necessary. "10Gb/s MAC data rate" should cover the ground or even just "10 Gb/s data rate".

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Replace "10Gb/s MAC and XGMII/RS data rate" with "10Gb/s MAC data rate". Related comment: 934.

Cl **48** *SC* **48.1.5** *P* **251** *L* **32** # **926**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Deleted "nominally" which would only be used if you were not stating the tolerance here.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.1.6** *P* **251** *L* **38** # **927**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

The logic is probably not "clockless". Also, usually we refer to signalling such as the 8B/10B code as "self-clocked" rather than "clockless".

SuggestedRemedy

Delete "logic and" (2 places) and change "clockless" to "self-clocked". Also, a list of 3 items is refered to here as former and latter. "former" should be "the former two" or "the first two".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.1.6** *P* **251** *L* **38** # **1298**

Jonathan Thatcher — World Wide Packets

Comment Type **T** *Comment Status* **A** *Hot Topic*

***** BIG TICKET ITEM *****
What is "longer clockless logic"? More importantly, why does length have anything to do with the PMA to PMD interface? This isn't a XAUI.We have a big problem in the mixing of function/feature/description/concept between clauses 37 and 38. If these clauses are to be independent, they need to be independent and deal only with the functions and features they are intended to describe.

SuggestedRemedy

Let's quit pretending that clause 37 and 38 are different and get this thing fixed!

Proposed Response *Response Status* **C**

ACCEPT. Deleted the first sentence of 48.1.6

Cl **48** *SC* **48.1.6** *P* **251** *L* **46** # **1297**

Jonathan Thatcher — World Wide Packets

Comment Type **E** *Comment Status* **A**

"to guarantee a modicum of signal fidelity" ???

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Sentence will be re-phrased. Related comments: 929.

Cl **48** *SC* **48.1.6** *P* **251** *L* **46** # **929**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

I hate to object to this sentence because I like its style. However, we probably rely on more than a "modicum" (i.e. a limited quantity) of signal fidelity over the link. Also, an implementation such as a PCS has no means to guarantee the signal fidelity of the physical link. It does protect against links with excessively poor signal quality with error detection and sync mechanisms.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Text will be re-phrased. Related comment: 1297.

Cl **48** *SC* **48.1.6** *P* **251** *L* **47** # **928**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

"not specified nor required" Some form of implementation method is required we just aren't specifying its form so it would be better to delete "nor required".

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Delete "nor required".

Cl **48** *SC* **48.1.7** *P* **251** *L* **50** # **57**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

Period at end of heading

SuggestedRemedy

Remove period at end of heading

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2** *P* **269** *L* **11** # **322**

Cruikshank, BrianS — Conexant Systems

Comment Type **T** *Comment Status* **A** *Hot Topic*

Because of the Haddock proposal, min IPG can be 9. The /a/k/r state machine was then changed. The new state machine does not guarantee that /a and /k characters are transmitted with every IPG. During transmissions with many consecutive minimum IPG, very few /a characters will be placed in the IPG.

SuggestedRemedy

Two methods:
1. Change description page 257 line 37-43 to designate that the counter and PRBS generation only increments during the idle transmission. In the original proposal, the counter clocked with each byte cycle. Maybe this new method is implied.
2. Change the State Machine on Page 269 so that A_CNT_0=X is not on the transitions from Send_Data to Send_A or from Send_Data to Send_K. When Send_A is sent, initialize the A_CNT counter.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change to make ||A|| and ||K|| probability during IPG equal subject to minimum ||A|| spacing rule. Fixed in 569.

Cl **48** *SC* **48.2** *P* **269** *L* **26** # **321**

Cruikshank, BrianS — Conexant Systems

Comment Type **T** *Comment Status* **A** *SM*

/a/k/r State Diagram change use of code_sel=1 for transitioning to different states is not consistent.

SuggestedRemedy

A new label (B) should be made that goes to Send_random_r state.
Send_random_k should go to B on condition
tx_clk * (tx=||idle|| + tx=||p|| * fault_det=1) * code_sel=1 * A_CNT_0=0
Send_random_k should go to A on condition
tx_clk * (tx=||idle|| + tx=||p|| * fault_det=1) * code_sel=0 * A_CNT_0=0
Send_k should go to B on condition
tx_clk * (tx=||idle|| + tx=||p|| * fault_det=1)

Proposed Response *Response Status* **C**

ACCEPT. Fixed in 185.

Cl **48** *SC* **48.2.1** *P* **253** *L* **11** # **934**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Replace "XGMII/RS" with "XGMII". Also do global search for XGMII/RS and replace with "XGMII" or "RS" as appropriate.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.1** *P* **253** *L* **6** # **932**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Strictly speaking, the PCS client is the RS rather than the MAC. The MAC is the RS client.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Text to be corrected. Related comment: #58.

Cl **48** *SC* **48.2.1** *P* **253** *L* **6** # **58**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

There are contradictory statements made here about the clients for this PCS. In the first sentence, it says the client is the 802.3 MAC. In the next sentence, it says that the previous clause describes alternative clients for this PCS.

SuggestedRemedy

Replace "The PCS client is the 802.3 MAC." with "A PCS client is the 802.3 MAC."

Proposed Response *Response Status* **C**

ACCEPT. Changed text to: "A PCS client is the RS."

Cl **48** *SC* **48.2.1** *P* **253** *L* **7** # **933**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

Suggest changing to "The PCS service interface is the XGMII defined in Clause 46.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.11.1.2** *P* **298** *L* **18** # **922**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **R**

UNITDATA should be SIGNAL.

SuggestedRemedy

Proposed Response *Response Status* **C**

REJECT. Unable to review comment. Referenced page number does not correspond to Clause 48, and referenced Subclause number does not exist.

Cl **48** *SC* **48.2.2** *P* **253** *L* **18** # **59**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

This first sentence seems to be listing the functions in the PCS as shown in the previous figure (although the figure is not referenced). As such, it is missing one of the functions: Management.

SuggestedRemedy

Replace "Transmit, Receive" with "Transmit, Management, Receive"

Proposed Response *Response Status* **C**

ACCEPT. Changed the word "comprises" to "includes".

Cl **48** *SC* **48.2.2** *P* **253** *L* **23** # **935**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

Delete "interframe" because it isn't needed.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.2** *P* **253** *L* **26** # **936**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

"...PMA, the PCS uses data signals in each direction (tx_code-grou<39:0>...." flows a bit better.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Replace text, but corect the spelling in "code-group" in suggested remedy.

Cl **48** *SC* **48.2.2** *P* **253** *L* **34** # **937**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

It would be better here to say that each set of code-group signals carries the data from an XGMII lane. The round robin function is done in the RS and the PCS simply maintains the lanes as it receives them. Also, the round robin statement is definitly untrue for rx_code-groups since the PMA rx_code-groups are not required to be synced or deskewed.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Deleted the second sentence in the target paragraph (on lane 34) worded: "The four lanes are used in round-robin sequence to carry an octet stream."

Cl **48** *SC* **48.2.2** *P* **254** *L* **11** # **940**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

This sentence should say something about what the Deskew process does to the code groups between receiving them and passing them to the receive process. Something like, "aligns the code-groups to remove skew between lanes that has been introduced by the link"

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Add text to clarify the function of the Deskew process.

Cl **48** *SC* **48.2.2** *P* **254** *L* **14** # **1300**

Jonathan Thatcher — World Wide Packets

Comment Type **E** *Comment Status* **A**

"flags is asserted" should be "flags are asserted"

SuggestedRemedy

see comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.2** *P* **254** *L* **19** # **597**

Stephen Haddock — Extreme Networks

Comment Type **T** *Comment Status* **A** *Hot Topic*

The statement "All non-Idle code-groups received during the interframe idle stream are replaced with interframe Idle characters prior to forwarding to the XGMII." is inconsistent with the Receive state machine behavior. Currently non-Idle code-groups are decoded and passed across the XGMII by the DATA_MODE_OTHER state. The PHY should not pass invalid sequences, whether they are control codes or data without a valid start delimiter, to the MAC.

SuggestedRemedy

In Figure 48-10, delete the DATA_MODE_OTHER state and change the transition condition into IDLE_MODE from "[||IDLE||]" to "ELSE".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Make the text consistent with State Machine behavior. See comment 941.

Cl **48** *SC* **48.2.2** *P* **254** *L* **2** # **938**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Delete "immediately" because we don't quantify it.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.2** *P* **254** *L* **20** # **941**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

This statement is not true. Ordered sets are not replaced and undecodeable characters are replace by E.

SuggestedRemedy

"All code-groups received that represent idle are replaced with Idle characters prior to forwarding to the XGMII."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.2** *P* **254** *L* **6** # **939**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

This makes it sound like the code groups relayed to deskew are the same as those received and doesn't describe what the sync process actually does.

SuggestedRemedy

"... via the PMA_UNITDATA.indicate primitive, obtains 10-bit code-group synchronization and conveys synchronized 10-bit code-groups to the PCS Deskew ...." Also, don't the sync_status flags convey whether sync has been obtained more than dependable operation? Repeated or extended loss of sync is a sign of link problems, but occasional loss of sync may just be a sign of a power cycle.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Text to be re-phrased to convey additional information.

Cl **48** *SC* **48.2.3** *P* **254** *L* **28** # **1375**
Booth, Brad Intel

Comment Type **E** *Comment Status* **A**
referenced standard not in 802.3 reference list

SuggestedRemedy
add referenced standard to your reference list

Proposed Response *Response Status* **C**
ACCEPT.

Cl **48** *SC* **48.2.3** *P* **254** *L* **32** # **943**
Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**
It isn't clear whether "applicable to" means that the rules are conformance requirements of 10GBASE-X.

SuggestedRemedy
"A 10GBASE-X PCS shall meet ther requirements specified in 36.2.4.1 through 36.2.4.6, 36.2.4.8 and 36.2.4.9."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **48** *SC* **48.2.3** *P* **254** *L* **32** # **942**
Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**
The specifications in 36.2.4.7 and 36.2.4.10 through 36.2.4.18 do not apply to 10GBASE-X.

SuggestedRemedy
Make the references more specific.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **48** *SC* **48.2.3** *P* **254** *L* **49** # **944**
Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **R**
The footnote a also applies to Pulse.

SuggestedRemedy

Proposed Response *Response Status* **C**
REJECT. OBE.

Cl **48** *SC* **48.2.3** *P* **255** *L* **1** # **945**
Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**
"an XGMII"

SuggestedRemedy

Proposed Response *Response Status* **C**
ACCEPT.

Cl **48** *SC* **48.2.3** *P* **255** *L* **23** # **948**
Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**
There do not seem to be any exceptions to 36.2.4 contained in this subclause. If there are exceptions, that should be stated specifically as "The requirement of 36.2.4.x that ... does not apply." In any case, I think the exceptions are eliminated by making the reference to clause 36 more specific as I suggest in a comment on p 254 l 32.

SuggestedRemedy
Delete the sentence.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **48** *SC* **48.2.3** *P* **255** *L* **28** # **1301**
Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **A**
According to Figure 48-4, only "Lane 0 is shown". But, we see TXD<31:0> and RXD<31:0> and TXC<3:0> and RXC<3:0> and tx_code-group<39:0> and tx_lane<3:0> and...and...and...and...

SuggestedRemedy
fix

Proposed Response *Response Status* **C**
ACCEPT. Remove references to data and control bits in lanes 1-3.

Cl **48** *SC* **48.2.3** *P* **255** *L* **28-29** # **60**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

Since Figure 48-4 only shows Lane 0 then the data path should only encompass TXD/RXD<7:0> and TXC/RXC<0>

SuggestedRemedy

Replace TXD<31:0> and RXD<31:0> with TXD<7:0> and RXD<7:0>, respectively. Also, replace TXC<3:0> and RXC<3:0> with TXC<0> and RXC<0>, respectively.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.3** *P* **255** *L* **30** # **570**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **R**

The bit ordering, or at least the bit numbering, on the XGMII in this diagram is inconsistent with the diagram in Annex 45A (which should be Annex 44A?) pages 162 and 163.

SuggestedRemedy

Make the diagrams consistent.

Proposed Response *Response Status* **C**

REJECT. Consider changing both this figure and the corresponding figure in clause 36 in the same future maintenance revision.

Cl **48** *SC* **48.2.3** *P* **255** *L* **30** # **949**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **R**

I know this is showing the diagram the same as it was in clause 36, but it deviates from the 802.3 conventions by showing the LSB on the right rather than the left.

SuggestedRemedy

Perhaps leave it as it is but add a statement saying that it deviates from the usual 802.3 convenetion.

Proposed Response *Response Status* **C**

REJECT. Based on discussion at the Jan 2001 Interim meeting, this diagram and the similar diagram in Clause 36 will be updated together at some time in the future. Adding a "statement saying that it deviates from the usual 802.3 convenetion" doesn't appear to make the diagram any clearer or more readable.

Cl **48** *SC* **48.2.3** *P* **255** *L* **31** # **1302**

Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **A**

What is a nine bit octet?

SuggestedRemedy

Fix

Proposed Response *Response Status* **C**

ACCEPT. Text note to be clarified.

Cl **48** *SC* **48.2.3** *P* **255** *L* **5** # **946**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

Should state that Dp represents a data octet containing the preamble pattern and Ds represents a data octet containing the SFD pattern. Also should probably state that 10GBASE-X PCS does not enforce these bytes.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Note or text to be added to describe Dp and Ds notation, and to note that the 10GBASE-X PCS doesn't enforce them.

Cl **48** *SC* **48.2.4** *P* **256** *L* **3** # **971**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A** *Hot Topic*

This clause doesn't address what happens to received columns that do not contain a valid ordered set. For instance, if a control character appears after a start or if an /S/ or /P/ appears on a lane other than lane 0. It appears from the transmit and receive state machines that such an ordered set will be transmitted as is. If so, we need to ensure that the RS contains the rules for delimiter protection. Also, I would like to see an explicit statement that /S/ and /P/ encoding/decoding is optional on lanes 1 to 3. That is, those codes can produce an /E/ on lanes other than 1.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Clarify ENCODE/DECODE functions. These functions shall do no more than simple encode and decode. Bad text p 254, l 52 in a note (delete the note)

Cl **48** *SC* **48.2.4** *P* **256** *L* **32** # **1304**

Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **A**

Also lines 38, 39, 47, 50, 51.The use of /Dxx.y/ might be confusing to some readers since the standard likes to use "x" and "y" as variables here and there. The implication is that /Dxx.y/Dxx.y/Dxx.y/ is a repeat of the same character across 3 lanes.

SuggestedRemedy

Remedy 1: put a note on the table to make it clear that this isn't what is intended here.
Remedy 2: replace with something like /Dx/Dy/Dz/ or D1/D2/D3....

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Note or text to be added to clarify the notation. All /Dxx.y/ should be /Dx.y/ and all /Kxx.y/ should be /Kx.y/

Cl **48** *SC* **48.2.4** *P* **256** *L* **4** # **982**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

It would be more clear to say: All ordered_sets are four code-groups in length and begin in Lane 0.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Suggested text, or similar, will be used to replace original text.

Cl **48** *SC* **48.2.4** *P* **256** *L* **44** # **950**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

Since the /K/ is only sent as part of ||K|| or ||T||, perhaps it does not belong in this table as a special pad code-group. Otherwise, the /P/, /S/ and /T/ should also appear here.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. To be deleted. Related comment: #979.

Cl **48** *SC* **48.2.4** *P* **256** *L* **48** # **571**

Stephen Haddock Extreme Networks

Comment Type **E** *Comment Status* **A**

10GFC is undefined.

SuggestedRemedy

Define 10GFC.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Reference to 10GFC to be deleted. Related comment: #61.

Cl **48** *SC* **48.2.4** *P* **256** *L* **5** # **1303**

Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **A**

Was a "column" ever defined?

SuggestedRemedy

Column should probably be defined where ever lane is first defined.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Text will be inserted where appropriate to define "column".

Cl **48** *SC* **48.2.4** *P* **256** *L* **50-51** # **61**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

Why are we including encodings for Fibre Channel in a 10Gbps Ethernet standard document?

SuggestedRemedy

Replace 10GFC ordered_sets section and call these encodings reserved. I could potentially accept a note attached to the table to say that these reserved values are used in a "sister" standards effort for ANSI...

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.4** *P* **256** *L* **53** # **62**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

Table boundary line is wrong thickness

SuggestedRemedy

Fix bottom of table line thickness

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.4.1** *P* **257** *L* **4** # **951**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Hopefully the content of data code-groups is not arbitrary but rather conveys the data the MAC sent.

SuggestedRemedy

Delete "arbitrary" and delete "The sequence ... where". Capitalize "any".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.4.1** *P* **257** *L* **7** # **952**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

This statement is not true. Receiving a column of data characters not proceeded by a start sends one to Data_Mode_Other state where the characters appear to be decoded. Also, data characters in the pulse ordered set are not preceeded by a start.Reception of a packet as unerrored by the RS requires a Start but decoding the /D/s does not.

SuggestedRemedy

Delete the sentence.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.4.2** *P* **257** *L* **16** # **953**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

The notation ||x|| has been defined as meaning one ordered set and not as a sequence of ordered sets so this sentence should be "An |||| consists of one ||K||, ||R|| or ||A|| ordered set, ..." Or "A sequence of |||| ordered sets consists of one or more ...."

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Second suggested rewording.

Cl **48** *SC* **48.2.4.2** *P* **257** *L* **19** # **954**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

"the occurence of the XGMII Terminate control character" could be "a ||T||" which would be more consistant with the rest of the statements.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.4.2** *P* **257** *L* **26** # **955**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Clarify whether ||A|| spacing is measured from the end of the first A to the start of the next A or from the end of the first A to the end of the next A. For instance consider: ||A|| ||K|| ||K|| ||R|| ||A||Is that an ||A|| spacing of 3 or 4? Neither this clause nor the state machine make it clear.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Indicate proper spacing per use of A_CNT. Rewrite text per state machine changes associated with ACNT.

Cl **48** *SC* **48.2.4.2** *P* **257** *L* **27** # **956**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

85 bits is the theoretical best case that a deskew function could achieve. Implementations may not achieve that. For instance, if a deskew function runs on a code-group rate clock rather than a bit clock, it will reduce to an 80-bit deskew capability. 41 UI is the current skew budget. There needs to be a spec provided (perhaps 48.2.4.2.3 is the right place) for skew tolerance of the deskew machine. Perhaps a skew tolerance of 70 UI at the PMA service interface to allow for some skew within the PCS input. Also, clarify that 85 is a theorectical limit or delete the sentence.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. 85 is the theoretical limit.

Cl **48** *SC* **48.2.4.2** *P* **257** *L* **30** # **958**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

I do not understand what this sentence is saying nor does it seem to have anything to do with idle decoding. Delete it and the following sentence because the rules for decoding valid and invalid code-groups are covered in the receiver state machine.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Delete last two sentences in f).

Cl **48** *SC* **48.2.4.2** *P* **257** *L* **34** # **959**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

The statement g is true, but it doesn't seem to relate to the rules on generating ||I|| groups and is covered in the state machines. Suggest deleting it.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.4.2** *P* **257** *L* **37** # **1305**

Jonathan Thatcher — World Wide Packets

Comment Type **T** *Comment Status* **A**

If the randomizer is not specifically specified, then the RX side of a port's EMI is controlled, to some degree, by the box on the other end of the link.

SuggestedRemedy

It seems like we should be able to identify, at least theoretically, a preferred pattern generator. Let's do it. If it doesn't matter, then we should be able to pick one without due concern :-)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Fixed by 900.

Cl **48** *SC* **48.2.4.2** *P* **257** *L* **37** # **63**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

Extra "the" in sentence

SuggestedRemedy

Replace "The purpose of the randomizing the" with "The purpose of randomizing the"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.4.2** *P* **257** *L* **39** # **960**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **R**

We should not restrict the polynomial to be 7th order. An implementation might chose to use a higher order polynomial.

SuggestedRemedy

"a uniformly distributed random integer r. A PRBS generator based on a 7th order polynomial PRBS will generate an adequately random value."

Proposed Response *Response Status* **C**

REJECT. Fixed by 900.

Cl **48** *SC* **48.2.4.2** *P* **257** *L* **40** # **961**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

While nothing said here is incorrect, it is difficult to tell what is specification and what is implementation example. Second, parts are a bit confusing. Third, the rules were just given above except there are some gaps in the rules such as they don't say that the random choices are to be uniformly distributed. Fourth, nothing says how the position of the first A is chosen when the first column following the I was a K.

SuggestedRemedy

Add any missing information to the list of rules and make the paragraph after a description of an example implementation. Change d and e tod) After the first ||I|| following a ||T|| and after each ||A|| the next ||A|| shall be sent after r non-||A|| columns where r is a uniform randomly distributed number between 16 and 31.
e) When not sending an ||A||, either ||K|| or ||R|| shall be sent with a random uniform distribution between the two.
Also add a rule:
The method of generating the random distributions is left to the implementor. A PRBS generator based on 7th order polynomial will provide adequate randomization. In the paragraph after the rules, insert the following after the second sentence to make it clear that the whole thing is example: "An example of randomizer implementation is illustrated in Figure 48-5. In the example, both ||A|| spacing and ...." Delete the last sentence of the paragraph.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Make wording consistet with fix in 900.

Cl **48** *SC* **48.2.4.2** *P* **257 - 259** *L* # **839**

Wesley Lee — Agere Systems

Comment Type **E** *Comment Status* **R**

The columns ||I||, ||A||, ||K||, and ||R|| are called "ordered_set". This is misleading since the symbols on each lane are not restricted to reside on any particular lane, unlike ||P||.

SuggestedRemedy

replace "order_set" with "code group"

Proposed Response *Response Status* **C**

REJECT. Ordered_sets are defined as "combinations of special and data code-groups", and do not necessarily require the code-groups to reside on specific lanes. Ordered_sets such as ||P|| are special cases that have more specific requirements.

Cl **48** *SC* **48.2.4.2** *P* **258** *L* **1** # **900**

Haulin, Tord — Optillion

Comment Type **T** *Comment Status* **A** *Hot Topic*

The PCS idle randomizer provides a pattern that has the properties required for a jitter test pattern. It could also serve as a built-in test pattern generator at no extra cost at all. Leaving it up the implementer to generate the integer random number r sequence, is the only thing precluding that additional service.

SuggestedRemedy

Mandate a specific implementation for the PCS idle randomizer.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Require the use of the example polynomials shown in Figure 48-5.

Cl **48** *SC* **48.2.4.2.1** *P* **258** *L* **21** # **64**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

Missing "the" in this sentence

SuggestedRemedy

Replace "comma pattern in incoming" with "comma pattern in the incoming"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.4.2.1** *P* **258** *L* **24** # **962**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

The difference between comma detection for 1000BASE-X and 10GBASE-X should be noted here. In writing 36.2.4.9 and clause 36 in general, our intent was to accomodate detectors that only sync'ed on comma+. We only hinted at that in the text but we certainly didn't state any requirement for detecting comma-. In Clause 48, we are statistically likely to generate half the K28.5s containing comma+ but unlike 36.2.4.9, we do not make it a certainty. My understanding is that our intent is to require detectors to detect both kinds of commas. If so, we need to put that in as a requirement here.

SuggestedRemedy

Either add a statement that the comma detection of the synchronization is required to detect both comma+ and comma- or agree that 10 Gb/s implmentations may detect just one polarity of comma. I prefer the former as it leaves us more flexability if we want to add something to the code in the future and because it will sync fast even if a run of bad luck generates just one polarity of comma for a time.

Proposed Response *Response Status* **C**

ACCEPT. Require detection of both comma flavors.

Cl **48** *SC* **48.2.4.2.2** *P* **258** *L* **40** # **1071**

Ali Ghiasi Broadcom

Comment Type **T** *Comment Status* **A**

Table 48 does not describe in detial various implementation and where the compliance points are.

The SerDes RX has 20 UI of skew, if this is due to logical skew then where is the physical skew.

SuggestedRemedy

Add diagram and provide reference compliance points.

On the RX you may need to add another 1UI.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. 1 UI is in included for SerDes Rx physical skew per early proposals. Clarify in Table.

Cl **48** *SC* **48.2.4.2.2** *P* **258** *L* **43** # **963**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A** *Hot Topic*

SerDes should be PMA as we don't define a device named SerDes. We should allocate some skew to the PMD both transmit and receive. Does 1 UI for PMA transmit plus 1 UI for PCB cover the case where an XGXS provides the PCS/PMA functionality and there is just a retimer on the PHY side of the XAUI? 2 UI seems pretty difficult to acheive in that situation.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Skew budget should be sufficient. Optional retimers must deskew if they blow the skew budget. Add requirement for receive skew specification. Global change SerDes to PMA.

Cl **48** *SC* **48.2.4.2.2** *P* **258** *L* **44** # **966**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **R**

Does 1 UI cover the XAUI link or is it just for a short connection between PMA and PMD? Clarify what is covered.

SuggestedRemedy

Proposed Response *Response Status* **C**

REJECT. The table lists the skew for the PCB, which is described in the text as one of the "link elements" "of a 10GBASE-X link". Without any specific suggested rememdy to the comment, it isn't clear what additional clarification should be added.

Cl **48** *SC* **48.2.4.2.2** *P* **258** *L* **47** # **1306**

Jonathan Thatcher World Wide Packets

Comment Type **T** *Comment Status* **R** *Hot Topic*

Why does a SerDes Rx require 20 UI of skew? Is this a requirement or an artifact of some funky SerDes design?

SuggestedRemedy

?

Proposed Response *Response Status* **C**

REJECT. Per proposal dedrick_1_0100.pdf integrated into baseline proposal set.

Cl **48** *SC* **48.2.4.2.2** *P* **258** *L* **51** # **957**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

Clause 47 has a spec for the length of a unit interval but clause 48 does not and 802.3 does not define the term. Add a spec for unit interval or at least define it as the duration of a code bit.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Define clause 48 UI as 320 ps.

Cl **48** *SC* **48.2.4.2.2** *P* **272** *L* **4** # **1018**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

It is always "during the synchronization process" because the process is running all the time. Also realignment only happens in LOSS_OF_SYNC.

SuggestedRemedy

When in the LOSS_OF_SYNC state, the PCS ...

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Text to be replaced as suggested or with similar text.

Cl **48** *SC* **48.2.4.2.3** *P* **259** *L* **6** # **968**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **R**

Since the text here says that idles may be deleted in the unencoded data stream, it needs to include the requirement that such removal not reduce the length of the idle to less than 5 octets (including the idles in the T column). Also, the first ||R|| after a ||T3|| shall not be deleted unless there is another ||I|| following it since two frames could be separated by an idle of ||A|| ||R|| ||R|| and if both Rs are deleted it would be a 4 byte idle.

SuggestedRemedy

Proposed Response *Response Status* **Z**

REJECT. Clarify Text.

Cl **48** *SC* **48.2.4.2.3** *P* **272** *L* **28** # **1025**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

"These states" and "alignment errors due to low bit error rate" It isn't a misalignment because the alignment is still correct but a bit error caused detection of a false alignment error.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Clarify text.

Cl **48** *SC* **48.2.4.2.3** *P* **272** *L* **28** # **578**

Stephen Haddock — Extreme Networks

Comment Type **E** *Comment Status* **A**

Incomplete phrase.

SuggestedRemedy

Change "low bit" to "low bit error rate".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.4.2.3** *P* **273** *L* **33** # **580**

Stephen Haddock — Extreme Networks

Comment Type **T** *Comment Status* **R** *SM*

The name BYTE_SLIP_WAIT implies some purpose to this state that is not obvious from the state machine or the text. I suspect that it assumes that any deskew_error is caused by a byte slip in one or more lanes which would cause consecutive deskew_error indications and lead to align_status=FAIL without the desired hysteresis. If this is the case then it seems there should be an analogous state preventing a single byte slip from causing a transition both in and out of ALIGN_ACQUIRED_3. There also is the possibility that an ||A|| column could get spread over 3 or 4 consequtive columns rather than just 2, but should still be considered a single deskew_error. If we want to make sure a byte slip gets counted as a single deskew error even when it occurs with adjacent ||A|| columns, then we should wait for a column with no /A/ before looking for a new deskew_error.

SuggestedRemedy

Add a transition from BYTE_SLIP_WAIT back to the same state with the condition "(SUDI * deskew_error) + SUDI([||A||])".
Change the transition between BYTE_SLIP_WAIT and ALIGN_ACQUIRED_2 to "SUDI(![||A||]) * !deskew_error".
Add a new state "BYTE_SLIP_WAIT_2".
Add a transition from ALIGN_ACQUIRED_2 to BYTE_SLIP_WAIT_2 with the condition "SUDI * deskew_error".
Add a transition from BYTE_SLIP_WAIT_2 back to the same state with the condition "(SUDI * deskew_error) + SUDI([||A||])".
ADD a transition from BYTE_SLIP_WAIT_2 and ALIGN_ACQUIRED_3 with the condition "SUDI(![||A||]) * !deskew_error".

Proposed Response *Response Status* **C**

REJECT. Ambivalent audience

Cl **48** *SC* **48.2.4.2.3** *P* **273** *L* **33** # **582**

Stephen Haddock — Extreme Networks

Comment Type **T** *Comment Status* **A** *SM*

The state machine can spend a long time in ALIGN_ACQUIRED_2 or ALIGN_ACQUIRED_2A without seeing ||A|| but without testing the NO||A|| function or changing the align_status variable to NOA.

SuggestedRemedy

Eliminate the ALIGN_ACQUIRED_NOA state.
Change "align_status <= OK" to "align_status <= NO||A||" in ALIGN_ACQUIRED_1, and add this term to all ALIGN_ACQUIRED_x and BYTE_SLIP_WAIT_x states.
Change the value returned by the NO||A|| function from TRUE/FALSE to NOA/OK.
Editorial: Change the name of "NO||A||" function to "GOT||A||?".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Fixed by 1023.

Cl **48** *SC* **48.2.4.2.3** *P* **273** *L* **39** # **581**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A** *SM*

The ALIGN_ACQUIRED_3 state has an incomplete set of exit conditions. Any "SUDI" other than ||A|| or deskew_error does not cause a transition and will not generate "AUDI".

SuggestedRemedy

Add a transition from ALIGN_AQUIRED_3 back to itself with the condition "!deskew_error * SUDI(![||A||])".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.4.2.3** *P* **273** *L* **5** # **583**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A** *SM*

The any_sync_status=FAIL term in the transition from LOSS_OF_ALIGNMENT back to the same state is redundant with the universal transition to the same state.
The variable deskew_complete is unnecessary since it is the same as SUDI([||A||]).

SuggestedRemedy

Eliminate the variable deskew_complete.
Change the transition condition between LOSS_OF_ALIGNMENT and itself to SUDI(![||A||]).
Change the transition condition from LOSS_OF_ALIGNMENT to ALIGN_DETECT_1 to "any_sync_status=OK * SUDI([||A||])".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.4.3** *P* **259** *L* **15** # **969**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

Clause 46 does not use the terms Start event or Terminate event. It doesn't have any name for a transfer with an /S/ or /T/ in it.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Replace "XGMII Start and Terminate events" with "columns containing the XGMII Start and Terminate control characters" or similar text.

Cl **48** *SC* **48.2.4.3.1** *P* **259** *L* **19** # **591**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A**

The /S/ must appear in lane zero for ||S|| to be recognized.

SuggestedRemedy

Add the words "in lane 0" so that the sentence reads "... Start control character in lane 0 followed by any three data characters in XGMII lanes 1 through 3."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.4.3.1** *P* **259** *L* **19** # **970**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

It would be appropriate to add: Normally the three data characters will be the preamble pattern, but the PCS neither checks nor alters their content except to ensure that they are /D/ characters.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Suggested text or similar text will be added for clarification.

Cl **48** *SC* **48.2.4.3.1** *P* **259** *L* **21** # **973**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

This doesn't seem to be precisely true. The state machines will map idle to AKR whenever it occurs and will map anything else presented to them to whatever is presented on XGMII is not idle (! TX = idle) even if it doesn't start with a start.

SuggestedRemedy

Either change this text or change the state machine.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Delete sentence starting with: "Packet initiation…

Cl **48** *SC* **48.2.4.3.2** *P* **259** *L* **29** # **974**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

This statement is not precisely true. The receive and transmit state machines will transmit whatever is given to them if it is not idle and will send idle if they get it even without a T. Make it consistant. One way would be to delete the statement and let the state machines describe what happens when these ordered sets are received.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Delete sentence starting with: "Packet termination…

Cl **48** *SC* **48.2.4.3.2** *P* **259** *L* **38** # **976**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

This last sentence is unnecessary. It is referencing information a few lines away. Also the information in 48.2.4.4.1 does not have any additional details. Delete it.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Related comments: 841, 975.

Cl **48** *SC* **48.2.4.3.2** *P* **262** *L* **35** # **972**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

48.2.4.3.1 does not mention /S/. 48.2.4 does not define or contain that label. Similarly for /T/. /R/ is mentioned in passing but not defined. They could be added to Figure 48-2 and the reference pointed to there instead which would be a concise way to do it. Another alternative is to add them to the clauses on their associated ordered sets.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. /S/, /T/, and /R/ definitions to be deleted from the list of State Variables, since they are not used by the state machines.

Cl **48** *SC* **48.2.4.3.2, 48.2.4.4.1** *P* **259, 260** *L* **37, 2** # **841**

Wesley Lee — Agere Systems

Comment Type **E** *Comment Status* **A**

Circular reference - section 48.2.4.3.2 refers to section 48.2.4.4.1, and section 48.2.4.4.1 refers back to 48.2.4.3.2. I don't think either of these references is helpful since the paragraph which these references are in, already describes what happens with the trailing disparity errors past the ||T||.

SuggestedRemedy

Remove both references.

Proposed Response *Response Status* **C**

ACCEPT. Related comments: 841, 976.

Cl **48** *SC* **48.2.4.4.1** *P* **259** *L* **52** # **978**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

46.2.3.2 seems to allow a DTE (or an RS which is pretty much the same thing) to intentionally transmit an /E/ to corrupt a frame. Either this statement should be removed or clause 46 should be changed.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Delete the sentence starting: "Invalid code-groups…

Cl **48** *SC* **48.2.4.4.1** *P* **260** *L* **1** # **572**

Stephen Haddock — Extreme Networks

Comment Type **T** *Comment Status* **A**

This sentence contradicts a nearly identical sentence in 48.2.5.3.2, and the two sections reference each other "for additional details".

SuggestedRemedy

Change "indicated as /E/ within the column" to "indicated with /E/ within the ||T|| column". Since section 48.2.4.3.2 has slightly more detail than 48.2.4.4.1, remove the reference to 48.2.4.4.1 from 48.2.4.3.2.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.4.4.1** *P* **260** *L* **3** # **975**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

The reference is pointing to a sentence or two half a page earlier. It is unnecssary - delete it.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Related comments: 841, 976.

Cl **48** *SC* **48.2.4.4.2** *P* **260** *L* **7** # **979**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Suggest either this subclause be deleted or the other special code groups be added. Preferably the former as the material is adequately covered in the description of ||T||.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. To be deleted. Related comment: # 950.

Cl **48** *SC* **48.2.4.5.1** *P* **260** *L* **17-19** # **842**

Wesley Lee — Agere Systems

Comment Type **E** *Comment Status* **A**

There is no mention within clause 48 what ||P|| specifically looks like.

SuggestedRemedy

Provide cross reference back to section 46.2.6

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The text and Table 48-3 define what ||P|| "specifically looks like", however, a reference to 46.2.6 for the specific data values may be helpful.

Cl **48** *SC* **48.2.4.6** *P* **260** *L* **27** # **909**

Healey, Adam — Agere Systems

Comment Type **T** *Comment Status* **A**

"The absolute delay value ranges from approximately 14.4 nsec to 33.6 nsec." is inconsistent with Table 48-5.

SuggestedRemedy

Change to read: "The maximum permissible delay through the transmit and receive path of the 10GBASE-X PCS are given in Table 48-5."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. OBE per 980.

Cl **48** *SC* **48.2.4.6** *P* **260** *L* **27** # **980**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *Thaler, Pat*

The receiver also needs a pipeline delay to look ahead at the ordered set after ||T||. I'm not sure why this subsection exists because the delay spec is in 48.5.1 which sets the maximum from MDI to XGMII at 275 bit times which is 27.5 ns which means the 33.6 ns mentioned here would blow the budget.

SuggestedRemedy

Delete this and consider whether the value in 48.5.1 should be increased.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Delete per suggested remedy and see other comments on this issue for delay value changes.

Cl **48** *SC* **48.2.5** *P* **260** *L* **45** # **981**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

The state Receive in figure 48-10 appears to be a timeless state.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Related comment: #65.

Cl **48** *SC* **48.2.5** *P* **260** *L* **45** # **65**

Brown, Benjamin J — AMCC

Comment Type **T** *Comment Status* **A** *SM*

The RECCEIVE state in the PCS Receive state diagram is a timeless state

SuggestedRemedy

Remove the editor's note and list the RECEIVE state in the PCS Receive state diagram as a timeless state.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.1** *P* **269** *L* **18** # **569**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A** *Hot Topic, SM*

In a minimum IFG there will be two full columns following ||T|| and prior to the next ||S||. When fault_det=0 it is guaranteed that there will be ||R|| in the second column after ||T|| which prevents an extended sequence of frames with no opportunities for clock tolerance adjustment. When fault_det=1, however, the number of frames without an ||R|| column becomes statistical rather than guaranteed, since the two columns following ||T|| will be randomly selected to be ||A|| followed by ||P|| or ||K|| followed by ||R||.

There are very few options left for improving this situation. The first column following ||T|| must be ||A|| or ||K|| for proper error detection at the end of the packet, and we want some assurance that both ||A|| and ||K|| will appear even in a long sequence of packets with minimum IFG. We also want to make sure we have a deterministic occurence of ||R|| for clock tolerance adjustment opportunities. We also want to make sure we can signal ||P|| between frames.

The best proposal I can come up with is to deterministically alternate between ||A||-||P|| and ||K||-||R|| as the first two columns after ||T||.

SuggestedRemedy

Add a variable "next_ifg" that can take on values of either "A" or "K".
Initialize by adding "next_ifg <= A" in START_TX.
Change transition between SEND_DATA and SEND_A to:
"TX_CLK * (TX=||IDLE|| + TX=||P|| * fault_det) * next_ifg=A"
Change transition between SEND_DATA and SEND_K to:
"TX_CLK * (TX=||IDLE|| + TX=||P|| * fault_det) * next_ifg=K"
Add "next_ifg <= K" in SEND_A.
Add "next_ifg <= A" in SEND_K.

Proposed Response *Response Status* **C**

ACCEPT. ACNT should be defined as sticky.

Cl **48** *SC* **48.2.5.1.1** *P* **261** *L* **12** # **66**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

The [/x/] notation is only conveyed by the SUDI message, not by AUDI or RX_CLK.

SuggestedRemedy

Remove everything in this definition after 48.2.5.1.6 and replace it with a period.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.1.1** *P* **261** *L* **23** # **67**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

The [||y||] notation is only conveyed by the SUDI and AUDI messages, not by RX_CLK.

SuggestedRemedy

Remove everything in this definition after the second 48.2.5.1.6 and replace it with a period. Also, replace the comma after the first 48.2.5.1.6 with " or the"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.1.2** *P* **261** *L* **38** # **985**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

Constants /D/, /Dx.y/, /I/, /K/, and /P/ are all defined but not used in the state machines or elsewhere in clause 48. Constants /S/ and /T/ are defined but not used in the state machines. They do appear in the delay spec, but ||S|| and ||T|| would appear to do the job just as well. I sort of like having them defined so they can be used in discussions, but the spec purist in me has a hard time with cluttering the state machine constants with things the state machines don't use. I suggest adding them as a column in the table where there values are defined and deleting them here.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Unused code-groups to be deleted.

Cl **48** *SC* **48.2.5.1.2** *P* **261** *L* **42** # **977**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **R**

Does an /E/ make a code group not a /D/? Is the intent that it causes one to follow the ELSE path from Receive state?

SuggestedRemedy

Proposed Response *Response Status* **C**

REJECT. It's not quite clear from the comment what change was being suggested. ||D|| is defined as a column of /D/, which is defined as "the set of 256 code-groups corresponding to valid data". An /E/ in any one or more lanes causes this to become an errored data column, not ||D||. This causes an "ELSE" transition in the receive state diagram.

Cl **48** *SC* **48.2.5.1.2** *P* **262** *L* **6** # **983**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **R**

Why introduce a second name for ||I||?

SuggestedRemedy

Proposed Response *Response Status* **C**

REJECT. ||IDLE|| is defined as an alias for ||I|| to make the state diagrams clearer and more readily readable.

Cl **48** *SC* **48.2.5.1.3** *P* **224** *L* **25** # **1012**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Why is this variable named mr_main_reset? There isn't any lesser reset defined. Also, we always use reset and power_on or'ed together. We could just define reset to be TRUE when during the time when the power supply is powering up as well as when we have gotten a reset command.Then we could use just reset.This also applies to state machines in other clauses.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Reset definition to be simplified.

Cl **48** *SC* **48.2.5.1.3** *P* **262** *L* **50-54** # **68**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

The PCS Transmit Source state machine would be more readable if the values for this variable were true & false rather than 1 & 0.

SuggestedRemedy

Replace the allowed values of 0 & 1 with False & True, respectively.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.1.3** *P* **263** *L* **15** # **986**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Should be: "All lanes have synchronized to the code group boundary but..."or "any_sync_status = OK but ...". With the current language it isn't clear whether the test is based on all lanes or at least one lane.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.1.3** *P* **263** *L* **20** # **997**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

This variable definition assumes sync_status is a boolean but it isn't. sync_status can take values FAIL, OKAY or NOA.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Fixed by 998.

Cl **48** *SC* **48.2.5.1.3** *P* **263** *L* **26** # **69**

Brown, Benjamin J — AMCC

Comment Type **T** *Comment Status* **A**

Rewrite the definitionfor cggood to match characters used in the state machine

SuggestedRemedy

Remove the "!" in front of the equation and replace the "member of set" symbol with the "not member of set" symble (the funny e with a line through it)

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.1.3** *P* **263** *L* **29** # **987**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Delete "r generated by a PRBS based on a 7th order polynomial.".The PRBS was an example of a good enough random number generator and not a requirement.Add "between 0 and 1 includive."

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Fixed by 900.

Cl **48** *SC* **48.2.5.1.3** *P* **263** *L* **31-32** # **70**

Brown, Benjamin J — AMCC

Comment Type **T** *Comment Status* **A**

Fix definition of values for this variable

SuggestedRemedy

Replace "random number is zero" with "LSB of random number is zero" and "random number is one" with "LSB of random number is one"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.1.3** *P* **263** *L* **40-45** # **71**

Brown, Benjamin J — AMCC

Comment Type **T** *Comment Status* **A**

This variable is only defined for /A/ not recognized in any lane or /A/ recognized in fewer than all lanes. What value should be used if /A/ is recognized in all lanes simultaneously?

SuggestedRemedy

Replace False definition with "/A/ not recognied in any lane or recognized in all lanes simultaneously"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.1.3** *P* **263** *L* **44** # **988**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

It should also be false when /A/ is recognized on all lanes.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See comment 71.

Cl **48** *SC* **48.2.5.1.3** *P* **263** *L* **49** # **72**

Brown, Benjamin J — AMCC

Comment Type **T** *Comment Status* **A**

The process of bit slipping in order to align on comma boundaries is called code-group alignment (see 48.2.2, page 253, line 28, 48.2.4.6, page 260, line 25 and most specifically 48.2.5.2.2, page 272, line 6) not code-group bit slipping.

SuggestedRemedy

Replace "code-group bit slipping" with "code-group alignment"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.1.3** *P* **264** *L* **16** # **860**

Tom Mathey — Independent

Comment Type **E** *Comment Status* **A**

There is no such thing as Control register bit 0.14. However, clause 45 does provide a full naming convention of x.0.14.

SuggestedRemedy

Change from “0.14” to “x.0.14”, but I am not sure what x should be for line 16, 20, and 27

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Text to be updated with appropriate register references.

Cl **48** *SC* **48.2.5.1.3** *P* **264** *L* **31** # **989**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

power_on is not explicitly set in any state so it is never True according to this definition. Rather than a variable with a default value, this should be described as an externally controlled variable.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.1.3** *P* **264** *L* **41** # **74**
Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A** *Hot Topic*

Nomenclature is confusing for this variable. I don't understand what is meant by putting lane[3:0] inside the <> for rx_code-group OR Perhaps this is intended to indicate that these rx_code-groups aren't perfectly synchronized and so you're actually getting 4 separate 10-bit code-groups from the 4 lanes rather than 1 40-bit code group from all the lanes simultaneously????? This issue comes up again in 48.2.5.1.6, page 268, line 13 with the definition of PMA_UNITDATA.indicate. It uses for a parameter rx_code-group<39:0> but this isn't exactly correct because each PMA will actually provide a separate PMA_UNITDATA.indicate with a 10-bit code-group for its parameter. In addition, there should actually be 4 separate SYNC_UNITDATA.indicates as well. See also 48.3.2, page 277, line 7 & 48.3.2.2, page 27

SuggestedRemedy

Replace rx_code-group<lane[3:0]> with rx_code-group<39:0> OR Provide a better definition of what is intended. In section 48.2.5.1.6, replace 40-bit PUDIs and SUDIs with 4 x 10-bit PUDIs and SUDIs. This will make the deskew state machine much more interesting...

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change variable to rx_unaligned<39:0>

Cl **48** *SC* **48.2.5.1.3** *P* **264** *L* **42** # **75**
Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

missing word

SuggestedRemedy

Replace "received column unaligned" with "received column of unaligned"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.1.3** *P* **264** *L* **8** # **73**
Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

The "link fault message" is never defined in this clause. There are relatively good descriptions of what you do with one should you get one but it never says how you recognize one.

SuggestedRemedy

Provide a definition of what a "link fault message" is.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Definition to be provided.

Cl **48** *SC* **48.2.5.1.3** *P* **265** *L* **30** # **788**
Furlong, Darrell R Aura Networks

Comment Type **E** *Comment Status* **A**

not in international format. Pg 265 line 15 and line 30 Value "16,384"Pg 266 line 52 Value "16,384"Pg 267 line 1 Value "65,536"Pg 267 line 6,7,14,19,20 Value "16,384"

SuggestedRemedy

Replace comma with a space.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.1.3** *P* **265** *L* **43** # **76**
Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

Wrong bit referenced

SuggestedRemedy

Replace "<39> is the last tx_bit" with "<9> is the last tx_bit"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.1.3** *P* **265** *L* **8** # **990**
Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A** *Hot Topic*

What we approved in November was adding a signal detect signal from PMD/PMA to PCS not 4 signal detects. The state machines here presume 4 lanes so there is no point to operating if 1 lane is down. Change this to a single boolean rather than a vector.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Support individual signal-detect inputs per lane. Support converged singal-detect input from PMD. Add to signal-detect variable definition: If only a single signal-detect signal is received from the PMD then its value shall be applied on each lane.

Cl **48** *SC* **48.2.5.1.4** *P* **266** *L* **20** # **991**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

This doesn't fit the definition of a variable with a default value because its non-default value is not set in a state machine.

SuggestedRemedy

Delete "default" and the note. Change the true definition to: The output of this function changes to true when the function detects a change in any_sync_status and stays true until the false condition is satisfied.Change the false definition to: The output of this function changes to false when the LINK_FAULT_IDLE state of the PCS receive state diagram is entered.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.1.4** *P* **266** *L* **27** # **992**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Change "running disparity error" to "running disparity error or /D/" and delete the next sentence. Also add "For all other lanes the value set previously is retained. This function can result in changing the T to an E or can change a K following the T to an E. Neither is necessary for running disparity error protection of the packet. The essential requirement is to perform the check for lanes before the T which have a D in the ||T||. Perhaps the function should be limited to those lanes.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Text to be updated using suggested or similar changes.

Cl **48** *SC* **48.2.5.1.4** *P* **266** *L* **28** # **594**

Stephen Haddock — Extreme Networks

Comment Type **T** *Comment Status* **A**

The check_end function should be more robust. It allows any control codes in the column following ||T||, whereas only ||A|| or ||K|| in this column is a valid sequence.

SuggestedRemedy

Replace "data codes" with "any code groups other than /A/ or /K/" in the last sentence in the definition of the check_end function.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.1.4** *P* **266** *L* **31** # **593**

Stephen Haddock — Extreme Networks

Comment Type **T** *Comment Status* **A**

The purpose and behavior of the convert_idle function is not very clear. I believe it's purpose is to convert all /K/ used as fill/pad following a /T/ to /IDLE/. If so, it needs to be more explicit at least in saying this applies only to lanes following the /T/, and I believe that any data characters following a /T/ should also be converted to /E/. More robust checking would convert any character other than /K/ to /E/.

SuggestedRemedy

Replace the definition of the convert_idle function with:
"Conversion function used by the PCS Receive process to validate a Terminate indication. When ||T|| is received, the code groups in all lanes subsequent to the lane containing /T/ are converted as follows:
a) all pad control codes (/K/) are converted to /IDLE/, and
b) any other data or control codes are converted to /E/."

Proposed Response *Response Status* **C**

ACCEPT. Fixed by 189.

Cl **48** *SC* **48.2.5.1.4** *P* **266** *L* **31** # **984**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

The only special code groups defined are /K/ and /E/ but /A/ and /R/ are also converted to idle. Since this is the covert during ||T||, it would be better to say "to convert /K/ to Idle control". However, what happens if an /A/, /K/ or /R/ is received in an invalid ordered set? Shouldn't they always decode to /I/? If so, convert_idle shouldn't be necessary.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. OBE by 189.

Cl **48** *SC* **48.2.5.1.4** *P* **266** *L* **31-34** # **189**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A**

Clause 48.2.5.1.4 on page 266 lines 31 to 34 define the convert_idle function. There is a problem here with the ||P|| since the function works on all lanes independently. This also conflicts with Idle Rule "f)" in clause 48.2.4.2 on page 257 that states only ||A||, ||K||, and ||R|| are converted to the ||I|| with all others mapped to data or control characters.

SuggestedRemedy

The words "all valid special code-groups" in line 31 should be replaced by "all ||A||, ||K||, and ||R||". The word "independently" should be removed from line 33.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The words "all valid special code-groups, with the exception of /E/," in line 31 should be replaced by "all /K/". The word "independently" is removed from line 33. Rename convert_idle to convert_terminate

Cl **48** *SC* **48.2.5.1.4** *P* **266** *L* **38** # **993**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

The function operates on the whole column so it should be "returns RXD<31:0> and RXC<3:0> as specified in 48.2.3 and 48.2.4." (Clause 36 isn't the right reference because it doen't cover the idle conversion and other features specific to 10 Gig decoding.) Delete the sentence about RXC. We shouldn't atempt to summarize the coding rules in a function spec when we have pages on them. RX could be used above in place of RXD<31:0> and RXC<3:0>

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. See also comment related to ENCODE/DECODE function text rewrite.

Cl **48** *SC* **48.2.5.1.4** *P* **266** *L* **46** # **994**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

It should be "returns the ... code-groups". Also, need to reference 48.2.3 and 48.2.4 for the coding rules.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.1.4** *P* **267** *L* **30** # **1002**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

This doesn't fit the definition of a variable with a default value because its non-default value is not set in a state machine.

SuggestedRemedy

Delete "default" and the note. Change the true definition to: The output of this function changes to true when the function detects a change in signal_detect and stays true until the false condition is satisfied.Change the false definition to: The output of this function changes to false when the LOSS_OF_SYNC state of the PCS synchronization state diagram is entered.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.1.4** *P* **267** *L* **6** # **995**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

This function does not need a default value and doesn't fit the definition of default. Delete "default" and the note. Also, the True definition would read better "in the last 16,384" There is no point in reseting the value on state entry because the state doesn't do anything to change the condition. If its value is changed to FALSE, at the next code group it will revert to TRUE unless the code group has an A and then it will go to FALSE anyway.These comments also apply to NO||A||

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Fixed by 998.

Cl **48** *SC* **48.2.5.1.5** *P* **267** *L* **38** # **1003**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A** *SM*

This should say that A_CNT is initialized with a random value between 16 and 31 when leaving the SEND_A, SEND_K, and SEND_RANDOM_A states and counts down once per PUDR or apply the suggested remedy which I prefer.All the .3 state machine counters that I can recall that are not explicitly incremented and decremented are up counters so it is important to make very clear that this is a down counter.

SuggestedRemedy

MAKE explicit in the PCS transmit state diagram by adding LOAD_A_CNT (defined as a function that loads a uniformly distributed value from 16 to 31 inclusive into A_CNT) to the SEND_A and SEND_RANDOM_A states and adding A_CNT <= A_CNT - 1 to all the other states START_TX (and perhaps SEND_DATA).

Proposed Response *Response Status* **C**

ACCEPT. Also see 569.

Cl **48** *SC* **48.2.5.1.5** *P* **267** *L* **40** # **1004**
Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**
Add that good_cgs is a 2 bit counter.

SuggestedRemedy

Proposed Response *Response Status* **C**
ACCEPT. Text to be modified to define good_cgs as a two bit counter. Related comment: #77.

Cl **48** *SC* **48.2.5.1.5** *P* **267** *L* **40-47** # **77**
Brown, Benjamin J — AMCC

Comment Type **T** *Comment Status* **A**
Missing or incorrect counter sizes

SuggestedRemedy
Replace the last 3 definitions with: good_cgs 2-bit consecutive valid code-group received counter. RP_CNT 7-bit receive Pulse ordered-set counter. TP_CNT 3-bit transmit Pulse ordered-set counter.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **48** *SC* **48.2.5.1.5** *P* **267** *L* **44, 47** # **844**
Wesley Lee — Agere Systems

Comment Type **E** *Comment Status* **A**
Description of RP_CNT and TP_CNT is reversed.

SuggestedRemedy
Reverse description

Proposed Response *Response Status* **C**
ACCEPT.

Cl **48** *SC* **48.2.5.1.6** *P* **268** *L* **10** # **1005**
Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**
This is a duplicate of the message at line 36. Delete

SuggestedRemedy

Proposed Response *Response Status* **C**
ACCEPT. Related comment: #596.

Cl **48** *SC* **48.2.5.1.6** *P* **268** *L* **35** # **596**
Stephen Haddock — Extreme Networks

Comment Type **E** *Comment Status* **A**
Definition of SYNC_UNITDATA.indicate occurs twice (line 9 and line 35).

SuggestedRemedy
Delete the second occurence of the SYNC_UNITDATA.indicate definition.

Proposed Response *Response Status* **C**
ACCEPT. Related comment: #1005.

Cl **48** *SC* **48.2.5.2.1** *P* **262** *L* **22,25** # **840**
Wesley Lee — Agere Systems

Comment Type **E** *Comment Status* **A**
Incorrect reference

SuggestedRemedy
Change line to read:
replace "48.2.4.2.3" to "48.2.4.5.1"

Proposed Response *Response Status* **C**
ACCEPT.Definition of /P/ to be deleted. Reference in definition of ||P|| to be changed from 48.2.4.2.3 to 48.2.4.5.1. Related comment: #985.

Cl **48** *SC* **48.2.5.2.1** *P* **268** *L* **43** # **1006**
Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**
It would be good to add a few lines describing the purpose of the fault message detection.

SuggestedRemedy

Proposed Response *Response Status* **C**
ACCEPT. Text to describe purpose of fault detection to be added.

Cl **48** *SC* **48.2.5.2.1** *P* **269** *L* # **80**
Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**
the variable fault_det has TRUE and FALSE values, not 0 & 1

SuggestedRemedy
Replace all conditions of "fault_det=1" with "fault_det"

Proposed Response *Response Status* **C**
ACCEPT. Related comment: 566.

Cl **48** *SC* **48.2.5.2.1** *P* **269** *L* # **79**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A** *SM*

Because there are 2 global entry conditions in this state machine and I expect the power_on_TRUE + mr_main_reset=TRUE global entry into state START_TX has precedence, the global entry into state SEND_DATA must be changed.

SuggestedRemedy

Replace global entry into state SEND_DATA with: power_on=FALSE * mr_main_reset=FALSE * TX_CLK * !(TX=||IDLE|| + TX=||P|| * fault_det)

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.2.1** *P* **269** *L* # **845**

Wesley Lee Agere Systems

Comment Type **T** *Comment Status* **A** *SM*

code_sel term is used inconsistently. code_sel = 1 should enable transitions to SEND_RANDOM_R and code_sel = 0 should enable transitions to SEND_RANDOM_K. This is consistent with draft 1.1.

SuggestedRemedy

make changes per comment above

Proposed Response *Response Status* **C**

ACCEPT. Fixed in 185.

Cl **48** *SC* **48.2.5.2.1** *P* **269** *L* # **78**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **R** *SM*

In clause 36, packets in progress are ignored when coming out of reset or power_on. Why isn't that done here?

SuggestedRemedy

Remove transition from START_TX to SEND_DATA. Add a variable called "STARTED" that is cleared to 0 in start START_TX and set to 1 in state SEND_K. Add the condition STARTED=1 to the equation for the global entry into state SEND_DATA.

Proposed Response *Response Status* **C**

REJECT. RS will discard packets without START. PCS should not block incoming stream.

Cl **48** *SC* **48.2.5.2.1** *P* **269** *L* # **847**

Wesley Lee Agere Systems

Comment Type **T** *Comment Status* **A** *SM*

From states SEND_K, SEND_RANDOM_K, SEND_P, RANDOM_R, and RANDOM_P the term "TX=||P|| does not need to be logically ANDed with "fault_det = 1". If I understand the intent of this diagram correctly, whether fault_det = 0 or 1 will have no effect on the exit transitions. This term would only affect the exit conditions to states SEND_A and SEND_RANDOM_A. Also the exit conditions to SEND_RANDOM_A don't seem correct. The two rightmost exit transtions should have "fault_det = 0".

SuggestedRemedy

1) Remove "fault_det = 1" term as an exit condition for states SEND_K, SEND_RANDOM_K, SEND_P, RANDOM_R, and RANDOM_P.
2) change "fault_det = 1" to "fault_det = 0" for the two rightmost exit transitions for state SEND_RANDOM_A.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. OBE per 1008.

Cl **48** *SC* **48.2.5.2.1** *P* **269** *L* # **81**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

In state SEND_DATA, the ENCODE function is defined to operate on a single octet from the XGMII. In this state, the ENCODE function operates on all 4 octets simultaneously.

SuggestedRemedy

Modify definition of ENCODE function so that it operates on all 4 octets with 4 independent but synchronous processes (?). This function most also be defined to replace the IDLES after the T with K to perform the padding function.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Add a function to perform Idle replacement.

Cl **48** *SC* **48.2.5.2.1** *P* **269** *L* **1** # **182**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A** *SM*

Figure 48-6 PCS transmit source state diagram on page 269. State SEND_K should transition to state SEND_RANDOM_R.

SuggestedRemedy

Delete the “A” box and make the line connect to the arc from the SEND_A to the SEND_RANDOM_R.

Proposed Response *Response Status* **C**

ACCEPT. Fixed in 1014.

Cl **48** *SC* **48.2.5.2.1** *P* **269** *L* **1** # **186**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A** *SM*

Figure 48-6 PCS transmit source state diagram on page 269. The transitions from SEND_RANDOM_A to SEND_RANDOM_K and SEND_RANDOM_R should have "TX = ||IDLE|| * !fault_det" instead of "(TX=||IDLE|| + TX=||P||*fault_det=1)"

SuggestedRemedy

Replace the "(TX=||IDLE|| + TX=||P||*fault_det=1)" term with "TX = ||IDLE|| * !fault_det" in the transitions from the SEND_RANDOM_A state to both the SEND_RANDOM_K and SEND_RANDOM_R states.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.2.1** *P* **269** *L* **1** # **185**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A** *SM*

Figure 48-6 PCS transmit source state diagram on page 269. State SEND_RANDOM_K has the transitions to the SEND_RANDOM_R and SEND_RANDOM_K reversed. "code_sel = 0" should always go to SEND_RANDOM_K and "code_sel = 1" goes to SEND_RANDOM_R.

SuggestedRemedy

Swap the "code_sel = 0" and the "code_sel = 1" in the transition equations for the SEND_RANDOM_K state.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.2.1** *P* **269** *L* **1** # **187**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A** *SM*

Figure 48-6 PCS transmit source state diagram on page 269. The transition equation from the SEND_RANDOM_A state to the SEND_RANDOM_P state should be the same as the transition from the SEND_A state to the SEND_P state.

SuggestedRemedy

Change the transition equation from the SEND_RANDOM_A state to the SEND_RANDOM_P state to be the same as the transition from the SEND_A state to the SEND_P state.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.2.1** *P* **269** *L* **10-11** # **846**

Wesley Lee Agere Systems

Comment Type **T** *Comment Status* **R** *SM*

Not all exit conditions are specified for SEND_DATA. What happens if TX=||P|| * !fault_det? (That is, a pulse column has arrived but the fault has not been recognized per state diagram fig 48-7.

SuggestedRemedy

The condition "TX=||P|| * !fault_det" by definition of fig 48-7 means that a ||P|| is not recognized. This condition should allow for the exit transition to either SEND_A or SEND_K depending upon the states of "code_sel" and "A_CNT".

Change line to read:
replace "TX=||IDLE|| + TX=||P|| * fault_det" with
"TX=||IDLE|| + TX=||P|| + fault_det"

Proposed Response *Response Status* **C**

REJECT. OBE per 1008.

Cl **48** *SC* **48.2.5.2.1** *P* **269** *L* **11** # **568**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A** *SM*

Requiring A_CNT0=1 to transition from SEND_DATA to SEND_A means there is a much higher probability of sending ||K|| after a frame then of sending ||A||. The purpose of testing code_sel in the transitions was to make the probability approximately equal. One possible solution is not to test A_CNT0 on transitions from SEND_DATA. The other is to make it so the transition to SEND_A occurs with "code_sel=1 + A_CNT0=1".

SuggestedRemedy

Change "code_sel=1 * A_CNT0=1" to "code_sel=1 + A_CNT0=1" in the transition from SEND_DATA to SEND_A.
Change "code_sel=0 + A_CNT0=0" to "code_sel=0 * A_CNT0=0" in the transition from SEND_DATA to SEND_K.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Fixed in 322.

Cl **48** *SC* **48.2.5.2.1** *P* **269** *L* **18-48** # **566**

Stephen Haddock Extreme Networks

Comment Type **E** *Comment Status* **A**

The transition terms use "fault_det" and "fault_det=1" inconsistently. Pick one.

SuggestedRemedy

Change all instances of "fault_det=1" to simply "fault_det".

Proposed Response *Response Status* **C**

ACCEPT. Related comment: 80.

Cl **48** *SC* **48.2.5.2.1** *P* **269** *L* **19** # **564**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A** *SM*

Transition out of SEND_K should go to SEND_RANDOM_R, not to "A". This guarantees the second column after ||T|| is always ||R||.

SuggestedRemedy

Change transition out of SEND_K to go to SEND_RANDOM_R.

Proposed Response *Response Status* **C**

ACCEPT. Fixed in 1014.

Cl **48** *SC* **48.2.5.2.1** *P* **269** *L* **31-35** # **565**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A** *SM*

Transitions out of SEND_RANDOM_K to SEND_RANDOM_K and SEND_RANDOM_R are inconsistent with other transitions in their interpretation of the code_sel variable.

SuggestedRemedy

Transition from SEND_RANDOM_K back to SEND_RANDOM_K should occur when code_sel=0, and the transition from SEND_RANDOM_K to SEND_RANDOM_R should occur when code_sel=1.

Proposed Response *Response Status* **C**

ACCEPT. Fixed in 185.

Cl **48** *SC* **48.2.5.2.1** *P* **269** *L* **39** # **567**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A** *SM*

Transition out of SEND_RANDOM_A don't make sense.

SuggestedRemedy

Change transitions from SEND_RANDOM_A to:
-- transition to SEND_RANDOM_P when "TX_CLK * fault_det * (TX=||IDLE|| + TX=||P||)"
-- transition to SEND_RANDOM_R when "TX_CLK * !fault_det * TX=||IDLE|| * code_sel=1"
-- transition to SEND_RANDOM_K when "TX_CLK * !fault_det * TX=||IDLE|| * code_sel=0"

Proposed Response *Response Status* **C**

ACCEPT. Fixed by 186 and 187.

Cl **48** *SC* **48.2.5.2.1** *P* **270** *L* **29** # **587**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A** *SM*

FAULT_MSG_3A is an unnecessary state. It is redundant with FAULT_MSG_2A.

SuggestedRemedy

Eliminate the FAULT_MSG_3A state (and all transitions into and out of this state).
Add a transition from FAULT_MSG_RECOG to FAULT_MSG_2A with condition "TX_CLK * TX!=||P||".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. OBE per 1008.

Cl **48** *SC* **48.2.5.2.1** *P* **270** *L* **3** # **1008**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A** *Hot Topic, SM*

The relaying of Pulse ordered sets by the PCS has been made more complex than I intended when I suggested sending them after A. The RS needs to detect the fault message condition by watching for multiple occurances. The PCS does not need this machine.It is adeqate for the PCS to watch for pulse messages transmit the last pulse message since the last A after the next A.

SuggestedRemedy

Replace with a two state machine. The first state is P_DET_IDLE and has no actions. Enter this state on power on or reset. Transition from this state to PULSE_DET on TX=||P||. In PULSE_DET, set TPMSG <= ENCODE(TX) and set pulse_det <= TRUE. In Figure 48-6 change fault_det to pulse_det. Change TFMSG to TPMSG. In SEND_P and SEND_RANDOM_P, add pulse_det <= FALSE. On the global transition into SEND_DATA, delete '*fault_det'.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Per suggested remedy plus changes per other related comments.

Cl **48** *SC* **48.2.5.2.1** *P* **270** *L* **7** # **1007**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

This presumes that ||P|| is always a fault message. Consider changing FAULT to PULSE so that this machine doesn't infer meaning on Pulse ordered sets.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. State machine is being modified to update behavior of fault messaging based on January 2001 Interim Meeting discussion. State names will be modified to eliminate reference to fault behavior unless specifically implied.

Cl **48** *SC* **48.2.5.2.2** *P* **271** *L* # **82**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A** *SM*

new state transitions

SuggestedRemedy

Replace transition which keeps machine in state SYNC_ACQUIRED_1 with cggoog * NO/A/=FALSE Replace transition from SYNC_ACQUIRED_1 to SYNC_ACQUIRED_1A with cggood * NO/A/=TRUE Replace transition which keeps machine in state SYNC_ACQUIRED_1A with cggood * PUDI(!/A/) Replace transition from SYNC_ACQUIRED_1A to SYNC_ACQUIRED_1 with cggood * PUDI(/A/) - this could probably be minimized to just PUDI(/A/)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. OBE in 998.

Cl **48** *SC* **48.2.5.2.2** *P* **271** *L* **27** # **998**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A** *SM*

Please explain the purpose of SYNC_ACQUIRED_1A or delete it because it doesn't seem to do anything useful. sync_status = NOA isn't used as an input and any_sync_status ignores it.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.2.2** *P* **271** *L* **28** # **573**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A** *SM*

The criteria for changing sync_status<n> from NOA to OK appears to be the reception of a comma. The is inconsistent with the text and the names of the NO/A/ function and NOA value, however it makes more sense that this state machine would flag the lack of a comma rather than the lack of /A/. The note on page 248 says this was changed because the idle sequence between packets guarantees ||A|| but not ||K||. In fact there is no more guarantee of ||A|| between packets than ||K||. We should go back to the draft 1.1 version with a NOCOMMA function that counts the number of code groups without a /K/.

SuggestedRemedy

Change "NO/A/" function back to "NOCOMMA" (actually I prefer "GOT/K/?") and watch for the occurence of /K/. Change the sync_status<n> value from NOA to NOK.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. OBE per 998.

Cl **48** *SC* **48.2.5.2.2** *P* **271** *L* **30** # **575**

Stephen Haddock Extreme Networks

Comment Type **E** *Comment Status* **A**

Inconsistent use of cgbad/cggood versus PUDI([/INVALID/]) throughout the state machine.

SuggestedRemedy

Pick one way of referring to valid versus invalid code groups and use it consistently.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.2.2** *P* **271** *L* **31** # **576**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A** *SM*

Not testing the NO/A/ function while in SYNC_ACQUIRED_2 (and _2A, _3, _3A, _4, and _4A) can indefinately delay changing sync_status from OK to NOA. One option for solving this would be to create another state for each of these states for setting sync_status <= NOA. This would make the state machine very confusing. Since the NO/A/ function effectively creates a background state machine that runs in parallel, I suggest calling the function as part of the sync_status assignment rather than creating a state for the assignment.

SuggestedRemedy

Eliminate the SYNC_ACUIRED_1A state. Change the name of "NO/A/" function to "GOT/A/?" (actually prefer "GOT/K/?" and looking for comma but that depends on the acceptance of another comment). Change the values returned by the function from TRUE/FALSE to OK/NOA. Change "sync_status <= OK" to "sync_status <= GOT/A/?" in SYNC_ACQUIRED_1 and add this term into all other SYNC_ACQUIRED_x states.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. OBE per 998.

Cl **48** *SC* **48.2.5.2.2** *P* **271** *L* **36** # **574**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A** *SM*

The transition from SYNC_ACQUIRED_2A to SYNC_ACQUIRED_1 when NO/A/=TRUE will cause sync_status to pulse from NOA to OK and back to NOA.

SuggestedRemedy

Transition from SYNC_ACQUIRED_2A to SYNC_ACQUIRED_1 when "PUDI([/COMMA/]) * NO/A/=FALSE". Add a transition from SYNC_ACQUIRED_2A to SYNC_ACQUIRED_1A when "PUDI([/COMMA/]) * NO/A/=TRUE".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. OBE per 998.

Cl **48** *SC* **48.2.5.2.2** *P* **272** *L* **4** # **577**

Stephen Haddock Extreme Networks

Comment Type **E** *Comment Status* **A**

The statement "sync_status<3:0>=FAIL" is ambiguous since it is not clear whether this means sync_status<n>=FAIL on any lane or on all lanes. In other places (line 12 and line 23) it says explicitly that it means on any lane, but in these cases it would be more appropriate to use "sync_status<n>=FAIL" rather than "sync_status<3:0>=FAIL". Alternatively these sentences could refer to the any_sync_status variable, but I have a problem with this variable also since the "any_sync_status=FAIL" case is self-explanatory but the "any_sync_status=OK" case is misleading.

SuggestedRemedy

Change the "sync_status<3:0>" variables to "lane_sync_status<3:0>".
Use "lane_sync_status<n>" when referring to any variable within this set, and use "lane_sync_status<3:0>" when referring to the entire set.

Change the "any_sync_status" variable to simply "sync_status". It's value is FAIL when lane_sync_status<n>=FAIL on any lane, and is TRUE when lane_sync_status<n>!=FAIL on all lanes.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.2.3** *P* **272** *L* **28** # **83**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

Missing words

SuggestedRemedy

Replace "reasonably low bit" with "reasonably low bit error rate"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.2.3** *P* **273** *L* # **85**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A** *SM*

Missing a condition on the transition from state BYTE_SLIP_WAIT to ALIGN_ACQUIRED_2

SuggestedRemedy

Add the condition SUDI on the transition from state BYTE_SLIP_WAIT to ALIGN_ACQUIRED_2

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.2.3** *P* **273** *L* # **84**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

From an earlier comment I made, I believe there are 4 SUDIs provided from 4 different sync state machines. How are they reconciled in this machine?

SuggestedRemedy

None...

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Clarify per earlier comment. Related to rx_unaligned fix in 74.

Cl **48** *SC* **48.2.5.2.3** *P* **273** *L* **1** # **188**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A** *SM*

Figure 48-9 PCS deskew state diagram on page 273. There needs to be another BYTE_SLIP_WAIT state before the transition into the ALIGN_ACQUIRED_3 state. This is needed so a back-to-back deskew_error from a single ||A|| does not drop the SM into the LOSS_OF_ALIGNMENT state. Additionaly, I'm not sure of the purpose of the ALIGN_ACQUIRED_2A state.

SuggestedRemedy

a) change the name of the ALIGN_ACQUIRED_3 state to BYTE_SLIP_WAIT_2 and delete the transition to LOSS_OF_ALIGNMENT. and ...
b) Change the name of the ALIGN_ACQUIRED_2A state to ALIGN_ACQUIRED_3 and leave the transitions as is.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Only state name changes accepted.

Cl **48** *SC* **48.2.5.2.3** *P* **273** *L* **27** # **999**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A** *SM*

Please explain the purpose of ALIGN_ACQUIRED_1A or delete it because it doesn't seem to do anything useful. align_status = NOA isn't used as an input and any_sync_status ignores it.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Deleted state ALIGN_ACQUIRED_NOA

Cl **48** *SC* **48.2.5.2.3** *P* **273** *L* **33** # **579**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A** *SM*

If both BYTE_SLIP_WAIT and ALIGN_ACQUIRED_2 generate AUDI, then presumably there should be "SUDI" on the transition between them to maintain correct timing.

SuggestedRemedy

Add "SUDI" to the transition from BYTE_SLIP_WAIT to ALIGN_ACQUIRED_2.

Proposed Response *Response Status* **C**

ACCEPT. Fixed by 85.

Cl **48** *SC* **48.2.5.2.4** *P* **272** *L* **33** # **1142**

Ishida, Osamu NTT

Comment Type **T** *Comment Status* **A** *SM*

The X-PCS Receive process with Figure 48-10 will generate spurious ||A||, ||K||, or ||R|| on XGMII at FAULT_MSG_1A and FAULT_MSG_2A states.

SuggestedRemedy

Take the same approach as the X-PCS Transmit process does with Figures 48-6 and 48-7. Break Figure 48-10 into two state diagrams; a receive state diagram and a fault message detect state diagram.The fault message detect state diagram will set/clear RX_fault_detect that will be referenced at RECEIVE state in the receive state diagram. When RX_fault_detect is set, ||P|| or ||IDLE|| reception will result in either FAULT_MSG(RXD=DECODE(RFMSG)) or FAULT_IDLE(RXD=0b07070707,RXC=0b1111) depending on the value of an 1-bit counter for alternating.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. OBE per 1159.

Cl **48** *SC* **48.2.5.2.4** *P* **272** *L* **45** # **1026**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

"...are mapped to corresponding XGMII..."

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.2.4** *P* **272** *L* **45** # **1027**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **R**

Does this mean that an A, K or R maps to an XGMII I or to clause 36 A, K, R?

SuggestedRemedy

Proposed Response *Response Status* **C**

REJECT. Can't parse the comment. Note sent to commenter on 1/16/01.

Cl **48** *SC* **48.2.5.2.4** *P* **272** *L* **50** # **1029**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

Fault mode is unnecessary. There is no reason to increase the density of ||P|| signals at the output to the XGMII. Just pass on the ||P|| signals that are received.

SuggestedRemedy

Delete fault mode.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.2.4** *P* **272** *L* **54** # **1028**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

The receive process doesn't do anything to validate delimiters. If a packet starts without a start delimiter, it will still send on what it received. It just won't perform check_end (but it shouldn't have to because RS will see it got a bad packet - on without a start). If a packet ends without a delimiter, the process just goes back to idle. The only extra check receive performs is to check lane disparity for the column after T.

SuggestedRemedy

Delete the sentence or change it to say "The Receive process is responsible for checking the column after T to ensure that disparity errors there which may indicate an error within the packet cause an /E/ within the packet.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Cl **48** *SC* **48.2.5.2.4** *P* **273** *L* # **848**

Wesley Lee Agere Systems

Comment Type **T** *Comment Status* **A** *SM*

The exit condition for BYTE_SLIP_WAIT is unlabeled. What is the purpose of this state? What happens the alignment shifts by two byte times. Should there be a blind time before looking at the next set of /A/'s.

SuggestedRemedy

Label the exit transition so that relevance of this state is clear.

Proposed Response *Response Status* **C**

ACCEPT. Fixed by 85.

Cl **48** *SC* **48.2.5.2.4** *P* **274** *L* # **88**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A** *SM*

If ||P|| protocol is being followed, there are several transitions that should never occur. I propose simplifying the state machine:

SuggestedRemedy

Remove the following transitions: FAULT_MSG_1 -> FAULT_MSG_2 FAULT_MSG_2 -> FAULT_MSG_RECOG FAULT_MSG_RECOG -> FAULT_IDLE_PDET FAULT_IDLE_PDET -> FAULT_RFMSG_PDET FAULT_RFMSG_PDET -> FAULT_MSG_RECOG Replace the conditions on the following transitions with "AUDI": FAULT_MSG_1 -> FAULT_MSG_1A FAULT_MSG_2 -> FAULT_MSG_2A FAULT_MSG_RECOG -> FAULT_IDLE_NOP FAULT_IDLE_PDET -> FAULT_RFMSG_NOP FAULT_RFMSG_PDET -> FAULT_IDLE_NOP

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. OBE. All referenced stated deleted per 1159.

Cl **48** *SC* **48.2.5.2.4** *P* **274** *L* # **86**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A** *SM*

This state machine should not use outputs of the sync machines but rather the output of the deskew machine

SuggestedRemedy

Replace all instances (5) of "any_sync_status" with "align_status"

Proposed Response *Response Status* **C**

ACCEPT. Fixed in 589.

Cl **48** *SC* **48.2.5.2.4** *P* **274** *L* # **843**

Wesley Lee Agere Systems

Comment Type **T** *Comment Status* **A** *SM*

It appears that a single ||P|| can bring the receiver down 64 column times. For example, with the reception of one ||P|| the state diagram transitions from RECEIVE to FAULT_MSG_1. Then if the next symbol is not ||P||, the state diagram will spin in FAULT_MSG_1A for 64 column times. A good packet received at this time would be lost.

SuggestedRemedy

From states FAULT_MSG_1, FAULT_MSG_1A, FAULT_MSG_2, FAULT_MSG_2A allow ||S|| to exit these states and transition to RECEIVE.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. OBE by 1159.

Cl **48** *SC* **48.2.5.2.4** *P* **274** *L* **1** # **871**

Lynskey, Eric R UNH IOL

Comment Type **T** *Comment Status* **A** *SM*

The transitions from the different states of the PCS receive state diagram, in particular into the RECEIVE state should be removed in order to make the diagram more readable, and replaced with the boxed number representation. In addition, the boxed/circled numbers 1, 2, and 3 should be renumbered, because 2 and 3 are identical.

SuggestedRemedy

Add a new, separate, entrance to the RECEIVE state that is a number one in a circle. Remove all other transitions into the RECEIVE state except the "power_on=TRUE + mr_main_reset=TRUE" transition. From the LINK_FAULT_IDLE state, replace the line to RECEIVE with a boxed "1". From the LOCAL_FAULT_INDICATE state, replace the line to RECEIVE with a boxed "1". From the DATA_MODE_START state, replace the line to RECEIVE with a boxed "1". From the TERMINATE state, replace the line to RECEIVE with a boxed "1". From the FAULT_MSG_1A state, replace the line to RECEIVE with a boxed "1". From the FAULT_MSG_2A state, replace the line to RECEIVE with a boxed "1". From the FAULT_IDLE_NOP state, replace the line to RECEIVE with a boxed "1". From the FAULT_RFMSG_NOP state, replace the line to RECEIVE with a boxed "1". From the IDLE_MODE state, replace the line to RECEIVE with a boxed "1". From the DATA_MODE_OTHER state, replace the line to RECEIVE with a boxed "1". Remove the circled "1" from the entrance into the FAULT_RFMSG_PDET state and replace it with a circled "2" that has its own, separate entrance into the state. Replace the boxed "1" exiting the FAULT_IDLE_NOP with a boxed "2". Remove the circled "2" and "3" on the entrance to FAULT_IDLE_NOP and replace it with a circled "3" with its own, separate entrance into the state. Replace the boxed "2" exiting FAULT_RFMSG_PDET with a boxed "3".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Helped by 1159

Cl **48** *SC* **48.2.5.2.4** *P* **274** *L* **1** # **589**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A** *SM*

This state machine should signal local link fault whenever the deskew machine indicates align_status=FAIL. Since align_status=FAIL whenever the synchronization machine is out of sync on any lane, it is not necessary to test any_sync_status in the receive machine.

SuggestedRemedy

Change all instances of "any_sync_status" to "align_status" in Figure 48-10.
Change "any_sync_statusCHANGE" to "align_statusCHANGE" in Figure 48-10 and page 266 line 14.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.2.4** *P* **274** *L* **1** # **588**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A** *SM*

There are two universal transitions going to different states that can be simultaneously true, creating an ambiguous situation.

SuggestedRemedy

Eliminate the universal transition into the RECEIVE state. Add the terms "power_on=TRUE + mr_main_reset=TRUE" to the universal transition into the LINK_FAULT_IDLE state.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Fault is signaled at Reset. LOCAL_FAULT_INDICATE state used, LOCAL_FAULT_IDLE state goes away.

Cl **48** *SC* **48.2.5.2.4** *P* **274** *L* **18** # **592**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A** *SM*

There is no reason for the Receive state machine to detect occurrences of ||P|| and enter special states that alternate ||P|| and ||IDLE|| on the XGMII. It is sufficient for this machine to simply repeat ||P|| whenever it is receiveds. (The transmit machine cannot simply repeat because it must create a randomized idle pattern including ||P|| for EMI purposes, but the receive machine has no such requirement.)

SuggestedRemedy

Rename the "FAULT_MSG_1" state to "FAULT_MODE". Change the exit transition from this state to go to the RECEIVE state on the condition "AUDI". (There is another comment suggesting the elimination of the DATA_MODE_OTHER state. If that comment is rejected then the DATA_MODE_OTHER and FAULT_MODE states are redundant and the FAULT_MODE state can be deleted.)
Eliminate the other eight FAULT_x states and all transitions into and out of these states.
Eliminate the RFMSG and RP_CNT variables.
In Figure 48-7 change "TP_CNT=4" to "TP_CNT=64" (3 places) and "TP_CNT!=4" to "TP_CNT!=64" (3 places). This will make sure an XGXS transmit machine will detect the fault message even if it is a pattern that has been randomized by an upstream transmit machine and simply repeated by any other XGXS or PCS in the path.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. OBE per 1159.

Cl **48** *SC* **48.2.5.2.4** *P* **274** *L* **21** # **590**

Stephen Haddock Extreme Networks

Comment Type **E** *Comment Status* **A**

The usage of AUDI(UCT) is inconsistent with the rest of the diagram that simply uses AUDI.

SuggestedRemedy

Change "AUDI(UCT)" to "AUDI".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.2.4** *P* **274** *L* **3** # **1000**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *SM*

The receive state machine should only be allowed to decode receive inputs if alignment has been obtained and link fault should be sent even if all lanes have sync but alignment isn't obtained. Also, currently the left exit from LOCAL_FAULT_INDICATE serve no purpose since when any_sync_status changes to OK it will go to LINK_FAULT_IDLE

SuggestedRemedy

Therefore, entry to LINK_FAULT_IDLE should be entered based on align_statusCHANGE (a function that will need to be added) and exit from that state and LOCAL_FAULT_INDICATE will need to be based on align_status. any_sync_statusChange can be deleted. Delete the left exit from LOCAL_FAULT_INDICATE.An alternative is to use align_statusFAIL (a function which goes true when align_status changes from OK to FAIL (and maybe when it changes to NOA depending on what happens to NOA) and goes false when LINK_FAULT_IDLE is entered)_as the global transition into LINK_FAULT_IDLE instead of deleting the transition.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Fixed by 589 and PCS Receive SM merge of LINK_FAULT_IDLE and LOCAL_FAULT_INDICATE

Cl **48** *SC* **48.2.5.2.4** *P* **274** *L* **42** # **996**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *SM*

The state LINK_FAULT_IDLE only has exit conditions for any_sync_status = FAIL or OK but sync status can be NOA. Neither the state machine nor the any_sync_status definition take this into account.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. OBE by 589.

Cl **48** *SC* **48.2.5.2.4** *P* **274** *L* **8** # **870**

Lynskey, Eric R — UNH IOL

Comment Type **T** *Comment Status* **A** *SM*

The PCS Receive state diagram enters the LOCAL_FAULT_INDICATE when any_sync_status=FAIL*AUDI. The text on the following page in 48.2.5.4.1 indicates that "A local_fault condition is recognized by the PCS Receive process whenever any_sync_status=FAIL or align_status=FAIL." The entrance into the LOCAL_FAULT_INDICATE state has no dependency on the align_status variable.

SuggestedRemedy

Change the entrance to the LOCAL_FAULT_INDICATE state to read:(any_sync_status=FAIL + align_status=FAIL)*AUDI.

Proposed Response *Response Status* **C**

ACCEPT. Fixed by 589.

Cl **48** *SC* **48.2.5.4** *P* **275** *L* **12-39** # **87**

Brown, Benjamin J — AMCC

Comment Type **T** *Comment Status* **A** *SM*

This section discusses local_fault and remote_fault but does not provide values for them. It also appears as though this clause forwards the content of the Pulse ordered_set regardless of the values in lanes 1, 2 & 3. The encoding of RXD in state LOCAL_FAULT_INDICATE is the only definition of the local_fault in this clause.

SuggestedRemedy

Define values for local_fault and remote_fault. Modify PCS receive state machine to ignore Pulse ordered_sets with values other than those defined for local_fault and remote_fault and to convert them to IDLEs.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Rewrite 48.2.5.4 to be consistent with state machines.

Cl **48** *SC* **48.2.5.4** *P* **275** *L* **14** # **1163**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Reporting received link status messages should be the job of the RS only.

SuggestedRemedy

Delete "and the conveyance of received link fault messages" and change "conditions," to "conditions and".

Proposed Response *Response Status* **C**

ACCEPT. Fixed by rewrite of Link Status Reporting clause.

Cl **48** *SC* **48.2.5.4.1** *P* **275** *L* **22** # **1001**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Link_fault is currently detected by the receive state machine only based on sync_status = FAIL. It should actually be detected based on align_status = FAIL. Note that any sync status failure will cause an align status failure.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Fixed by 589 and Link Satus Reporting subclause rewrites.

Cl **48** *SC* **48.2.5.4.2** *P* **275** *L* **29** # **1180**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Detection of a link fault condition is unnecessary. All that is necessary is to detect reception of a pulse ordered set and save it for transmission after the next A. Also, this should be called pulse signalling because it happens for any pulse ordered set.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Detection of a link fault condition is necessary in order for the PCS to report Link Faults via state LOCAL_FAULT_INDICATE. Relay of Link Fault Messages is fixed in 1008.

Cl **48** *SC* **48.2.5.4.3** *P* **275** *L* **36** # **1181**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

This section doesn't serve any purpose and it has grammar problems. Delete it.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Fixed by rewrite of Link Status Reporting clause.

Cl **48** *SC* **48.2.5.5.1** *P* **269** *L* **11** # **1015**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **R**

This is a state machine style issue. The rule is that a global transition overrides any non-global transition. That is why we don't qualify every other transition with !power_on *!reset. Since the transition to SEND_DATA is a global transition, we don't have to put the *(TX=||IDLE|| + TX=||P||*fault_det=1) in all the other transitions. I'm not sure which will make it more understandable - deleting the term to reduce clutter or leaving it there so the reader doesn't have to implicitly apply the term.

SuggestedRemedy

If we delete the term we should remind the reader of the rule about global transitions in the text of the subclause.

Proposed Response *Response Status* **C**

REJECT. The comment makes a valid point about global transitions, but as the commenter observes, the text as written may make the state machine more readily understandable. Since this state machine is being updated significantly in the next draft, and since the comment made no specific request for a change, no change will be made at this time.

Cl **48** *SC* **48.2.5.5.1** *P* **269** *L* **11** # **1009**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

There is no reason to crate the variable A_CNT_0. It is a confusing variable because it takes the value 0 when A is not zero.

SuggestedRemedy

If you keep A_CNT_0 at least make it a boolean taking values of TRUE and FALSE rather than 0 and 1. My preferred fix would be to: delete A_CNT_0 replace all tests for A_CNT_0=0 with A_CNT <> 0 (where <> represents the not equal sign since I can't put a font in here).replace all tests for A_CNT_0=1 with A_CNT = 0

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.5.1** *P* **269** *L* **12** # **1010**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

The transitions out of SEND DATA do not result in the behavior described in 48.2.4.2 after data. That subclause says that after sending data there is a random choice between A and K if the minimum spacing rule has been met.The state machine always sends A if the spacing since the last A is greater than random number rather than the minimum.

SuggestedRemedy

Either behavior should be okay but make the description and machine match. To make the machine match the text, one would need to create another counter that counts whether 16 counts had passed since the last A. Transition would be made on checking that count. Another way to make the state machine match the text is to make A_CNT an up counter starting at zero and to test for it reaching a random number where it is now tested for zero except at the transitions out of SEND_DATA test for it equalling 16.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Text to be clarified. Strike "minimum" in 48.2.4.2.b) State Machines fixed per 569.

Cl **48** *SC* **48.2.5.5.1** *P* **269** *L* **19** # **1014**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *SM*

Transition from SEND_K should be to SEND_RANDOM_R.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.5.1** *P* **269** *L* **20** # **1013**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **R**

Should SEND_P be removed? If the reason we are sending it is because we are in a fault condition, we would not have just gotten a packet. We must have been in SEND_DATA to send a P and we can wait until the next A to send another.With the current machines, fault_det would not be true after a real packet.Therefore, we do not need the state for our current use of P. If some day we want to use P's interspersed during IPGs, it is probably more important to make sure the R occurs than to put out a P.

SuggestedRemedy

Delete SEND_P state and delete !fault_det from the right hand transition from SEND_A.

Proposed Response *Response Status* **C**

REJECT. SEND_P is required for the case of a fault_condition where the fault is either internal or the result of the receipt of a Fault Message.

Cl **48** *SC* **48.2.5.5.1** *P* **269** *L* **30** # **1016**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

In every state except SEND_RANDOM_K, code_sel=0 causes the next character to be the K and 1 causes an R. In SEND_RANOM_K it is reversed. Externally, as long as we don't specifiy the random number generator, the behavior will be indistinguishable, but it would be kinder to those who feel they have to stick to the letter of the state machines to make the exits from SEND_RANDOM_K consistant.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Fixed in 185.

Cl **48** *SC* **48.2.5.5.1** *P* **269** *L* **4** # **1011**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *SM*

Generally we do not allow conflicting transition conditions. The two global transition conditions can be simultaneously true. Which state does one go to in that case?

SuggestedRemedy

Add !power_on=TRUE + ! mr_main_reset = TRUE.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Fixed in 79.

Cl **48** *SC* **48.2.5.5.1** *P* **269** *L* **40** # **1017**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

The transitions from SEND_RANDOM_A are incorrect. Note that when the left transition is satisfied one of the other two will also be satisfied and the left term can be true even when we are not in fault detect.

SuggestedRemedy

Change the transtion into SEND_RANDOM_P to the same as the left transtion term from SEND_A - i.e. move fault_det outside the parens. The other two transition terms should be: middle term: TX_CLK * !fault_det * TX=||IDLE|| * code_sel=1 and right term: TX_CLK * !fault_det * TX=||IDLE|| * code_sel=0

Proposed Response *Response Status* **C**

ACCEPT. Fixed by 186 and 187.

Cl **48** *SC* **48.2.5.5.2** *P* **270** *L* **40** # **1020**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Should be "For each lane, the PCS shall implement a copy of the Synchronization process" or "The PCS shall implement four Synchronization process...."Also, since the synchronization process is defined as the thing in Figure 48-8 and that operates on one lane, the third sentence should be "A Synchronization process operates independently for each lane and synchronization is complete only when synchronization is acquired on all lanes."The next sentence can be deleted.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.5.2** *P* **271** *L* **2** # **1022**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *SM*

Shouldn't a change of mr_loopback also cause a return to LOSS_OF_SYNC?Also, it seems that the term could be:
power_on=TRUE + mr_main_reset=TRUE + (signal_detect=FAIL*mr_loopback=FALSE) + mr_loopbackCHANGE=TRUEbecause we are always in that state when signal detect is FAIL and we are not in loopback.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. OBE by 1023.

Cl **48** *SC* **48.2.5.5.2** *P* **271** *L* **2** # **1019**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

For completeness, it would be good to add "- lane n" to the title of the diagram or to add a note saying that n is the number of the lane.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Title or text to be added to clarify <n> nomenclature.

Cl **48** *SC* **48.2.5.5.2** *P* **271** *L* **2** # **1023**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *SM*

This state diagram assumes that loopback is done all the way through the sync state machine. However, the loopback spec leaves where to do the loopback as an implementor's option. It is not necessary to put loopback implementation details into the state machines. We should leave them up to the implementor.

SuggestedRemedy

Delete all terms associated with loopback.

Proposed Response *Response Status* **C**

ACCEPT. Also remove all NOA text and variables.

Cl **48** *SC* **48.2.5.5.2** *P* **271** *L* **29** # **1021**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *SM*

Both exits from SYNC_ACQUIRED_1 can be simultaneously true.

SuggestedRemedy

Add *cggood to the right hand exit.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. OBE by 998.

Cl **48** *SC* **48.2.5.5.2** *P* **272** *L* **12** # **1024**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

What about the condition sync_status<3:0>=NOA. Also, the syntax of sync_status <3:0>= value is wrong because it would be a vector of values. "When any sync_status flag equals FAIL, the align_status flag will be FAIL."Also, the align_status flag is not a boolean so "deasserted" does not apply to it. This also applies to 48.2.5.2.3.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. NOA deleted per 998. Synax for sync_status<3:0> to be corrected.

Cl **48** *SC* **48.2.5.5.3** *P* **273** *L* **28** # **1152**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

NOA would be easier to read NO_A.

SuggestedRemedy

Global replace "NOA" with "NO_A"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.5.3** *P* **273** *L* **33** # **1162**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A** *Thaler, Pat*

Naming of the ALIGN_ACQUIRED states isn't consistant. If we make it consistant with the sync numbering, ALIGN_ACQUIRED_n would be the state where the nth error had occured and ALIGN_ACQUIRED_nA would be the state where one waits for another error.

SuggestedRemedy

Change _2 to _1A
Change _3 to _2

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.5.3** *P* **273** *L* **33** # **1160**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

The state name BYTE_SLIP_WAIT is confusing as "byte slip" sounds like what happens when enable_deskew is TRUE.

SuggestedRemedy

Name the state ALIGN_ERROR_WAIT

Proposed Response *Response Status* **C**

ACCEPT. Related comment: #580.

Cl **48** *SC* **48.2.5.5.3** *P* **273** *L* **34** # **1161**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Exit from BYTE_SLIP_WAIT has no term.

SuggestedRemedy

Term should be SUDI.

Proposed Response *Response Status* **C**

ACCEPT. Fixed by 85.

Cl **48** *SC* **48.2.5.5.4** *P* **274** *L* **1** # **1153**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

The two transition conditions here will be true at the same time whenever any_sync was true and a reset happens because a reset causes sync_status to go to FAIL. Also, at reset we do not have sync so we should not be trying to receive. If any_sync_status is false and a reset causes us to go to RECEIVE, when the reset is over we won't go to LINK_FAULT_IDLE because any_sync_status doesn't change.

SuggestedRemedy

power_on + mr_main_reset should cause us to go to LINK_FAULT_IDLE.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Fault is signaled at Reset. Duplicate with 588.

Cl **48** *SC* **48.2.5.5.4** *P* **274** *L* **1** # **1154**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

State machine style thing here. A term that tests a boolean like power_on=TRUE just creates another boolean with the same value. It's not wrong, but it is unnecessary.We initially put test for =TRUE and =FALSE into state machines because we wanted to stop using overbars (because they sometimes got lost or misplaced) and no in text negation symbol was considered standard enough. Since we have bitten the bullet on selecting ! to indicate negation, we should drop the needless test.

SuggestedRemedy

delete =TRUE from state machine terms and where =FALSE appears, delete it and negate the variable being tested.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.5.4** *P* **274** *L* **18** # **1159**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *SM*

The FAULT_MSG states are unnecessary.

SuggestedRemedy

Delete the transition from RECEIVE to FAULT_MSG_1. Delete all states with names beginning FAULT.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.5.4** *P* **274** *L* **28** # **1157**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

The left and middle exits from FAULT_MSG_1A and FAULT_MSG_2A can be true at the same time.

SuggestedRemedy

Change AUDI on the middle term to AUDI(!{||P||}).

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. OBE per 1159.

Cl **48** *SC* **48.2.5.5.4** *P* **274** *L* **3** # **1155**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

It is okay to combine transitions going to the same state even if they don't have the same term. However, in that case, each term should be shown on the uncombined part of the line and not the combined part as any_sync_status=OK*AUDI is.

SuggestedRemedy

Move the term to the line out of LINK_FAULT_IDLE. If you are having trouble making room for it, I have a suggestion on how to do it.

Proposed Response *Response Status* **C**

ACCEPT. Fixed in 871.

Cl **48** *SC* **48.2.5.5.4** *P* **274** *L* **4** # **1156**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

Also lots of other places. Another state machine style issue. It makes sense to combine lines traveling across the page to a destination because it is hard to read the diagram with lots of parallel lines that may or may not separate. However, I don't see a point in combining lines just before they enter the top of the box as is done on entries to RECEIVE and DATA_MODE_START. Turning the line and going into the box as soon as it is over the top of the box would reduce clutter rather than add to it.

SuggestedRemedy

Terminate the arrows into the box separately when they arrive there separately unless there is a space problem.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.5.5.4** *P* **274** *L* **40** # **1158**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

There is no reason to use two different labels for the same destination. Delete the circle with the 3 and change 3 in the arrow-box to a 2.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.3** *P* **275** *L* **45** # **89**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

extra s

SuggestedRemedy

Replace "of code-groups information" with "of code-group information"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.3.1.1** *P* **276** *L* **7** # **1184**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

The purpose of this subclause is unclear since it is not normative and states the obvious. The delay spec is elsewhere.

SuggestedRemedy

Delete the subclause.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.3.1.1** *P* **276** *L* **8** # **1182**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

It isn't clear whether "Logically," here is meant as "It is logical that" or that the buffering must be done logically or that the bits are logical. In any case it is unnecessary. Delete it. The same applies to p 260 l 24

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.3.1.2** *P* **276** *L* **27** # **1185**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Since the reference clock is not at a compatability interface and the PMA service interface is not a compatability interface, we should not specify its frequency. If someone wants to build the interface twice as wide and use half the clock rate, they can as long as they meet the overall delay spec. Similarly for the statement on how the output clock is generated.

SuggestedRemedy

Only specify that the bits are output at a 3.125 +- 100 ppm rate. Also, delete "nominally" since we are specing tolerance rather than just the nominal rate here.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.3.1.3** *P* **276** *L* **34** # **1186**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

This section should include the requirement for the PMA receive process to recover clock from the received data stream. Also, PMD_UNITDATA.indicate primitives must be passed when the PMD has been unable to recover a clock, it should include a requirement for a reference clock. There is no reason for such a reference clock. The PMD should just use the loss of signal detect primitive to indicate lack of a clock and not be required to provide PMD_UNITDATA.indicate under that condition. Therefore, the statements about a reference clock should be deleted - they are implementation.The PMD receive process is not responsible for enforcing data rate tolerance. If it receives data at an out of tolerance rate, it may receive it at that rate or it may fail to attain lock.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Rewrite to include the requirement for the PMA receive process to recover clock from the received data stream if the stream is within tolerance. Remove references to a "reference clock".

Cl **48** *SC* **48.3.1.3** *P* **276** *L* **47** # **90**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

extra n

SuggestedRemedy

Replace "shall have an nom-" with "shall have a nom-"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.3.2** *P* **277** *L* **1** # **1187**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **R**

The signal detect indication primitive which should convey an OR of the receive PMD signal detect and the PMA loss of lock condition is missing. Also, passing the signal detect should be added either as part of the receive process or as part of a signal quality detect process.

SuggestedRemedy

Proposed Response *Response Status* **C**

REJECT. The PMD signal detect bypasses the PMA. There is no PMA loss of lock codition.

Cl **48** *SC* **48.3.3** *P* **278** *L* **3** # **1188**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Since management is not required, how can loopback mode be required? One can't check that it is there if one can't invoke it.

SuggestedRemedy

Make loopback optional.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Loopback function is required. Even if MDIO Registers are not provided equivalent functionality to invoke loopback is required. Add text to 48.3.3.

Cl **48** *SC* **48.3.3.1** *P* **278** *L* **15** # **1189**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

"A receiver may be placed in Loopback mode," makes it sound like the receiver can be put into loopback separately from the tranmsitter. Same problem exists for the transmitter.

SuggestedRemedy

Delete the sentence for the receiver and for the transmitter. Consider removing the 48.3.3.1 and 48.3.3.2 headings.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.3.3.2** *P* **278** *L* **21** # **595**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A**

The external behavior of a transmitter in Loopback mode is not specified in 22.2.4.1.2, and should be specified here. All that 22.2.4.1.2 says is "the assertion of TX_EN at the GMII or MII shall not result in the transmission of data on the network medium." It does not say what should be transmitted (perhaps an idle pattern could be assumed). Furthermore, specifications of behavior of TX_EN, GMII, or MII are all irrelevant for 10Gbps operation.

Appropriate external behavior of a transmitter in Loopback would be an idle pattern, or better yet a link fault message. To provide the randomized idle/fault pattern, however, would either require a shadow PCS transmit state machine just for loopback, or provide incentive for implementors to create a loopback point very close to the XGMII. Since loopback is a test condition, not a true idle condition, randomization for EMI control is probably not necessary.

SuggestedRemedy

Remove the sentence referencing 22.2.4.1.2 and replace with:
"While in Loopback mode the transmitter shall generate a continuous stream of ||P|| indicating Local Fault." (If the receiver at the other end has achieved sync and alignment it will recognize the fault message, otherwise it will be generating its own local fault message in the receive path.)

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.3.4** *P* **278** *L* **26** # **1190**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

Add after "transmitter function", "or for testing of an attached receiver". The test function purpose in the example at line 36 is a receiver test.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.3.4** *P* **278** *L* **30** # **91**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

Wrong annex

SuggestedRemedy

Replace 48A with 36A RemedyEnd: "

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.5** *P* **278** *L* **49** # **1191**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

Delete "also"

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.5.1** *P* **279** *L* **13** # **910**

Healey, Adam Agere Systems

Comment Type **T** *Comment Status* **A**

Data delay requirements are too restrictive.Regarding the justification for the delay constraints presented in Table 48-5.The term "bit time" (BT) has traditionally referred to the duration of a bit at the MAC layer. Therefore, a latency of 136 BT in 1000BASE-X is very different from 136 BT in 10GBASE-X. For an apples-apples comparison, note that 136 BT in transmit path delay in 1000BASE-X translates to 136 ns which in turn translates into 17 GMII clock cycles (125 MHz). An equalivalent number of cycles in 10GBASE-X would be 17/312.5 MHz = 54.4 ns which corresponds to 544 BT.For the receive path, application of the same conversion factor yields a latency of 768 BT. Add to this number 85 UI = 85*320ps = 272 BT worst-case deskew time. Therefore, the total receive path delay would be 104 ns (1040 BT).Given the proposed pause reaction time (31B.3.7) of 40 pause_quanta (20,480 BT), the additional latency proposed here has no impact on system performance and enables additional implementation flexibility.

SuggestedRemedy

Change XGMII to MDI delay to 544 BT.Change MDI to XGMII delay to 1040 BT.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Delay should only include XGMII through XAUI. Review numbers in conjuction with delay values from other clauses. Coordinate with 762.

Cl **48** *SC* **48.5.1** *P* **279** *L* **19** # **1192**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

There is no reason to have the XGMII to MDI delay applied to /S/ while the MDI to XGMII delay is applied to /T/.

SuggestedRemedy

Make them both /T/ or both /S/.

Proposed Response *Response Status* **C**

ACCEPT. Changed to apply both to /S/.

Cl **48** *SC* **48.5.1** *P* **279** *L* **19** # **1193**
Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**
Need to specify whether these times are in MAC bit times or in 10-bit-code bit times or specify in ns.

SuggestedRemedy

Proposed Response *Response Status* **C**
ACCEPT. See 910.

Cl **48** *SC* **Fig 48-1** *P* **250** *L* **20** # **1370**
Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**
label incorrect

SuggestedRemedy
should be "10GBASE-X" or "10GBASE-LX4"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **48** *SC* **Fig 48-2** *P* **252** *L* **34** # **1374**
Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**
label incorrect

SuggestedRemedy
change "Signal" to "Signal Detect"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **48** *SC* **Fig 48-8** *P* **271** *L* # **1376**
Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**
figure in the middle of paragraph

SuggestedRemedy
re-format so figure doesn't break up paragraph

Proposed Response *Response Status* **C**
ACCEPT.

Cl **48** *SC* **multiple** *P* *L* # **1373**
Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**
clause is lower case

SuggestedRemedy
fix throughout clause 48

Proposed Response *Response Status* **C**
ACCEPT.

Cl **49** *SC* **49** *P* **283** *L* **1** # **1307**
Jonathan Thatcher — World Wide Packets

Comment Type **E** *Comment Status* **R**
Title should include 10GBASE-W

SuggestedRemedy
see comment

Proposed Response *Response Status* **C**
REJECT. This is the 10GBASE-R PCS. 10GBASE-W is the output of the WIS - 10GBASE-R coded data encapsulated in SONET/SDH frames.

Cl **49** *SC* **49.** *P* **283** *L* **1** # **92**
Brown, Benjamin J — AMCC

Comment Type **T** *Comment Status* **A**
Too many "sublayers". To put the word sublayer after PCS is to say the Physical Coding Sublayer sublayer. This does not make sense. This also applies to many other locations of "PCS sublayer" and "WIS sublayer" throughout the entire document

SuggestedRemedy
Remove second "sublayer" from usage in all instances

Proposed Response *Response Status* **C**
ACCEPT.

Cl **49** *SC* **49.1.1** *P* **285** *L* **17** # **1377**
Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**
change 10Gbit/s to 10 Gbit/s and ensure that Gb/s is not split up

SuggestedRemedy
fix

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. It should be 10 Gb/s. Also, it may be OBE.

Cl **49** *SC* **49.1.1** *P* **285** *L* **17** # **93**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

LAN PMD does not operate at 10 Gbit/s but rather at 10.3125 GBaud Same comment applies to 49.1.2, page 285, line 28

SuggestedRemedy

Replace "10Gbit/s" with "10.3125 GBaud"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change "operating at 10 Gbit/s" to "supporting a data rate of 10 Gb/s" because the point being made here is that the LAN Phys support the MAC data rate and the WAN Phy requires compensation to a lower data rate.

Cl **49** *SC* **49.1.1** *P* **285** *L* **5** # **1308**

Jonathan Thatcher World Wide Packets

Comment Type **T** *Comment Status* **A**

Use of 10GBASE-R to refer to 10GBASE-LW/SW/EW/LW4 is confusing, at best.

SuggestedRemedy

Reword. Perhaps use 10GBASE-R/W

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. 10GBASE-R is the name of the 64b/66b PCS. The 10GBASE-W encoding is created by feeding a 10GBASE-R encoded data stream into WIS to create a series of WAN frames carrying the data stream. To better explain, change to:
This clause specifies the Physical Coding Sublayer (PCS) that is common to a family of 10 Gb/s Physical Layer implementations, known as 10GBASE-R. This PCS can connect directly to one of the 10GBASE-R Physical Layers: 10GBASE-SR, 10GBASE-LR, and 10GBASE-ER. Alternatively, this PCS can connect to a Wan Interface Sublayer (WIS) which will produce the 10GBASE-W encoding (10GBASE-R encoded data stream encapsulated into frames compatible with SONET and SDH networks) for transport by the 10GBASE-W Physical Layers: 10GBASE-SW, 10GBASE-LW, 10GBASE-LW4, and 10GBASE-EW.

Cl **49** *SC* **49.1.2** *P* **285** *L* **28** # **1378**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

reference incorrect

SuggestedRemedy

change to be "... SONET OC-192c/SDH VC-4-64c rate;" or "... SONET STS-192c/SDH VC-4-64c rate;"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.1.4.1** *P* **285** *L* **46** # **94**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

The RS is defined as Reconcilation Sublayer

SuggestedRemedy

Replace "Reconciliation sublayer" with "Reconciliation Sublayer"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.1.4.1** *P* **285** *L* **47** # **1379**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

last sentence of paragraph is confusing and unnecessary

SuggestedRemedy

delete last sentence of the paragraph

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.1.4.1** *P* **285** *L* **50** # **1380**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

sentence leads into bullet items on next page

SuggestedRemedy

keep sentence with bullet items

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.1.4.1** *P* **286** *L* **18** # **1148**

Bottorff, Paul A Nortel Networks

Comment Type **E** *Comment Status* **A**

The diagram can not use 10GBASE-X PMA since this refers to 8b/10b encoding.

SuggestedRemedy

Replace 10GBASE-X with 10GBASE-R/W.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Diagram will show and identify a 10GBASE-R stack and a 10GBASE-W stack.

Cl **49** *SC* **49.1.4.1** *P* **286** *L* **26-34** # **1043**

Robert Grow Intel

Comment Type **E** *Comment Status* **A**

The expansion of acronyms is in random order. Though there may be historical reasons for this (i.e., higher layers to lower layers when there was one protocol stack) there is no descernable reason for order in the current pictures.

SuggestedRemedy

Put in alphabetical order

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.1.4.1** *P* **286** *L* **41** # **1116**

Finch, Stephen G. Texas Instruments

Comment Type **T** *Comment Status* **R**

Deleting or inserting idles is not unique to WAN operation. It occurs in LAN systems as well, just at much different rates. The following qualification is not correct:"c) When connected to a WAN PMD, deleting (inserting) idles to compensate for the rate difference between the MAC and PMD;"

SuggestedRemedy

Change to read:"c) Deleting (inserting) idles to compensate for the rate difference between the MAC and PMD;"

Proposed Response *Response Status* **C**

REJECT. Only in the case of WAN PMDs is it necessary to delete and insert idles to compensate for data rate difference between the MAC and PMD. In the case of a LAN PMD it is necessary to add and delete occasional idles to compensate for data rate tolerance. This is a more minor function than the data rate difference adjustment called out here. Also, this latter function is an implementation option rather than a required function of the PCS. An implementation of the 10GBASE-R PCS could use an output transmit clock derived from its input transmit clock and similarly an output receive clock derived from its input receive clock. In that case, it would not need to insert and delete idles.

Cl **49** *SC* **49.1.4.2** *P* **286** *L* **46** # **1077**

Stephen Haddock Extreme Networks

Comment Type **E** *Comment Status* **A**

Typical to place the acronym in parenthesis following the words it summarizes, not in the middle of them.

SuggestedRemedy

Change sub-clause heading to "WAN Interface Sublayer (WIS)"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE

Cl **49** *SC* **49.1.4.2** *P* **286** *L* **46** # **1382**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

"(WIS)" should be at the end

SuggestedRemedy

fix

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.1.4.2** *P* **286** *L* **50** # **1079**

Stephen Haddock Extreme Networks

Comment Type **E** *Comment Status* **A**

SONET is an acronym and should be capitalized.

SuggestedRemedy

Replace "Sonet" with "SONET". Suggest a global search and replace.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.1.4.2** *P* **286** *L* **50** # **1078**

Stephen Haddock Extreme Networks

Comment Type **E** *Comment Status* **A**

"WIS sublayer" is redundant.

SuggestedRemedy

Delete the word "sublayer". There are numerous places where this comment applies, so I suggest a global search and replace of "WIS sublayer" for "WIS".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.1.4.3** *P* **287** *L* **14** # **1244**

Rich Taborek nSerial Corporation

Comment Type **T** *Comment Status* **A**

This location is a good as one as 1000 other to point out this issue. However, it should be noted that the issue is pervasive and affects multiple clauses. The PMA interface to the 10GBASE-R PCS is described as the XSBI. This interface is also described as a 16-bit interface in both data directions. This is incorrect. The PMA interface to the 10GBASE-R PCS should be a Service Interface. The Service interface should be 66-bits wide in both data directions. Most PHYs employing the 10GBASE-R PCS will benefit significantly from economic and technical simplicity perspectives through the physical instantiation of a 66:1 PMA rather than a 66:16:1 PMA as mandated by the 10GBASE-R PCS. Note that the 66:16 ratio does not reduce beyond 33:6 requiring a complex "gearbox" between the 10GBASE-R PCS and its PMA.

SuggestedRemedy

Redefine the 10GBASE-R PCS as being associated with a PMA which provides a 66-bit Service Interface to the PCS. The PMA Service Interface should be described in an abstract manner and should not imply any particular implementation. Clause 51 should be specified as one possible and optional physical instantiation of the PMA Service Interface to the 10GBASE-R PCS. It should be noted that this the suggested documentation changes are exemplified by the 1000BASE-X and its optional PMA, the TBI. It should also be noted that 100% of all 1000BASE-X utilize the TBI. My personal belief is that by 802.3ae standard maturity, few if any implementations will utilize the XSBI.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The PMD service interface must support connection to both WIS and 10GBASE-R PCS. The WIS operates octet wide.If the PMD service interface was 66 bits, then the WIS would need a gearbox. It also is convenient for the service interface to be the same width as its optional physical instantiation. If it is not, then specifying that physical instantiation would be more complex.

The width of a service interface does not imply the width of its actual implementaiton. For instance, the service interface between MAC and RS is bit wide but probably no implementation will implement it that way. As it says in 4.1.5: It is important to note that, while this specification defines interfaces in terms of bits, octets, and frames, implementations may choose other data path widths for implementation convenience.
In other words, if you don't expose the XSBI, you are free to use what ever width of interface is best for your implementation.

Add text to gearbox to state it is not required if not using XSBI.

Cl **49** *SC* **49.1.4.4** *P* **287** *L* **18** # **1384**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

plural of medium is media

SuggestedRemedy

change "mediums" to "media"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.1.4.4** *P* **287** *L* **18** # **1309**

Jonathan Thatcher World Wide Packets

Comment Type **T** *Comment Status* **A**

10GBASE-SR/SW are missing

SuggestedRemedy

Add...

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.1.4.4** *P* **287** *L* **19** # **1310**

Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **A**

"its mediums are specified" should be "its medium is specified"

SuggestedRemedy

see comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.1.4.5** *P* **287** *L* **27** # **95**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

2 periods at end of sentence

SuggestedRemedy

remove one of the periods

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.1.4.5** *P* **287** *L* **47** # **304**
Figueira, Norival Nortel Networks

Comment Type **E** *Comment Status* **A**
SONET is usually written with capital letters.

SuggestedRemedy
Change word "Sonet" to "SONET".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **49** *SC* **49.1.4.5** *P* **287** *L* **51** # **305**
Figueira, Norival Nortel Networks

Comment Type **E** *Comment Status* **A**
WIS means WAN Interface Sublayer. It is redundant to say "WIS sublayer".

SuggestedRemedy
Delete word "sublayer" from "WIS sublayer".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **49** *SC* **49.1.5** *P* **288** *L* **10** # **1311**
Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **A**
Is there a reason why the bits are labeled 1 2 3 ... 8 1 2 3 ... 8 on both Tx and Rx sides on line 10 and on line18? This doesn't seem consistent with convention.

SuggestedRemedy
Explain or fix.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Add at line 51 of page 287:
Also, the SONET/SDH bit labeling conventions are different from the usual 802.3 bit labeling. The bits of a SONET/SDH octet are labeled from 1 to 8 with bit 1 being the MSB. Ethernet conventions label bits of an n-bit field from 0 to n-1 with bit 0 being the LSB. Figure 49-3 shows the results of these conventions. For example, tx_data-unit<0> through tx_data-unit<7> map to bits 1 through 8 respectively of a WIS octet.

Cl **49** *SC* **49.1.5** *P* **288** *L* **36** # **1312**
Jonathan Thatcher World Wide Packets

Comment Type **E** *Comment Status* **A**
should be "XGMII (10 Gigabit"

SuggestedRemedy
see comment

Proposed Response *Response Status* **C**
ACCEPT.

Cl **49** *SC* **49.1.5** *P* **288** *L* **36** # **911**
Healey, Adam Agere Systems

Comment Type **E** *Comment Status* **A**
"...XGMII (Gigabit Media Independent Interface)." should read "...XGMII (10 Gigabit Media Independent Interface)."

SuggestedRemedy
Change "Gigabit" to "10 Gigabit".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **49** *SC* **49.1.5** *P* **288** *L* **42** # **1313**
Jonathan Thatcher World Wide Packets

Comment Type **T** *Comment Status* **R**
The XGXS provides the same service interface to the PCS as the XGMII, not the RS. Right?Also in 49.2.1, page 289, line 51-52.

SuggestedRemedy

Proposed Response *Response Status* **C**
REJECT. XGMII is an instantiation of the service interface to RS. The text is correct as it stands except Reconcilliation Sublayer should be capitalized.

Cl **49** *SC* **49.1.5** *P* **288** *L* **44-47** # **195**

Don Alderrou nSerial

Comment Type **E** *Comment Status* **A**

In the second paragraph on page 288 lines 44/47 state that the different WIS and PMA interfaces operate at different rates, but it does not state what these rates are.

SuggestedRemedy

The text should be changed to add the specific data rates for the different WIS and PMA interfaces.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Insert at line 45:
When the PCS is connected directly to a LAN PMA, the nominal rate of the PMA service interface is 644.53 Mtransfers/s which provides capacity for the MAC data rate of 10 Gb/s. When the PCS is connected to a WAN PMA, the nominal rate of the WIS service interface is 599.04 Mtransfers/s and the MAC uses IFS stretch mode to ensure that there will be enough idle time that the PCS can delete idles to adjust to the lower rate.

Cl **49** *SC* **49.1.5** *P* **288** *L* **49** # **1385**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

paragraph contains extraneous information

SuggestedRemedy

copy paragraph to clause 44 and delete the last sentence of the paragraph in clause 49

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.1.5** *P* **288** *L* **51-54** # **196**

Don Alderrou nSerial

Comment Type **E** *Comment Status* **A**

In the third paragraph on page 288 lines 51/54 lists references for the XGMII and the XSBI. The text mentions the MDI, but there is no reference to the clause where it is defined.

SuggestedRemedy

A reference to the clause which defines the MDI should be added. I assume it is defined in the WIS clause somewhere. If it is not, then the sub-clause to define the MDI also needs to be added either here or in clause 50.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. add to end of sentence: as specified in clause 54 for 10GBASE-LW4 and in clause 52 for other PMD types.

Cl **49** *SC* **49.1.6** *P* **289** *L* # **197**

Don Alderrou nSerial

Comment Type **E** *Comment Status* **A**

Figure 49-4 on page 289 does not show a "gearbox" in the receive path. If you look at Figures 49-5 and 49-6 for the transmit and receive bit ordering, both of them have a "gearbox." This seems to make the "gearbox" a minor bit ordering detail, thus it should be removed from Figure 49-4.

SuggestedRemedy

Either add a "gearbox" block to the receive path in Figure 49-4 on page 289 or remove the "gearbox" block in the transmit path of the Figure 49-4. Since a "gearbox" block is already shown in both of the Figures 49-5 and 49-6 it should be removed from Figure 49-4.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The figure 49-4 is a block diagram of the whole PCS showing blocks for major functions. On the receive side, the frame sync block provides the translation between the 16-bit service interface and the 66-bit frames that the Gearbox provides on transmit. Figures 49-5 and 49-6 show the bit order with respect to the processing performed by some of the blocks.

In 49-6, "Gearbox" will be replaced by "Frame Sync" which will remove the discrepancy.

Cl **49** *SC* **49.1.6** *P* **289** *L* **23** # **300**

Figueira, Norival Nortel Networks

Comment Type **E** *Comment Status* **A**

Figure 49-4 uses tx_data-unit and rx_data-unit, which are correct for the WIS Service Interface. For the PMA service interface the correct names are tx_data-group and rx_data-group.

SuggestedRemedy

Indicate that tx_data-unit and rx_data-unit are the names for the WIS Service Interface and that tx_data-group and rx_data-group are the names for the PMA Service Interface.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change the labels to:
tx_data-unit<15:0> (for WIS) or
tx_data-group<15:0> (for PMA)

and
rx_data-unit<15:0> (for WIS) or
rx_data-group<15:0> (for PMA)

Cl **49** *SC* **49.1.7** *P* **289** *L* **40** # **96**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

Wrong word

SuggestedRemedy

Replace "body of this standard" with "body of this clause"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.1** *P* **289** *L* **50** # **97**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

Wrong heading name.

SuggestedRemedy

Replace "PCS Interface" with "PCS Service Interface"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.11** *P* **297** *L* **22** # **864**

Tom Hatley Spirent Communicatio

Comment Type **E** *Comment Status* **A**

The editors comment about reading the following to avoid silly questions like "what does UCT mean?" does not appear to be correct. Nothing in the following defines UCT, nor is it defined anywhere in the D2.0 document (as far as I can find using the Acrobat global search) It is only used in a couple of other state diagrams in D2.0 - Clause 48 and Clause 53, and is not defined in those clauses either.

UCT is apparently defined (as Unconditional Transfer) in one of the clauses not being modified and therefore not included in D2.0

Wouldn't it aid the readers understanding of the state diagrams to briefly repeat the definition along with the state variables? Particularly those readers who are focusing one just a few of the clauses instead of reading the entire 802.3 document?

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The editor's comment did not say to read the following. It was referring to the statement above it which references 21.5 and 14.2.3.2. You will find UCT as well as other conventions defined in 21.5. We do not repeat this information in every state machine clause. The references are specific enough to save the reader from having to read all of 802.3 to have to understand the state machines and it is not a goal to write 802.3ae so it stands without the rest of 802.3.

Change the editor's note to: If you read the references above, you will find the answers to questions such as "What does UCT mean?"

Cl **49** *SC* **49.2.11** *P* **301** *L* **23** # **1137**

Finch, Stephen G. Texas Instruments

Comment Type **T** *Comment Status* **A**

Reference Figure 49-11: When does one transition between states? If on each frame time, then the state machines are broken. For example, suppose one is in state TEST_SH and a good frame is received followed by a frame with a bad header. The first frame time would transition to VALID_SH. When we transition from VALID_SH to TEST_SH (assuming this is the path taken) we will miss the invalid frame and not count it.

SuggestedRemedy

Create a new variable called frame_time. Define it to occur once every frame time. In clause 49.2.11.1.2 add:"frame_timeboolean variable which is set true each time a new frame is received. frame_time can cause a single state transition in a state machine. frame_time becomes false between frames."Condition the following transitions with an AND with frame_time, leave all others alone:SH_MT_INIT to TEST_SHTEST_SH to VALID_SHTEST_SH to INVALID_SH32_BAD to SH_MT_INIT64_GOOD to SH_MT_INIT

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Call the variable test_sh.

Add: test_sh: boolean variable which becomes true when a new sync header is available for testing and false when TEST_SH state is entered.

Condition all transitions to TEST_SH with this variable.

Move the similar test form sh_valid.

Cl **49** *SC* **49.2.11** *P* **302** *L* **22** # **1138**

Finch, Stephen G. Texas Instruments

Comment Type **T** *Comment Status* **A**

Reference Figure 49-12: When does one transition between states? If on each frame time, then the state machine is broken. For example, suppose one is in state BER_TEST_SH and two frames with bad headers are received back to back. The first frame time would transition to BER_BAD_SH. When we transition from BER_BAD_SH to BER_TEST_SH (assuming this is the path taken) we will miss the second invalid frame and not count it.

SuggestedRemedy

Create a new variable called frame_time. Define it to occur once every frame time. In clause 49.2.11.1.2 add:"frame_timeboolean variable which is set true each time a new frame is received. frame_time can cause a single state transition in a state machine. frame_time becomes false between frames."Condition the following transitions with an AND with frame_time, leave all others alone:BER_MT_INIT to BER_TEST_SHBER_TEST_SH to BER_BAD_SHBER_TEST_SH to GOOD_BER

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Call the variable ber_test_sh.

Add: ber_test_sh: boolean variable which becomes true when a new sync header is available for testing and false when BER_TEST_SH state is entered.

Condition all transitions to BER_TEST_SH with this variable.

Move test from sh_valid.

Cl **49** *SC* **49.2.11** *P* **303** *L* **17** # **1139**

Finch, Stephen G. Texas Instruments

Comment Type **T** *Comment Status* **R**

Reference Figure 49-13: There is no valid reason to check for sequences of Idle, Start, Data, and Terminate. The MAC/RS must create them in the right order during transmission and verify them on receiption to prevent line hits and other non-detectable errors from being accepted as valid data. If 64 bits of data (72 with control information) are received at the input of the 64b/66b encoder, then the PCS device should encode them. Each 64 (72) bit combination can and should be encoded without regard to predecessors.

SuggestedRemedy

Remove state TX_E.Combine states TX_C, TX_S, TX_D, TX_T into one state TX_INFO.State Transitions:GLOBAL: power_on=true + reset=true => TX_INITTX_INIT: init_done => TX_INFO !init_done => TX_INITTX_INFO: all transitions => TX_INFOEnd state machine.

Proposed Response *Response Status* **C**

REJECT. RS does not do code dependent checks which a specific code may need to enhance its delimiter protection to achieve Hamming distance. Those checks are the responsibility of the PCS. To accomplish this, the 10GBASE-R PCS, checks that a start delimiter is preceeded by idle. RS does not perform this check.

Also, it is possible for frames to be corrupted by bit errors such that the available frame types cannot encode them. For instance, if a data character gets corrupted to a control character. These must be replaced by an E frame because if we do not do this, we would have to make up data which would impact the Hamming distance of the code.

There is value in keeping symetry between the transmit and receive machines. The state machine you propose is not consistant with the objectives. No change to the state machine.

Cl **49** *SC* **49.2.11** *P* **304** *L* **9** # **1140**

Finch, Stephen G. Texas Instruments

Comment Type **T** *Comment Status* **R**

Reference Figure 49-14: There is no valid reason to check for sequences of Idle, Start, Data, and Terminate. The MAC/RS must create them in the right order during transmission and verify them on receiption to prevent line hits and other non-detectable errors from being accepted as valid data. If 66 bits of data are received at the input of the 64b/66b decoder, then the PCS device should decode them. Each 66 bit combination can and should be encoded without regard to predecessors.The logic in the receive state machine that I am talking about expects that corrupted, but possibly decodable data might be detected by seeing if the next data frame contains data that may not logically follow the data just received. Since 64b66b encoding/decoding can not cause this type of error, the only cases that might be detected using the scheme would be if some other device has corrupted the data, e.g., an 8B10B device or a sever line hit. If the corrupted data has occurred because of the encoding scheme of an 8B10B indicated it as an incorrect sequence or a running disparity error, then that device could have the logic to detect the error and take the same preventative steps that are mandated in the referenced state machine. Why burden the 64b66b PCS device with someone else's problem?

SuggestedRemedy

Remove state RX_E.Combine states RX_C, RX_S, RX_D, RX_T into one state RX_INFO.State Transitions:GLOBAL: power_on=true + reset=true => RX_INITRX_INIT: init_done => RX_INFO !init_done => RX_INITRX_INFO: all transitions => RX_INFOEnd state machine.

Proposed Response *Response Status* **C**

REJECT. RS does not do code dependent checks which a specific code may need to enhance its delimiter protection to achieve Hamming distance. Those checks are the responsibility of the PCS. To accomplish this, the 10GBASE-R PCS, checks that a start delimiter is preceeded by idle. RS does not perform this check.

Also, it is possible for frames to be corrupted by bit errors such that the available frame types cannot encode them. For instance, if a type field gets corrupted to an invalid type or a sync header on a data packet gets corrupted to the control sync header with resulting invalid payload content. These must be replaced by an E frame because if we do not do this, we would have to make up data which would impact the Hamming distance of the code.

The state machine you propose is not consistant with the objectives. No change to the state machine.

Cl **49** *SC* **49.2.11.1** *P* **301** *L* **24** # **1085**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A**

The hysteresis in clearing frame_lock seems excessive. Requiring 32 of 64 sync headers to be invalid before determining loss of lock is unnecessarily tight. When not in frame lock you should see 50% sync header errors statistically over a large sample, but how broad is the distribution of the numbers that would actually be seen and, more to the point, why bother to calculate it? We declare a local fault at a bit error rate of 10e-4. It would take a bit error rate greater than 10e-1 to cause a false out-of-lock detection even if we only required 6 of 64 sync headers to be invalid. Relaxing the bad_sh_eq_thresh to transition to frame_lock=FALSE will assure rapid detection of a loss of lock without risk of false detection due to high bit error rates.

SuggestedRemedy

Change the bad_sh_eq_thresh from 32 to 16 when in frame lock.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.11.1.1** *P* **297** *L* **30** # **109**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

missing comma

SuggestedRemedy

Replace "vector, tx_raw and" with "vector, tx_raw, and"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Actually, the existing commas should not be there and there are a couple of missing - and poor parallelism. Change to:
This function shall classify each 72-bit tx_raw vector and each 66-bit rx_coded vector as belonging to ….

Cl **49** *SC* **49.2.11.1.1** *P* **297** *L* **32-38** # **200**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A** *error*

The definition for the "C" FRAME_TYPE at lines 32 to 38 on page 297 is not strict enough. Specifically the portion concerning the /E/ character in the first character location. If there is an /E/ character in any of the eight locations, it should be considered an "E" FRAME_TYPE for maximum error robustness. An example is when there is an /E/ in the seventh or eighth character locations in a frame which precedes an "S" frame. The Transmit SM in Figure 49-13 won't transition from the TX_E state to the TX_S state to prevent this potential error case, but it will transition from the TX_C state to the TX_S state.

SuggestedRemedy

Change the sentence at lines 34 and 35 from "... and the first character is not /E/" to read "... and none of the characters is an /E/"
Note: This will also require the definition for the "E" FRAME_TYPE at lines 45 and 46 to change.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.11.1.1** *P* **297** *L* **32-38** # **199**

Don Alderrou nSerial

Comment Type **E** *Comment Status* **A**

The definition for the "C" FRAME_TYPE at lines 32-38 on page 297 is not clear. Specifically the three different "sub-types" are not clearly delineated.

SuggestedRemedy

Delineate the three "sub-types" with letters (a, b, c) or numerals (1, 2, 3) or bullets (*, *, *) For example Values: C; The vector contains one of the following:
*) eight valid control characters other than /O/, /S/ and /T/ and the first character is not /E/
*) one valid ordered set (a valid /O/ character in the first or fifth character data characters in the three following positions) and four valid control characters
*) two valid ordered sets

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Use a), b), c)

Cl **49** *SC* **49.2.11.1.1** *P* **297** *L* **32-47** # **198**

Don Alderrou nSerial

Comment Type **E** *Comment Status* **A**

The definition for the FRAME_TYPEs at lines 32 to 47 on page 297 are not clear. Specifically the relationship to the types in Figure 49-7—64b/66b Frame Formats is not defined.

SuggestedRemedy

For Each of the FRAME_TYPEs defined list which Frame Formats in Figure 49-7 it is related. For the control frames, add the sentence "This FRAME_TYPE corresponds to Control Frames with the 0xXX Type Field shown in Figure 49-7" For the data frame, add the sentence "This FRAME_TYPE corresponds to the Data Frame shown in Figure 49-7."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. This function is applied to both encoded and unencoded frames. The suggested addition would only apply to the receive frame decode. Separate into R_FRAME_TYPE and T_FRAME_TYPE constants. For T_FRAME_TYPE use the existing definitions. For R_FRAME_TYPE rewrite the definitions to with reference to type fields and valid encoded content.

Cl **49** *SC* **49.2.11.1.1** *P* **297** *L* **34** # **1202**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A** *error*

Should "and the first character is not an /E/" be deleted or changed to "any character is an /E/"

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See response to 200.

Cl **49** *SC* **49.2.11.1.1** *P* **297** *L* **34-38** # **110**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

Need some way to bulletize the items in this list. Also, add a word

SuggestedRemedy

Put a semicolon after the "/E/" on line 35 Put a semicolon after "characters" on lin 37 Put a period after "sets" on line 38 On line 36, replace "character data" with "character and data"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Also plan to make this into a lettered list.

Cl **49** *SC* **49.2.11.1.1** *P* **297** *L* **36** # **1203**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

Should be "...fifth and data...."

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.11.1.1** *P* **297** *L* **36** # **1082**

Stephen Haddock Extreme Networks

Comment Type **E** *Comment Status* **A**

missing word

SuggestedRemedy

Replace "fifth character data characters" with " fifth character with data characters".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Use "and" rather than "with"

Cl **49** *SC* **49.2.11.1.1** *P* **297** *L* **38-41** # **201**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **R** *error*

The definition for the "S" FRAME_TYPE at lines 38 to 41 on page 297 is not strict enough. Specifically the portion concerning control characters before the /S/. If there is an /E/ character preceding the /S/ in any of the four locations, it should be considered an "E" FRAME_TYPE for maximum error robustness. The Transmit SM in Figure 49-13 won't transition from the TX_E state to the TX_S state to prevent a similar error case, but this definition will allow the transmission of a suspect /S/ frame.

SuggestedRemedy

Change the sentence at lines 39 and 40 from "...are valid control characters other than S and T ..." to read " .. are valid control characters other than E, S and T"

Proposed Response *Response Status* **C**

REJECT. There is no Hamming distance error condition that is protected by doing this. Therefore, there is no need for the change.

Cl **49** *SC* **49.2.11.1.1** *P* **297** *L* **39** # **323**
Cruikshank, BrianS Conexant Systems

Comment Type **E** *Comment Status* **A**
The S Value is for "an S in its first or fifth character"

SuggestedRemedy

Proposed Response *Response Status* **C**
ACCEPT.

Cl **49** *SC* **49.2.11.1.1** *P* **297** *L* **39** # **1083**
Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A**
S cannot be in the fourth character.

SuggestedRemedy
Replace "fourth" with "fifth".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **49** *SC* **49.2.11.1.1** *P* **297** *L* **41-44** # **202**
Don Alderrou nSerial

Comment Type **T** *Comment Status* **R** *error*
The definition for the "T" FRAME_TYPE at lines 41 to 44 on page 297 is not strict enough. Specifically the portion concerning control characters after the /T/. If there is an /E/ character following the /T/ in any of the locations, it should be considered an "E" FRAME_TYPE for maximum error robustness. This is analogous to the definition of the "C" FRAME_TYPE at lines 32 to 38 on page 297 looking for the first character to not be an /E/ character.

SuggestedRemedy
Change the sentence at lines 43 and 44 from "...are valid control characters other than S and T ..." to read " .. are valid control characters other than E, S and T"
Note: This does impose a random /T/ delimiter robustness of control characters from "0 to 7" as mentioned in Ben's Nov 20th note to the reflector. If you look at my next comment regarding the transmit state machine in Figure 49-13, the two new T03 and T47 types reduce the robustness to "0 to 3." This is consistent with the end of packet delimiter robustness of the four lane oriented XGXS, so I don't think it's unreasonable.

Proposed Response *Response Status* **C**
REJECT. There is no Hamming distance error condition that is protected by doing this. Therefore, there is no need for the change. The XGXS test refered to in the comment protects against a Hamming distance issue that is specific to the 8B/10B code (specifically, its disparity checking which will catch single bit errors by the next character with distinct disparity forms). This check is not necessary on the 64B/66B code. The primary protection needed in 64B/66B to ensure Hamming distance is protection against cases where a single sync header is changed from data to control or vice versa. All those cases are currently protected against.

Cl **49** *SC* **49.2.11.1.1** *P* **298** *L* **5** # **332**
Dartnell, Peter Nortel Networks

Comment Type **E** *Comment Status* **A**
Add description of LF ordered set's Data octets.

SuggestedRemedy
Make a reference to Clause 46, subclause 46.2.6, Table 46-4 on page 228 line 21 which describes what an LF status message looks like.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Reference will be to 46.2.6.

Cl **49** *SC* **49.2.11.1.2** *P* **298** *L* **11** # **1204**
Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**
The list of variables should be in alphabetical order.

SuggestedRemedy

Proposed Response *Response Status* **C**
ACCEPT.

Cl **49** *SC* **49.2.11.1.2** *P* **298** *L* **38** # **1126**
Finch, Stephen G. Texas Instruments

Comment Type **E** *Comment Status* **A**
The usage of the word "frame" is inconsistant. A "frame" is one 66 bit code word, per 49.2.4.3.

SuggestedRemedy
Change "Boolean variable which is set true when the number of invalid sync headers within a frame equals the threshold." to "Boolean variable which is set true when the number of invalid sync headers within a window of 64 frames equals the threshold. See Figure 49-11."

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. We will also be replacing frame with block when referring to a unit of 64B/66B encoding.

Cl **49** *SC* **49.2.11.1.2.** *P* **298** *L* **13-14** # **111**
Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**
This init_done variable is unnecessary

SuggestedRemedy
remove this variable and its usage in the state machine

Proposed Response *Response Status* **C**
ACCEPT.

Cl **49** *SC* **49.2.11.1.3** *P* **299** *L* **10** # **1125**

Finch, Stephen G. Texas Instruments

Comment Type **E** *Comment Status* **A**

Shouldn't return type be indicated on all functions?

SuggestedRemedy

Change the functional definitions:For DECODE:"Decodes the 66 bit vector into a 72 bit vector to be sent to the GMII" to"Decodes the 66 bit vector into a 72 bit vector to be sent to the GMII, returns rx_raw<71:0>."For ENCODE:"Encodes the 72 bit vector into a 66 bit vector to be transmitted to the PMA or WIS" to "Encodes the 72 bit vector into a 66 bit vector to be transmitted to the PMA or WIS, returns tx_coded<65:0>"For R_TYPE:"Determines the FRAME_TYPE of the rx_coded< 65: 0> bit vector." to "Determines the FRAME_TYPE of the rx_coded< 65: 0> bit vector, returns FRAME_TYPE."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Make the following changes:
"into a 72 bit vector to be sent to the GMII" to "returning rx_raw<71:0> which is sent to the XGMII"
"into a 66 bit vector to be" to "returning tx_coded<65:0> which is"
In R_TYPE and T_TYPE change "Determines" to "Returns"

Cl **49** *SC* **49.2.11.1.3** *P* **299** *L* **9-19** # **112**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

Lots of spaces

SuggestedRemedy

Around the parenthesis and angle brackets, remove all excess spaces.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.11.1.4** *P* **299** *L* **23** # **113**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

The ++ increment comment doesn't belong here

SuggestedRemedy

Move this sentence to a new section called "notations"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Move subclause 49.1.7 State diagram conventions to be a subhead under 49.2.11. Delete the sentence on page 297 line 18 (because it is duplicated in 49.1.7). Move the sentence on ++ into the state diagram conventions subclause.

Cl **49** *SC* **49.2.11.1.4** *P* **299** *L* **26** # **114**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

missing s

SuggestedRemedy

Replace "sync header within" with "sync headers within"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.11.1.5** *P* **299** *L* **37** # **915**

Healey, Adam Agere Systems

Comment Type **T** *Comment Status* **A**

2^14 66-bit frames equates to about 104 microseconds. Also missing ")".

SuggestedRemedy

"Timer which is triggered every 2^14 66-bit frames in the receive process (approximately every 125 us."To:"Timer which is triggered every 19,531 66-bit frames in the receive process (approximately every 125 us)."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The number of frames in 125 us will vary depending on whether it is a LAN or a WAN Phy. Change to:
Timer which is triggered every 125 us +1% -25%.

This leaves the implementation the option of implementing with a 125 us timer (which a WIS would have) or a convenient binary divide of a frame rate clock and it provides sufficient accuracy.

Cl **49** *SC* **49.2.11.1.5** *P* **299** *L* **37** # **115**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

Extra space

SuggestedRemedy

Replace "66- bit" with "66-bit"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.11.2** *P* **299** *L* **42** # **1127**

Finch, Stephen G. Texas Instruments

Comment Type **E** *Comment Status* **R**

The paragraphs for the Transmit and Receive state machines have the phrase "It makes exactly one transition for each transmit/receive <sic> frame processed."This type of statement needs to be applied to the lock state machine as well and should be stated.

SuggestedRemedy

Change: "The Lock state machine shown in Figure 49?10 determines when the PCS has obtained lock to the received data stream. The Sync Header Monitor state machine shown in Figure 49?11 monitors the sync headers to produce signals used by the Lock state machine. The BER Monitor state machine shown in Figure 49?12 monitors the received signal for high bit error rate."To:"The Lock state machine shown in Figure 49?10 determines when the PCS has obtained lock to the received data stream. It makes exactly one transition for each receive frame processed.The Sync Header Monitor state machine shown in Figure 49?11 monitors the sync headers to produce signals used by the Lock state machine. The BER Monitor state machine shown in Figure 49?12 monitors the received signal for high bit error rate. These state machines transition only on the conditions listed by the state machine."

Proposed Response *Response Status* **C**

REJECT. The suggested statement is not true of the Lock state machine. It is not necessary to say that state machines transition when the transition conditions are satisfied.

Cl **49** *SC* **49.2.11.2** *P* **300** *L* # **204**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A**

Figure 49-10 on page 300 and Figure 49-11 on page 301 are tightly coupled, require too many variables to communicate, and are confusing. Combining these two Figures into one will clarify and simplify the standard.

SuggestedRemedy

1) Remove Figure 49-10 and rename Figure 49-11 "Sync header lock status state machine"
2) In the SH_MT_INIT state of Figure 49-11, remove the variables "good_sh_eq_64 <= false" and "bad_sh_eq_thresh <= false" and add the variable "frame_lock <= false"
3) In the 64_GOOD state of Figure 49-11, remove the variable "good_sh_eq_64 <= true", add the variable "frame_lock <= true" add the variable "sh_cnt <= 0", add the variable "sh_invalid cnt <= 0", and make it transition UCT to state TEST_SH
4) In the 32_BAD state of Figure 49-11, remove the variable "bad_sh_eq_thresh <= true" add the variable "frame_lock <= false", add the variable "sh_cnt <= 0", add the variable "sh_invalid cnt <= 0", add the variable "slip" and make it transition to state TEST_SH when "slip_done = true."
5) Add a state between the 64_GOOD state and the 32_BAD state such that the transitions from the VALID_SH state and the INVALID_SH state to the SH_MT_INIT state go to the new state. In the new state, add the variables "sh_cnt <= 0" and "sh_invalid cnt <= 0", and add the transition UCT to the TEST_SH state.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Use change in 1084 instead because it accomodates 863 better.

Cl **49** *SC* **49.2.11.2** *P* **300** *L* **1** # **1084**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A**

The separation of the Lock and Sync Header Monitor functions into different state machines with variables passed between them seems unnecessarily complex. It is simpler to combine them.

SuggestedRemedy

Delete Figure 49-10. Delete the good_sh_eq_64 and bad_sh_eq_thresh variables, and delete all assignment operations to these variables from Figure 49-11.

Add a state to Figure 49-11 that is entered with the universal transition "power_on=TRUE + reset=TRUE + signal_detect=FALSE", contains the operation "frame_lock <= FALSE", and is exited with a UCT to state SH_MT_INIT.

Add the operation "frame_lock <= TRUE" to state 64_GOOD, and make the exit condition from this state a UCT.

Add the conditions "frame_lock <= false" and "slip" to state 32_BAD.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.11.2** *P* **300** *L* **1** # **1200**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

Consider removing test for power_on and instead define reset to include the power_on reset condition.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Apply this to all state machines.

Cl **49** *SC* **49.2.11.2** *P* **300** *L* **10** # **1199**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

State machine style issue. For boolean transition terms, consider deleting =true and =false adding a ! in front of those variables currently tested for =false.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Applies to all clauses.

Cl **49** *SC* **49.2.11.2** *P* **300** *L* **1-20** # **116**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

Transition conditions are not well aligned to the transition arrows. Same comment applies to all state machines.

SuggestedRemedy

Align conditions better with arrows

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.11.2** *P* **300** *L* **16** # **863**

Tom Hatley Spirent Communicatio

Comment Type **T** *Comment Status* **A**

This comment refers to the State Diagrams for the Lock State Machine and the Synch Header Monitor State Machine.

The variable slip_done is asserted true when a slip has been completed. This variable is sensed by both the Lock State Machine and the Synch Header Monitor State Machine.

However, there is nothing in either state diagram or in the description of the variable itself (page 298 line 45) that indicates when the variable should be set false. As the state diagrams are drawn, once slip_done is asserted, it never is de-asserted. This will cause improper operation of the state machines

SuggestedRemedy

In the state 32_BAD, the variable slip_done should be set to false prior to setting bad_sh_eq_thresh true.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Set slip_done = false in SH_MT_INIT

Cl **49** *SC* **49.2.11.2** *P* **300** *L* **17** # **1128**

Finch, Stephen G. Texas Instruments

Comment Type **E** *Comment Status* **A**

The text "bad_sh_eq_thresh=true" is split onto two lines.

SuggestedRemedy

Fix.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.11.2** *P* **300** *L* **17** # **1198**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

Resize the text window so "true" isn't split.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Will be removing = true

Cl **49** *SC* **49.2.11.2** *P* **301** *L* **1-34** # **184**

Brierley-Green, Andrew Philips Semiconductor

Comment Type **T** *Comment Status* **A**

I believe there is an error in the state diagram for the Sync header monitor state machine. Specifically, the transition condition from INVALID_SH to TEST_SH will often be true at the same time as the transition condition from INVALID_SH to 32_BAD, when frame_lock = false.

SuggestedRemedy

Change the transition condition from INVALID_SH to TEST_SH as follows:
sh_cnt < 64 *
sh_invalid_cnt < 32 *
frame_lock = true

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.11.2** *P* **301** *L* **24** # **1136**

Finch, Stephen G. Texas Instruments

Comment Type **E** *Comment Status* **A**

In Figure 49-11, Transition from INVALID_SH to TEST_SH and the transition from INVALID_SH to SH_MT_INIT are inconsistant. The INVALID_SH to SH_MT_INIT transition has "* frame_lock=true" and the INVALID_SH to TEST_SH transition doesn't.While it is technically correct as is for clarity a change is requested.

SuggestedRemedy

Change:sh_cnt < 64 * sh_invalid_cnt < 32To:sh_cnt < 64 * sh_invalid_cnt < 32 * frame_lock=true

Proposed Response *Response Status* **C**

ACCEPT. Same change as 184.

Cl **49** *SC* **49.2.11.2** *P* **302** *L* # **118**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

ugly arrow

SuggestedRemedy

Move START_TIMER state down so transition arrow from HI_BER can be straight

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. OBE 1086

Cl **49** *SC* **49.2.11.2** *P* **302** *L* **23** # **1201**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

Adjust term and line so they don't interfere with each other. Also on page 304.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.11.2** *P* **302** *L* **8** # **1086**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A**

This is a nit, but when the goal is to count valid/invalid sync headers in a 125 us window it seems silly to start the timer and then wait for frame_lock before starting to count. This only affects the first 125us after initialization and worst case would spin through GOOD_BER once before counting over a full 125us interval, but it's also pretty straight forward to clean up.

SuggestedRemedy

Move the START_TIMER state toward the top of the diagram (between BER_MT_INIT and BER_TEST_SH) keeping the same input and exit transitions.

Make the exit transition from BER_MT_INIT upon frame_lock=TRUE go to START_TIMER.

Remove the "hi_ber_cnt <=0" and "start_125us_timer" operations from BER_MT_INIT.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.11.2** *P* **303** *L* # **119**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **R** *error*

In clause 36, the transmit state machine doesn't start transmitting until it is between packets.

SuggestedRemedy

Remove transitions from TX_INIT to TX_S and to TX_E. Also, from an earlier comment, remove TX_INIT variable from transition to TX_C as well as transition back to itself

Proposed Response *Response Status* **C**

REJECT. Current state machine isn't broken. If it starts in the middle of the packet, it will ensure the packet transmission has an error by going to /E/. The change would remove the possibility of counting an errored packet at the MAC caused by tranition of the machine rather than by a bit hit. The downside of the suggested change is that when receiving a bad input signal such as continuous data, the output will be idle rather than what was received or local fault.

Cl **49** *SC* **49.2.11.2** *P* **303** *L* # **203**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **R** *error*

The transition from the TX_T state to the TX_S state in Figure 49-13 on page 303 is not strict enough. If the "T" FRAME_TYPE is a T4, T5, T6, or T7 and the "S" FRAME_TYPE is S0, the minimum IPG of 5 will be violated.

SuggestedRemedy

I don't see an "easy fix" for this problem. One method is to re-define the "S" FRAME_TYPE into two (S0, S4) FRAME_TYPEs and the "T" FRAME_TYPE into two (T03, T47) FRAME_TYPEs. Then the TX_T state can be split into a TX_T03 state and a TX_T47 state and the transitions to the TX_S state can be changed from "T_TYPE(tx_raw) = S" to "T_TYPE(tx_raw) = (S0 + S4)" for the TX_T03 state and to "T_TYPE(tx_raw) = S4" for the TX_T47 state. The transitions into the new TX_T03 and TX_T47 states use the new T03 and T47 FRAME_TYPES to choose which state.
Note: Changing the "T" FRAME_TYPE into two (T03, T47) FRAME_TYPEs would relax the /T/ delimiter robustness regarding the /E/ control characters from "0 to 7" down to "0 to 3" as mentioned in my previous comment on the "T" FRAME_TYPE definition.

Proposed Response *Response Status* **C**

REJECT. We do not need to protect against excessive IPG shrinkage. The purpose of checking next frame is to protect against a 2-bit hit changing a data frame into a control frame with a T type field. That purpose is accomplished.

Cl **49** *SC* **49.2.11.2** *P* **303** *L* **7** # **1089**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A**

The state machine is in the TX_INIT state when it is not receiving viable signals from the XGMII to forward across the link. By generating Idle frames in this state, the station at the other end of the link cannot distinguish between this station being unable to forward data packets and simply not having any data packets to forward. It would be more appropriate to send frames containing local fault indication while in this state.

SuggestedRemedy

Change the frames transmitted in the Tx_INIT state from Idle frames to Pulse frames with a local fault indication.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. init_done will be removed. If XGMII signals are invalid, that will send us to /E/.

Cl **49** *SC* **49.2.11.2** *P* **304** *L* # **120**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **R**

Don't jump to RX_E state just because we power up in the middle of a packet

SuggestedRemedy

Add a new state between RX_INIT and RX_C called RX_WAIT_FOR_C. The only transition from RX_INIT goes to RX_WAIT_FOR_C and the condition is UCT (i.e. remove all other transitions from RX_INIT). The only transition from RX_WAIT_FOR_C goes to RX_C upon the condition R_TYPE(rx_coded)=C.

Proposed Response *Response Status* **C**

REJECT. See also 119. There is no reason to change. Sending an /E/ does not cause increment of any MAC counters since the RS will not indicate the fragment without a Start to MAC.

Cl **49** *SC* **49.2.11.2** *P* **304** *L* # **799**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **R** *error*

Figure 49--14-Receive state machine should send an Error frame before sending the Local_Fault frame when "hi_ber = true" or "frame_lock = false" when the current receive packet is being processed.

SuggestedRemedy

Change the receive state machine such that when in the RX_S or RX_D or RX_T states, it will output an Error frame (transition to the RX_E) if the "hi_ber = true" or "frame_lock = false" conditions occur. Here are the details:
1) Remove the "hi_ber = true" and "frame_lock = false" conditions from the global transition into the RX_INIT state.
2) Add the "hi_ber = true" and "frame_lock = false" conditions and transition arcs from the RX_C state and the RX_E state to the RX_INIT state.
3) Add the "hi_ber = true" condition to the transition from the RX_INIT state back to the RX_init state.
4) Add the "hi_ber = true" and "frame_lock = false" conditions to the transitions from the RX_S, RX_D, and RX_T states to the RX_E state.

Proposed Response *Response Status* **C**

REJECT. The proposed change is unnecessary. frame_lock only goes false and hi_ber only goes true because sync header errors are occurring. These same errors will cause /E/s to occur. Therefore, any frame that was in transit will already have /E/s.

Also, if we are in the S or D states, transitioning to RX_INIT will cause a frame that ends without a T and also will ensure that the frame is discarded. If we are in the T state it means that we received a T with a valid S or C frame after it and there is no reason to add an Eframe after it and doing so would not cause the frame to be discarded.

Cl **49** *SC* **49.2.11.2** *P* **304** *L* **37** # **916**

Healey, Adam Agere Systems

Comment Type **E** *Comment Status* **A**

Redundant frame_lock = false transition from (and to) RX_INIT state, Figure 49-14.

SuggestedRemedy

Remove frame_lock = false transition to and from RX_INIT.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.11.2** *P* **304** *L* **9** # **1088**

Stephen Haddock Extreme Networks

Comment Type **E** *Comment Status* **A**

The transition from RX_INIT back to itself on the condition "frame_lock=FALSE" is unnecessary when there is a universal transition into RX_INIT for the same condition.

SuggestedRemedy

Delete the transition from RX_INIT to itself.

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **49** *SC* **49.2.12.1** *P* **300** *L* **32** # **1129**

Finch, Stephen G. Texas Instruments

Comment Type **T** *Comment Status* **A**

"PCS_status" looks like a key word but is not defined or used anywhere else in the document.

SuggestedRemedy

Change "PCS_status: Indicates whether the PCS is in a fully operational state. It is only true if frame_lock is true and hi_ber is false." to "PCS status is indicated by the following status bits:"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. This is defining a flag for use by the MDIO management registers. It should be formated as the other items below. Also, add "This status is reflected in MDIO registers 3.1.12 and 3.32.12. The inverse of this status is reflected in MDIO register 3.1.10.

Cl **49** *SC* **49.2.12.1** *P* **300** *L* **32** # **117**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

change the format

SuggestedRemedy

Replace "PCS_status: Indicates:" with "PCS_status indicates"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. This definition should be formated the same as frame lock below it.

Cl **49** *SC* **49.2.12.1** *P* **300** *L* **36** # **1130**

Finch, Stephen G. Texas Instruments

Comment Type **E** *Comment Status* **A**

We should tie to the appropriate bit definition in MDIO registers

SuggestedRemedy

Add "This status is reflected in MDIO register bit 3.32.0 as defined in Table 45-16."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.12.1** *P* **300** *L* **38** # **1131**

Finch, Stephen G. Texas Instruments

Comment Type **E** *Comment Status* **A**

We should tie to the appropriate bit definition in MDIO registers

SuggestedRemedy

Add "This status is reflected in MDIO register bit 3.32.1 as defined in Table 45-16."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.12.1** *P* **300** *L* **39** # **45001**

Ed Turner

Comment Type **T** *Comment Status* **D**

The PCS should not reflect the status of signal_detect because it is already reflected in the PMA or WIS.

SuggestedRemedy

Delete signal_detect from 49.2.12.1.

Proposed Response *Response Status* **Z**

Cl **49** *SC* **49.2.12.1** *P* **300** *L* **40** # **1132**

Finch, Stephen G. Texas Instruments

Comment Type **E** *Comment Status* **A**

We should tie to the appropriate bit definition in MDIO registers, but there is no currently defined bit in the MDIO registers. Another ballot comment recommends adding such a bit.

SuggestedRemedy

Add "This status is reflected in MDIO register bit 3.32.x as defined in Table 45-26."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Conditional on MDIO adding the bit.

Cl **49** *SC* **49.2.12.2** *P* **300** *L* **44** # **1134**

Finch, Stephen G. Texas Instruments

Comment Type **T** *Comment Status* **A**

There are no MDIO registers defined to hold these values.

SuggestedRemedy

Either move these counters to the clause 49.2.11.1.4 or add appropriate MDIO registers to clause 45.2.3.4 or new register in claue 45.2.3.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Comments have been made on clause 45 requesting addtion of these counters to a new register.

Cl **49** *SC* **49.2.12.2** *P* **300** *L* **49** # **1087**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A**

A 4 bit counter for hi_ber_counter is either too much or too little. Since it counts transitions to hi_ber=TRUE, it is overdone. This should never happen in normal operation, and a single sticky bit to indicate that it has happened is sufficient to "localize transient problems". (The same argument can be made for frame_lock_count.) There would be more information conveyed by the counter if it counted the number of 125us intervals with hi_ber=TRUE, rather than simply the transitions, but even this is of marginal value when the threshold for hi_ber assertion is at such a high bit error rate (approx 10e-4). The hi_ber_counter could be used for an "early warning" of a degrading link, but this is the case where the current definition is too little. If the hi_ber_counter was a cumulative count of the invalid sync headers, then a polling interval as infrequent as every 125ms could detect bit error rates on the order of 10e-7 to 10e-8.

SuggestedRemedy

Change "frame_lock_count" and "hi_ber_counter" from 4-bit counters to single sticky bits that are set on any loss of frame lock or detection of hi_ber respectively. Change the names to "frame_lock_lost" and "hi_ber_detected".

Change "hi_ber_counter" to be a 4-bit counter (that sticks at all ones) that is incremented along with hi_ber_cnt in the BER_BAD_SH state of Figure 49-12, and cleared when read.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Make frame_lock and hi_ber sticky bits and make the cumulative counter 6 bits.

Cl **49** *SC* **49.2.12.2** *P* **300** *L* **49** # **1135**

Finch, Stephen G. Texas Instruments

Comment Type **T** *Comment Status* **A**

Other counters are called xxx_count, but hi_ber_counter isn't. For consistancy, change the name. This is the only place this name occurs.

SuggestedRemedy

Change "hi_ber_counter" to "hi_ber_count"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.13** *P* **301** *L* **41** # **1390**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

10GBASE-R split across two lines

SuggestedRemedy

insert joiner to keep "10GBASE-" and "R" together

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Make hyphen non-breaking.

Cl **49** *SC* **49.2.13** *P* **301** *L* **41** # **917**

Healey, Adam Agere Systems

Comment Type **T** *Comment Status* **A**

Delay specification is too restrictive given the fact that this layer is responsible for rate adaptation (per 49.1.1, ~ 18). Recommended allocations are as follows:encoder and TX gearbox: 24 cycles, maxdecoder and RX gearbox: 26 cycles, maxTX rate adaptation: 16 cycles, maxRX rate adaptation: 38 cycles, maxA "cycle" refers to an XGMII clock cycle. In this case, an XGMII cycle is assumed to be 290.44 MHz to be compatible with the WIS payload rate.Therefore, the total TX data delay should be 137.8 ns (1378 BT) and the total RX data delay should be 220.4 ns (2204 BT).Given the proposed pause reaction time (31B.3.7) of 40 pause_quanta (20,480 BT), the additional latency proposed here has no impact on system performance and enables additional implementation flexibility.

SuggestedRemedy

Add table with format based on Table 48-5 with the following two entries:XGMII => XSBI: 1378 BTXSBI => XGMII: 2204 BT

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Since there is not a need to make these numbers tight. Make transmit 150 ns and 250 ns. Also, keep specification in ns rather than bit times. Bit time is apt to be misunderstood in this context. Is it code bit rate or MAC bit rate? WAN and LAN Phy speed differences further confuse this.

Task the editors to make representation consistent over clauses and to review values.

Cl **49** *SC* **49.2.13** *P* **303** *L* **7** # **1121**

Finch, Stephen G. Texas Instruments

Comment Type **T** *Comment Status* **A**

In figure 49-13, in state TX_INIT, the action should be tx_coded <= LFRAME_T. This will require a definition of LFRAME_T in clause 49.2.11.1.1.Justification: If a device can not forward received data then it does not have Link Status = 1. When Link Status = 0, we are in a local fault condition. When local fault is true we should, if possible, generate a Local Fault signal. Note that this is true for the receive state machine in figure 49-14

SuggestedRemedy

Change "tx_coded <= IFRAME_T" to "tx_coded <= LFRAME_T". Add definition for LFRAME_T to clause 49.2.11.1.1

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.2** *P* **290** *L* **12** # **1194**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

The use of the term "frame" for 66-bit structures is confusing.

SuggestedRemedy

Use "block" in place of "frame"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.2** *P* **290** *L* **13** # **1245**

Rich Taborek — nSerial Corporation

Comment Type **T** *Comment Status* **A**

The gearbox is a function strictly associated with a specific and non-optimal physical intantiation of the 10GBASE-R PMA service interface.

SuggestedRemedy

Move the gearbox function, in its entirety, to Clause 51.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See response to 1244. Will add a statement that implementations that do not expose an XSBI interface may not require a gearbox depending on internal path width chosen by the implementer.

Cl **49** *SC* **49.2.2** *P* **290** *L* **15** # **98**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

misspelling - there are many instances of this throughout the clause for both WIS_UNITDATA and PCS_UNITDATA.

SuggestedRemedy

Replace "UNIDATA" with "UNITDATA" in all instances

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.2** *P* **290** *L* **26** # **921**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Need to add a shall statement about driving WIS_SIGNAL request either by changing this sentence or adding a statement to the state machine. Also, either WIS_SIGNAL.request should have values added to cover other reasons for not being able to process the received signal (i.e. HI_BER and RESET) or the definition of FRAME_LOCK should be altered to include those.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change WIS_SIGNAL.request(FRAME_LOCK) to WIS_SIGNAL.request(PCS_R_STATUS)

change last sentence at p 290 l 27 to:
The value of PCS_R_STATUS shall be FAIL when the Receive state machine is in the RX_INIT state and OK otherwise.

The need for this signal is dependent on resolution to clause 50 comments.

THIS CHANGE REQUIRES A MATCHING CHANGE IN 50.2

Cl **49** *SC* **49.2.2** *P* **290** *L* **26** # **912**

Healey, Adam — Agere Systems

Comment Type **E** *Comment Status* **A**

"to the WIS" repeated

SuggestedRemedy

Remove redundant "to the WIS".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.3** *P* **293** *L* **7** # **913**

Healey, Adam — Agere Systems

Comment Type **T** *Comment Status* **R**

No mapping defined for the following sequences: TCCCODDD, DTCCODDD, DDTCODDD, DDDTODDD.There is no mechanism in the RS or XGXS that prevents a Pulse column from directly following a Terminate column. As it stands, this event will be encoded as an error (and consequently invalidate the preceding packet) for the cases given above, but not in the case where the Terminate and Pulse columns are separated by a 66-bit frame boundary. This inconsistency should be rectified. The proposed suggested remedy assumes that it is desirable to accept the frame preceding the Pulse column.An alternate solution would be to use the terminate check function to ensure that the code following T is either Idle or S and stitute E if Pulse is the first 4 bytes in the next frame.

SuggestedRemedy

Add the following encodings to Figure 49-7: 1 2 3 4 5 6 01 23456789 0123456789012345678901234567890123456789012345678901234Sync Type +--D1--++--D2--++--D3--++--D4--++--D5--++--D6--++--D7--+[TCCCODDD] 10 TBD 0000000--C1-----C2-----C3----O4----D5------D6------D7---[DTCCODDD] 10 TBD ---D1---000000--C2-----C3----O4----D5------D6------D7---[DDTCODDD] 10 TBD ---D1------D2---00000--C3----O4----D5------D6------D7---[DDDTODDD] 10 TBD ---D1------D2------D3---0000-O4----D5------D6------D7---Type field encodings need to be chosen to meet Hamming distance requirements.

Proposed Response *Response Status* **C**

REJECT. The frame type codes have been chosen to have a 4 bit Hamming distance. There are no available codes for adding these types.

Neither the 64B/66B nor 8B/10B will guarantee a pulse ordered set being transmitted immediately following a frame.

Cl **49** *SC* **49.2.4** *P* **291** *L* # **101**

Brown, Benjamin J — AMCC

Comment Type **T** *Comment Status* **A**

In figure 49-5, use a different interface label. Same comment applies to figure 49-6.

SuggestedRemedy

Replace "XSBI" with "PMA service interface"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.4** *P* **291** *L* **33** # **1314**

Jonathan Thatcher — World Wide Packets

Comment Type **E** *Comment Status* **A**

Having Figure 49-5 show the WIS service interfache XSBI as a serial line is somewhat confusing.Ditto for Figure 49-6

SuggestedRemedy

Recommend showing transfer across the interface like the XGMII at the top. The serial line could be put below the interface to show direction of transmission order

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Delete "serial bit order" and the line pointing to it.

Cl **49** *SC* **49.2.4.1** *P* **291** *L* **48** # **1123**

Finch, Stephen G. — Texas Instruments

Comment Type **E** *Comment Status* **A**

Some textual changes for consistancy and clearity.

SuggestedRemedy

Change "The control character for terminate is shown as Tn when n is the character where it occurs."to"The control character for terminate is shown as T0 to T7. (new paragraph)Two consecutive XGMII transfers provide eight data or control characters which are encoded into one 66 bit transmission code. The subscript in the above labels relates the location of the data octet or control character received on the XGMII bus to the placement of the data octet or the encoded control character in the 66 bit tranmission codeword."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The sentence: "The subscript in the above labels relates the location of the data octet or control character received on the XGMII bus to the placement of the data octet or the encoded control character in the 66 bit tranmission codeword." is not accurate because placement varies based on frame type.
Instead use: "The subscript in the above labels indicates the position of the character in the 8 characters of the XGMII transfers."

Cl **49** *SC* **49.2.4.1** *P* **291** *L* **49-50** # **100**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

misspelling - Also applies to note at bottom of figure 49-7.

SuggestedRemedy

Replace 4 instances of "hexidecimal" with "hexadecimal"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.4.1** *P* **291** *L* **53** # **99**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **R**

I know you're trying to drive home the point of which bit is transmitted first but you already made this statement

SuggestedRemedy

Remove this last sentence.

Proposed Response *Response Status* **C**

REJECT. I couldn't find a place where this statement was duplicated. The order is graphically illustrated in figure 49-5, but it is worth putting in text as well. If the commenter can point out such a place, then this response will be reconsidered.

Cl **49** *SC* **49.2.4.1** *P* **292** *L* **28** # **302**

Figueira, Norival Nortel Networks

Comment Type **E** *Comment Status* **A**

Inconsistent to use both service interface and physical interface. To be consistent, this line should say "WIS or PMA Service Interface".

SuggestedRemedy

Change line to "WIS or PMA Service Interface".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.4.11** *P* **295** *L* **40** # **193**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A**

Clause 49.2.4.11 on page 295 line 40 reads
"An invalid control code is any code that does not appear in Table 49-1." Since there are XGMII control codes that can't be encoded as 10GBASE-R control codes (i.e. 0xfb-/S/ in a lane other than 0 or 4) on the TX path, this definition of an invalid control code needs to be expanded.

SuggestedRemedy

Change the invalid definition at line 40 to read "An invalid control code is a received XGMII control code that does not have a corresponding 10GBASE-R control code as listed in in Table 49-1 or a received 10GBASE-R control code that does not have a corresponding XGMII control code as listed in in Table 49-1."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Subclause needs rewording, but the suggested text doesn't do it. 49.2.4.6 describes invalid frames and a character with an invalid control code is one of the causes of a invalid frame. The invalid frame subclause should also add:
a set of 8 XGMII characters that does not have a corresponding frame type in Figure 49-7.

Change:
It is also sent when invalid frames or invalid control codes are received. An invalid control code is any code that does not appear in Table 49-1.
to:
It is also sent when invalid frames are received.

Cl **49** *SC* **49.2.4.3** *P* **292** *L* **30** # **301**

Figueira, Norival Nortel Networks

Comment Type **E** *Comment Status* **A**

Figure 49-6 uses tx_data-unit and rx_data-unit, which are correct for the WIS Service Interface. For the PMA service interface the correct names are tx_data-group and rx_data-group.

SuggestedRemedy

Indicate that tx_data-unit and rx_data-unit are the names for the WIS Service Interface and that tx_data-group and rx_data-group are the names for the PMA Service Interface.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.4.3** *P* **292** *L* **52-53** # **102**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

With the addition of Pulse ordered_sets, there are no longer exactly 8 control characters or 7 control and data characters. These are different.

SuggestedRemedy

In line 52, replace "Control frame contain" with "Control frames without Pulse ordered_sets contain". At the end of that sentence on line 53, add a new sentence: "Control frames with Pulse ordered sets contain a type field and a total of seven or eight control and data characters.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Replace the paragraph with:
Data frames contain eight data characters. Control frames contain a type field followed by a total of eight control and data characters. For control frames containing a Start or Terminate character, that character is implied by the type field. Other control characters are encoded in a 7-bit control code or a 4-bit O Code.

Cl **49** *SC* **49.2.4.3** *P* **293** *L* # **191**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A**

Figure 49-7—64b/66b Frame Formats on page 293 does not list the reserved 0x00 type field as listed in walker_1_0700 page 19. Since the reserved control codes are listed in Table 49-1, the reserved type should be listed in Figure 49-7.

SuggestedRemedy

Add the reserved 0x00 type field to Figure 49-7.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Since all type codes not in the table produce an E Frame, there isn't any reason to reserve unused codes explicitly. They all cannot be used. Add a note to the figure or text to describe that only 0x00 type code preserves the Hamming distance and is reserved.

Cl **49** *SC* **49.2.4.3** *P* **293** *L* **0** # **183**

Romer, Tume Optillion AB

Comment Type **T** *Comment Status* **A**

Figure 49-7 64b/66b Frame Formats The type field encoding for C0/C1/C2/C3/O4/D5/D6/D7 is the same as for the encoding of C0/C1/C2/C3/C4/C5/C6/C7 (x1E in the type field). This makes it difficult to distinguish between a errored C and a correct ODDD. (Because all else is equal (value zero) except one bit).

SuggestedRemedy

Change type field encoding for C0/C1/C2/C3/O4/D5/D6/D7 to something else. Suggested is x2D since this have some similarities to the other encodings for O-type. Also suggest other coding if there is some special reasoning behind the choice of type field values? (ie I am willing to settle with anything other than x1E and different from already choosen values). Since many of the choosen type values is actually inverses/reverses of each other, I also suggest that we may choose to encode the type somewhat more rigorously.

Proposed Response *Response Status* **C**

ACCEPT. Type field should be 0x2d.

Type field encodings were chosen to have 4-bit Hamming distance.

Cl **49** *SC* **49.2.4.3** *P* **293** *L* **15** # **1196**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

The type code is a duplicate. Replace with the correct value.

SuggestedRemedy

0x2d is the value

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.4.3** *P* **293** *L* **15** # **333**

Dartnell, Peter Nortel Networks

Comment Type **E** *Comment Status* **A**

Typo for Ordered Set Type field

SuggestedRemedy

Change the Type field of CCCCODDD to 0x2d (from 0x1e - used by CCCCCCCC) as described in Rich Taborek's slide.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Type field should be 0x2d. The table was in walker_1_0700.

Cl **49** *SC* **49.2.4.3** *P* **293** *L* **15** # **192**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A**

Figure 49-7—64b/66b Frame Formats on page 293 has the incorrect Type Field for the third row (C0,C1,C2,C3,O4,D5,D6,D7) at line 15. It is listed as 0x1e but it should be 0x2d according to walker_1_0700 page 19.

SuggestedRemedy

Change the 0x1e at line 15 on page 293 to 0x2d.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.4.3** *P* **293** *L* **16** # **1117**

Finch, Stephen G. Texas Instruments

Comment Type **T** *Comment Status* **A**

In table 49-7, the entry for CCCCODDD has the wrong Type Field value.

SuggestedRemedy

Change 0x1e in the table entry to 0x2d.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.4.3** *P* **293** *L* **38** # **1124**

Finch, Stephen G. Texas Instruments

Comment Type **E** *Comment Status* **A**

For clarity, I think we should have text that indicates that the Input Data (Data Frame Format and Control Frame Formats) have a relationship to the XGMII TXC and RXC signal lines. I think after table 49-7 is a good location. Suggested text given below.

SuggestedRemedy

In Table 49-7, the column labeled Input Data shows, in an abreviated form, the eight characters used to create the 66 bit code word. These characters are either data chacters or control characters and, when transferred across the XGMII interface, the cooresponding TXC or RXC bit is set accordingly. Within the Input Data column, D0 through D7 are data octets and are transferred with the cooresponding TXC or RXC bit set to zero. All other characters are control octets and are transferred with the cooresponding TXC or RXC bit set to one.

Proposed Response *Response Status* **C**

ACCEPT. Also move the text that is currently a note on the figure to the end of this paragraph.

Cl **49** *SC* **49.2.4.4** *P* **293** *L* **50** # **1080**

Stephen Haddock Extreme Networks

Comment Type **T** *Comment Status* **A**

What does it mean that a codes not in the table are reserved? How do they differ from the reserved codes that are in the table? It sounds like a device compliant with this standard is not allowable to transmit this code, but that future modifications may allow it to be transmitted so a receiver should be tolerant of it. However section 49.2.4.11 says that any code not appearing in the table is to be treated as an error. This makes it meaningless to claim that it is reserved.

SuggestedRemedy

Replace "are reserved" with "shall not be transmitted and shall be treated as an error if received"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.4.4** *P* **294** *L* # **103**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A** *sequence*

Several comments on table 49-1

SuggestedRemedy

Remove reserved labels and notes regarding Fibre Channel. Re-label these ordered_sets a reserved 6 & 7. Remove the 8B/10B column since these are not applicable in this clause. Fix the grammer in the last sentence of the last note: "They are not sent on the XGMII or in the 10GBASE-R code but code points have been reserved for them."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accept relabeling to reserved6. The second reserved ordered set character will be removed. reserved6 will be moved to the bottom of the table to put it in order.

Reject removing the 8B/10B column. It was added based upon requests and it is nice to have the information combined in one table. It is clearly marked as for information only and a reference is given.

Accept grammar correction of note.

Cl **49** *SC* **49.2.4.4** *P* **294** *L* # **215**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A**

Table 49-1—Control Codes on page 294 should have a note stating the bit order the same way Figure 49-7—64b/66b Frame Formats on page 293 states the bit order for the type field.

SuggestedRemedy

Add the below text as a note to Table 49-1.
"Bits and field positions are shown with the least significant bit on the left. Hexidecimal numbers are shown in normal hexidecimal. For example the 7-bit 10GBASE-R Control Code field of 0x2d is sent as 101 1010 representing bits 0 through 6 of the 7 bit Control Code."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The first sentence would not apply to the table as it only shows hexidecimal representations. Also, we already have a lot of mentions of bit ordering. It isn't necessary to add another.

Will move the note to the text describing the figure and make it clear it applies to all hexadecimal representations in the clause.

Cl **49** *SC* **49.2.4.4** *P* **294** *L* # **194**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A** *sequence*

Table 49-1 on page 294 lists the wrong 8B/10B code for the reserved4 control character. The XGMII control code of 0xdc has the name of reserved4 and the 0x66 control code as shown on page 6 of the walker_1_0700 presentation. According to the 8B/10B Table 36-2, the 0xdc corresponds to the K28.6 code.
Note: The reserved(with double dagger) which has the O code encoding of 0x5 has the same 0xdc XGMII control code. This control character will probably be removed before the TF vote described in the editorial box since the FC signals will most likely use the Pulse Ordered Set.

SuggestedRemedy

Change the 8B/10B code in Table 49-1 for the reserved4 control character from "K28.7" to "K28.6."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.4.4** *P* **294** *L* **13** # **1119**

Finch, Stephen G. Texas Instruments

Comment Type **E** *Comment Status* **A** *sequence*

The use of /Op/ seems inconsistant with all the other names which contain only a single character.

SuggestedRemedy

I suggest replaceing /Op/ with /P/ for Pulse ordered sets. While the use of /O/ for this would cause conflict with another definition, /P/ is used in 48.2.5.1.2 for this value.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. It will be changed to /Q/.

Cl **49** *SC* **49.2.4.4** *P* **294** *L* **15** # **1118**

Finch, Stephen G. Texas Instruments

Comment Type **T** *Comment Status* **A**

Pulse Ordered sets and the two reserved codes which follow have "-" in the 10GBASE-R Control Code field and have values in the 10GBASE-R O Code field. While the O Code field is true, they are encoded by type field as well.

SuggestedRemedy

Place the following text in the 10GBASE-R Control Code column for these entries:"encoded by type field and O Code value"

Proposed Response *Response Status* **C**

ACCEPT. Use "plus" instead of "and".

Cl **49** *SC* **49.2.4.4** *P* **294** *L* **17** # **1195**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A** *sequence*

The code on this line requires 802.3ae approval.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. This code will be removed.

Cl **49** *SC* **49.2.4.4** *P* **294** *L* **26** # **330**

Dartnell, Peter — Nortel Networks

Comment Type **T** *Comment Status* **A** *sequence*

Changes to Table 49-1 (repeated XGMII Control Codes)

SuggestedRemedy

The XGMII control code for reserved4 should be changed to 0xfc (8b/10b K28.7) since 0xdc (8b/10b K28.6) was chosen for the Fibre Channel Sequence ordered set.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The 0xdc reserved ordered set will be removed and 0xdc, K28.6 will be used for reserved4

Cl **49** *SC* **49.2.4.4** *P* **294** *L* **26** # **1197**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A** *sequence*

The correct XGMII code for K28.7 is 0xfc

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The 0xdc reserved ordered set will be removed and 0xdc, K28.6 will be used for reserved4.

Cl **49** *SC* **49.2.4.4** *P* **294** *L* **32** # **1122**

Finch, Stephen G. — Texas Instruments

Comment Type **E** *Comment Status* **A**

Typographical/grammer error in last note below table 49-1.

SuggestedRemedy

Change "They not sent" to "They are not sent"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.4.5** *P* **294** *L* **50** # **1081**

Stephen Haddock — Extreme Networks

Comment Type **E** *Comment Status* **A** *sequence*

The notation for Pulse Ordered Sets is inconsistent between clause 48 and 49.

SuggestedRemedy

Replace "/Op/" with "/P/"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. "Pulse" ordered set will be replaced everywhere with "Sequence" and its character will be labeled /Q/.

Cl **49** *SC* **49.2.4.5** *P* **294** *L* **50** # **1387**

Booth, Brad — Intel

Comment Type **T** *Comment Status* **A**

statement about Fibre channel with no reference

SuggestedRemedy

add reference to which Fibre Channel specification, or delete the sentence

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Will delete.

Cl **49** *SC* **49.2.4.6** *P* **295** *L* **7** # **331**

Dartnell, Peter — Nortel Networks

Comment Type **T** *Comment Status* **A**

Invalidation a frame for bad O-codes

SuggestedRemedy

Add another way to invalidate a frame following line 7. It should read "d) any O code contains a value not in Table 49-1."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.4.9** *P* **295** *L* **26-27** # **104**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

/T/ is spread across to lines

SuggestedRemedy

Fix grouping so /T/ stays together on the same line

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.5** *P* **295** *L* **46** # **105**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

incorrect primitive

SuggestedRemedy

Replace "PMA_UNIDATA" with "PAM_UNITDATA.request"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.5** *P* **295** *L* **47** # **106**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

missing n

SuggestedRemedy

Replace "to a XGMII" with "to an XGMII"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.5** *P* **296** *L* **2** # **107**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

Even though this variable starts a sentence, it should keep its actual name and be lowercase

SuggestedRemedy

Replace "Tx_coded<1:0>" with "tx_coded<1:0>"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.6** *P* **296** *L* **20** # **306**

Figueira, Norival Nortel Networks

Comment Type **T** *Comment Status* **A**

I would think Figure 49-8 described the polynomial G(x) = 1 + x^19 + x^58 instead of the one in equation (1), i.e, G(x) = 1 + x^39 + x^58. My interpretation follows the one in Figure 2b of the reference below. I realize that what is important here is conformance to the scrambler described in Figure 49-8. The polynomial itself is not important. However, if bit errors occur, error multiplication inside the Ethernet frame will not be a problem if the polynomial describing the error multiplication has no factors in common with the Ethernet CRC polynomial.The polynomial describing error multiplication for the scrambler described in Figure 49-8 is 1 + x^19 + x^58, since a single bit error will appear (after error multiplication) as an error pattern that is described by this polynomial. This explains my choice of polynomial interpretation. I am not sure which polynomial was used in the analysis presented in walker_1_0100. Slide 12 states that "no CRC degradation occurs with error multiplication if the scrambler and the CRC polynomial share no common factors." The polynomial 1 + x^19 + x^58 is probably ok. I just would like to confirm that the analysis was done with the right polynomial.Reference for polynomial interpretation (see figure 2b): Fair, I., Bhargava, V. K., and Wang Q., "On the Power Spectral Density of Self-Synchronizing Scramblerd Sequences," IEEE Transactions on Information Theory, Vol. 44. No. 4, July 1998.

SuggestedRemedy

This is a technical comment on an alternative polynomial interpretation. No remedy is suggested.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The testing done to verify the polynomial was done based on the figure. Almost all references I consulted identify the most recent input to the scrambler as the low order coefficient and identify the oldest bit in the scrambler as the nth coefficient. A few references did the opposite. All scramblers in 802.3 follow the first convention. The SONET scrambler is referred to as 1 + x^6 + x^7 and shown as XORing the oldest two bits in the scrambler.

Therefore, this scrambler is consistant with all the other 802.3 scramblers and with Sonet in the relationship between the polynomial and the figure.

Add a statement the in case of doubt use the picture. Move shall to picture.

Cl **49** *SC* **49.2.7** *P* **296** *L* **31** # **914**

Healey, Adam Agere Systems

Comment Type **E** *Comment Status* **A**

Typographical error: "_UNIDATA" should be "_UNITDATA", 6 occurences in 49.2.7 and 1 occurence in 49.2.8.

SuggestedRemedy

Change all instances of "_UNIDATA" to "_UNITDATA".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.8** *P* **296** *L* **39-40** # **108**
Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**
Wrong primitives used

SuggestedRemedy
Replace "PMA_UNIDATA.request" with "PMA_UNITDATA.indicate" and "WIS_UNIDATA.request" with "WIS_UNITDATA.indicate"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **49** *SC* **49.49.2.4.4** *P* **293** *L* **40** # **1120**
Finch, Stephen G. Texas Instruments

Comment Type **E** *Comment Status* **A**
With reference to Clauses 49.2.4.4, thru 49.2.4.11, with the exception of 49.2.4.6, it appears to me that these should be subclauses of 49.2.4.3 as they detail coding rules.

SuggestedRemedy
Renumber as appropriate.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Change heading of 49.2.3 to Frame structure

Cl **49** *SC* **Fig 49-1** *P* **286** *L* **1** # **1381**
Booth, Brad Intel

Comment Type **T** *Comment Status* **A**
figure is confusing, contains incorrect information, and fonts are not consistent

SuggestedRemedy
- change figure to have only one PMA, PMD, MDI and MEDIUM as this clause is for the PCS, not the PMAs and PMDs
- figure is misleading showing the WIS and calling it a 10GBASE-R PHY, so remove WIS
- lines from OSI to layer model need coarser granularity for the dashing
- XAUI-XGXS are not required
- remove boxes at each end of the XGMII connection, they infer a connector

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. It is important to show the WIS to understand the operation of the PCS in that mode. Use two stacks, one with WIS and one without and label the stack with WIS as 10GBASE-W Phy.

Cl **49** *SC* **Fig 49-10** *P* **300** *L* **17** # **1388**
Booth, Brad Intel

Comment Type **E** *Comment Status* **A**
transition label broken up

SuggestedRemedy
fix label

Proposed Response *Response Status* **C**
ACCEPT.

Cl **49** *SC* **Fig 49-11** *P* **301** *L* # **1389**
Booth, Brad Intel

Comment Type **E** *Comment Status* **A**
transition labels are confusing

SuggestedRemedy
move labels closer to transition arrows

Proposed Response *Response Status* **C**
ACCEPT.

Cl **49** *SC* **Fig 49-12** *P* **302** *L* **1** # **1391**
Booth, Brad Intel

Comment Type **E** *Comment Status* **A**
figure is cramped, yet has lots of room left on the pagetransition label overlaps transition arrow

SuggestedRemedy
spread out state machine so it isn't so cramped and fix transition label

Proposed Response *Response Status* **C**
ACCEPT.

Cl **49** *SC* **Fig 49-13** *P* **303** *L* # **1392**
Booth, Brad Intel

Comment Type **E** *Comment Status* **A**
readability... or to use the 802.3z term, the state machine is ugly :-)

SuggestedRemedy
use more space for the diagram, ensure transition labels and arrows don't overlap, and that it is easy to determine the transition label associated with the transition arrow

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. I'll do my best but I can't promise to meet your standards for state machine beauty.

Cl **49** *SC* **Fig 49-14** *P* **304** *L* # **1393**
Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

readability... or to use the 802.3z term, the state machine is ugly :-)

SuggestedRemedy

use more space for the diagram, ensure transition labels and arrows don't overlap, and that it is easy to determine the transition label associated with the transition arrow

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. I'll do my best but I can't promise to meet your standards for state machine beauty.

Cl **49** *SC* **Fig 49-7** *P* **293** *L* **10** # **1386**
Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

font size too small

SuggestedRemedy

remove brackets and arrows, increase font size, add row for bit position and label the MSB and LSB bit number for Sync and Frame Payload

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. I do not entirely understand your suggestion. I will get rid of the brackets and make them a bigger font.

Cl **49** *SC* **multiple** *P* *L* # **1383**
Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

Sonet should be SONET

SuggestedRemedy

fix

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* *P* *L* # **825**
Tom Mathey Independent

Comment Type **T** *Comment Status* **A**

Text refers to “Annex 50A” However, this annex in not in the document

SuggestedRemedy

Write and publish “Annex 50A”

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **5.1.4** *P* **312** *L* **31** # **10001**
Shimon Muller

Comment Type **T** *Comment Status* **X**

SUPI is not a defined interface in this draft. Therefore, there should be no reference to it.

SuggestedRemedy

Delete the second sentence on this line.

Proposed Response *Response Status* **O**

Cl **50** *SC* **50.1** *P* **310** *L* **12** # **1396**
Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

Note should be normal text.

SuggestedRemedy

fix

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.1.1** *P* **310** *L* **37** # **1397**
Booth, Brad Intel

Comment Type **T** *Comment Status* **A** *Medium*

"... WIS is not intended to interoperate directly with interface that comply with SONET or SDH standards." on line 13 doesn't jive with "... to permit basic compatibility at the Path, Line and Section levels with SONET and SDH equipment;" on line 37

SuggestedRemedy

Delete the sentence on line 37.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.1.1** *P* **311** *L* **11** # **1398**
Booth, Brad Intel

Comment Type **T** *Comment Status* **A** *Low*

Last sentence is incorrect as the draft does not require compatibility with SONET and SDH networks.

SuggestedRemedy

delete the last sentence

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.1.2** *P* **311** *L* **28-29** # **121**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A** *Low*

This objective is met and carried out by the PCS. Is it a valid objective for the WIS?

SuggestedRemedy

Remove objective C)

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.1.2** *P* **311** *L* **37** # **1399**

Booth, Brad Intel

Comment Type **T** *Comment Status* **A** *Low*

Frames refers to MAC frames. Frames should not apply to SONET frames for this clause only.

SuggestedRemedy

Reference SONET frames as SONET frames or container, something to differentiate between a MAC frame and a SONET frame.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The intent of the note is to eliminate any confusion that might arise due to the conflicting use of "frame" at both the MAC and the WIS layers. It is not possible to avoid the use of the word "frame" when referring to "SONET frame" - renaming "frame" to "container" will cause even more confusion when the ANSI standards are referenced, where "container" means something entirely different.

The note should be reworded to state that the WIS clause will use the term "WIS frame" throughout to refer to SONET-compatible frames generated and terminated by the WIS sublayer, in order to distinguish such frames from those terminated by the MAC.

Cl **50** *SC* **50.1.4** *P* **312** *L* **46-48** # **1044**

Robert Grow Intel

Comment Type **E** *Comment Status* **A**

The expansion of acronyms is in random order. Though there may be historical reasons for this (i.e., higher layers to lower layers when there was one protocol stack) there is no descernable reason for order in the current pictures.

SuggestedRemedy

Put in alphabetical order

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.1.4** *P* **313** *L* **1** # **1401**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

there is no regeneration

SuggestedRemedy

Change "Regeneration" to "Generation"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.1.4** *P* **313** *L* **10** # **1402**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

no such thing as SUPI

SuggestedRemedy

change to read:"If used with the clause 53 PMA sublayer, then ..."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.1.4** *P* **313** *L* **10** # **10002**

Shimon Muller

Comment Type **T** *Comment Status* **X**

SUPI is not a defined interface in this draft. Therefore, there should be no reference to it.

SuggestedRemedy

Re-write this note.

Proposed Response *Response Status* **O**

Cl **50** *SC* **50.1.5** *P* **313** *L* **27** # **1403**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

instantiations should not be plural

SuggestedRemedy

change "instantiations" to be "an instantiation"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.1.5** *P* **315** *L* **14** # **1210**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **R** *Medium*

The reason the 10GBASE-LW4 transmit synchronization state machine is needed is because the Sonet Frame has to start in a specific lane in order for the receive sync to be able to demux the 16 bit words. The transmitter gets the data with octet alignment.It would make this PMA simpler if the WIS would provide an output indicating the first word of a Frame.

SuggestedRemedy

Consider doing so.

Proposed Response *Response Status* **C**

REJECT.

This is an excellent suggestion, but unfortunately would be a technical change that would result in modifications to the serial as well as the LW4 PMAs, and also modify the XSBI interface definition, among other things.

Note: Verify that Clause 53 responds to a corresponding comment with a similar response.

Cl **50** *SC* **50.1.7** *P* **313** *L* **52** # **1404**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

this is IEEE 802.3

SuggestedRemedy

change "IEEE Std 802.3" to be "This standard"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

We cannot use "This standard" because Clause 50 is a part of this standard and yet numbers things differently. Propose using the phrase "The remainder of this standard". This conforms with the commenter's intent without obscuring the meaning of the sentence.

Cl **50** *SC* **50.2** *P* **314** *L* **28** # **122**

Brown, Benjamin J — AMCC

Comment Type **T** *Comment Status* **A** *Low*

Fix heading

SuggestedRemedy

Replace "Service Interface" with "WIS service interface"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.2** *P* **314** *L* **28** # **613**

William G. Lane — CSU, Chico

Comment Type **E** *Comment Status* **A**

The subclause title does not agree with the subclause text

SuggestedRemedy

Add "WIS" before "Service interface"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.2** *P* **314** *L* **40** # **49001**

Thaler, Pat

Comment Type **T** *Comment Status* **A**

Clause 49 is making the following change and WIS needs to execute the same change. The reason for the change is that the PCS to may decide that it cannot decode the receive data due to hi_ber even though it has lock.

Change WIS_SIGNAL.request(FRAME_LOCK) to WIS_SIGNAL.request(PCS_R_STATUS)

define as:
The value of PCS_R_STATUS shall be FAIL when the Receive state machine is in the RX_INIT state (that is, it cannot decode the received data stream) and OK otherwise.

SuggestedRemedy

Change WIS_SIGNAL.request(FRAME_LOCK) to WIS_SIGNAL.request(PCS_R_STATUS)

define as:
The value of PCS_R_STATUS shall be FAIL when the Receive state machine is in the RX_INIT state (that is, it cannot decode the received data stream) and OK otherwise.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.2.3.3** *P* **316** *L* **24** # **290**

Figueira, Norival — Nortel Networks

Comment Type **E** *Comment Status* **A**

This subclause uses "code-word" while subclause 50.3.5.3 uses "code-group".

SuggestedRemedy

Change text in 50.2.3.3 line 24 to "code-group".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.3** *P* *L* # **1407**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

Figures showing overhead bytes and their tables are not in the same order. Figures are section and line followed by path, and tables are path followed by line then section.

SuggestedRemedy

Re-align order to be consistent between figures and tables.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.3** *P* **317** *L* # **205**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A** *Low*

Figure 50-3—WIS Transmit and Receive processes, on page 317 does not show the WIS_SIGNAL.indicate(SIGNAL_DETECT) signal origin. Figure 50-2—Functional block diagram, on page 314 shows this signal originating from the receive process block. There is an inconsistency between these two figures.

SuggestedRemedy

Either add the WIS_SIGNAL.indicate(SIGNAL_DETECT) signal to Figure 50-3 to show which Receive process block drives the signal or change Figure 50-2 to show the WIS_SIGNAL.indicate(SIGNAL_DETECT) signal originating from a different block (i.e. the Synchronization Process block or the Layer Management block.)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The WIS_SIGNAL.indicate(SIGNAL_DETECT) signal should be redrawn in Figure 50-2 as originating from the Layer Management block. This is because both the Receive Process and the Synchronization Process contribute to the generation of the WIS_SIGNAL.indicate(SIGNAL_DETECT) primitive. In addition, the generation of WIS_SIGNAL.indicate(SIGNAL_DETECT) is closely related to the functionality implemented in the Layer Management block.

Cl **50** *SC* **50.3.1** *P* **318** *L* **41** # **787**

Furlong, Darrell R Aura Networks

Comment Type **E** *Comment Status* **A**

Number not in international format. Pg 318 line 41 Value "149,760"

SuggestedRemedy

Replace comma with a space.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.3.2** *P* **320** *L* **39** # **291**

Figueira, Norival Nortel Networks

Comment Type **E** *Comment Status* **A**

"Undefined and unused octets are left blank" may be taken as an indication of what to write to these octets. Besides, this text does not indicate whether these are WIS or ANSI undefined/unused octets. The intent of the text is actually to point out that octets that are undefined and unused by the WIS are indicated as blank boxes in this figure.

SuggestedRemedy

Change text to "Octets that are undefined and unused by the WIS are indicated as blank boxes in this figure".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.3.2.1** *P* **321** *L* **17** # **292**

Figueira, Norival Nortel Networks

Comment Type **E** *Comment Status* **A**

"Undefined and unused octets are left blank" may be taken as an indication of what to write to these octets. Besides, this text does not indicate whether these are WIS or ANSI undefined/unused octets. The intent of the text is actually to point out that octets that are undefined and unused by the WIS are indicated as blank boxes in this figure

SuggestedRemedy

Change text to "Octets that are undefined and unused by the WIS are indicated as blank boxes in this figure".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.3.2.1** *P* **321** *L* **48** # **286**

Figueira, Norival — Nortel Networks

Comment Type **T** *Comment Status* **A** *Low*

The statement "a default Trace Message shall be transmitted consisting of a header octet formatted according to Section 5 of ANSI T1.269-2000 followed by 15 octets of zeros" may be confusing considering the octet transmission order defined in 50.3.7.1.10 page 331. In 50.3.7.1.10, the header octet is transmitted last. However, one can see a message at the receiver as being formed by 15 octets followed by a header octet or a header octet followed by the other 15 octets of the message.

SuggestedRemedy

Change "a default Trace Message shall be transmitted consisting of a header octet formatted according to Section 5 of ANSI T1.269-2000 followed by 15 octets of zeros" to "a default Trace Message consisting of 15 octets of zeros and a header octet formatted according to Section 5 of ANSI T1.269-2000 shall be transmitted".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The remedy is accepted subject to the resolution of Comment #1394.

Cl **50** *SC* **50.3.2.5** *P* **324** *L* **25-26** # **865**

Ben Brown — AMCC

Comment Type **T** *Comment Status* **A** *Medium*

The allowed time period for parameters T & T' is too restrictive. There should be some tolerance added.

SuggestedRemedy

Replace "to three row periods" with "to two to four row periods" or perhaps "to three row periods with a tolerance of +/- one row period"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the sentence "The parameters T and T' in Section 7.2.1 of ANSI T1.416-1999 shall both be set to time periods equivalent to
three row periods within the WIS frame (approximately 41.6667 microseconds) instead of the values provided therein" to read "The parameters T and T' in Section 7.2.1 of ANSI T1.416-1999 shall both be set to a value ranging between 2.3 and 100 microseconds."

Cl **50** *SC* **50.3.3.1** *P* **325** *L* **29** # **861**

Tom Mathey — Independent

Comment Type **E** *Comment Status* **R** *Low*

The equation for the polynomial is not listed.

SuggestedRemedy

Provide the equation.
During the development of the VLAN Tagging standard 802.3ac, it was strongly emphasised by the gods of Ethernet, the powers that be, that the Ethernet standard was to stand on its own two feet and provide a crisp definition of all terms, all byte definitions, all bit locations within a byte, all equations, etc. Reference to some other specification is/was allowed, but only if the user needed additional supporting documentation. I believe that this same criteria applies here, and additionally thruout clause 50. This clause 50 has much too much usage of “as defined by ANSI”; an implememtator needs to have all values defined in this clause, with no need to purchase or obtain additional standards.

Proposed Response *Response Status* **Z**

REJECT.

The commenter is entirely correct in that the WIS clause departs from standard 802.3 specification practice by continually pointing to ANSI specifications rather than importing the relevant information directly. However, this was mandated by the Blue Book presentation (figueira_1_0700.pdf) according to which the WIS clause was written. It should be noted that the intent of providing pointers rather than copying the information was to avoid possible conflicts and confusion in the event of errors, and also to make it explicitly clear to implementers where deviations occur from standard SONET practice.

It must also be pointed out that the instance noted by the comment (the scrambler polynomial) is by no means the only, or the most important, case where a pointer is provided rather than the explicit information. Replacing the pointers with the actual information in a consistent and uniform manner would significantly expand the size and scope of the WIS clause, and require a technical majority vote by the task force as well.

Cl **50** *SC* **50.3.3.2** *P* **325** *L* **41** # **123**

Brown, Benjamin J — AMCC

Comment Type **T** *Comment Status* **R** *Low*

Instead of simply saying that the above description is informative, the location of the normative text should be provided

SuggestedRemedy

Add text to the note to provide the location of the normative text.

Proposed Response *Response Status* **C**

REJECT.

The location of the normative text (ANSI T1.105-1995, Section 10.3) has been referenced four separate times in the preceding four paragraphs. Therefore, only those who read the clause backwards will miss the reference to the normative text! (Just kidding, Ben.)

Cl **50** *SC* **50.3.5.3** *P* **327** *L* # **124**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A** *Medium*

If the primitive WIS_SIGNAL.indicate(SIGNAL_DETECT) is FALSE and, in response, the PCS provides WIS_SIGNAL.request(FRAME_LOCK) is FALSE, does the WIS still report the LCD-P defect to the far end WIS?

SuggestedRemedy

None...

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

As per standard practice in both SONET and Ethernet, error reporting must be prioritized, and the reporting of a more-fundamental error should take precedence over a less-signficant error. Hence the WIS should not recognize or report LCD-P defects to the remote entity if the primitive WIS_SIGNAL.indicate(SIGNAL_DETECT) is FALSE, indicating that the incoming data stream is corrupted. Text to this effect should be added to the description of the LCD-P condition in 50.3.5.3.

Cl **50** *SC* **50.3.6** *P* **327** *L* **17** # **918**

Healey, Adam Agere Systems

Comment Type **T** *Comment Status* **A** *High*

WIS requires a data delay limitation to guarantee support of 802.3 Annex 31A/B flow control. Recommended allocations are as follows:TX path latency: 1 row of SONET overhead plus 10 XSBI cycles processing margin (530.5 ns)RX path latency: 10 XSBI cycles for processing margin (16.1 ns)An XSBI cycle in this case is based on a 622.08 MHz clock.Given the proposed pause reaction time (31B.3.7) of 40 pause_quanta (20,480 BT), the additional latency proposed here has no impact on system performance and enables additional implementation flexibility.

SuggestedRemedy

Add table with format based on Table 48-5 with the following two entries:XSBI (PCS) => XSBI (PMA): 5305 BTXSBI (PMA) => XSBI (PCS): 161 BT

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The provision of delay bounds to support flow control was overlooked; this should be rectified as described in the comment. However, the delays may be too small, because the slip buffers needed to handle clock frequency tolerances (i.e., pointer processing) may interpose more than 16 XSBI clocks of delay.

The delsys need to be set to a maximum of 6000 BT (Bit Times) in the transmit direction (PCS service interface to PMA service interface) and 8000 BT in the receive direction (PMA service interface to PCS service interface)..

Cl **50** *SC* **50.3.6** *P* **327** *L* **30** # **294**

Figueira, Norival Nortel Networks

Comment Type **T** *Comment Status* **A** *Low*

Subclause 50.3.2 should explain the octet transmission order of the WIS frame. Note that subclause 50.3.1 does not address the whole WIS frame. It only addresses the octet transmission order of the SPE. Even though the transmission order of the SPE implies the transmission order for the whole WIS frame, this should be explained.

SuggestedRemedy

Add text describing the transmission order of the WIS frame. Explain that the first 16-bit code-word sent to the PMA sublayer is composed of the first two octets of row 1 in accordance with octet and bit ordering shown in Figure 50-11.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This comment is closely related to the Comment #293, and editorial license is requested so that the two can be resolved properly.

Cl **50** *SC* **50.3.6** *P* **327** *L* **30** # **293**

Figueira, Norival Nortel Networks

Comment Type **T** *Comment Status* **A** *Low*

The WIS aligns data being presented to the PMA service interface on octet boundaries. Besides this, the first 16-bit data-group from a WIS frame sent to the PMA Service Interface is composed of the first two octets in row 1 (i.e., the ones in columns 1 and 2) of Figure 50-7. This should be explained around line 30. This alignment is required in Clause 53 (see page 388 line 49).

SuggestedRemedy

Add text clarifying that the WIS aligns the data being sent to the PMA sublayer on octet boundaries. The first 16-bit data-group from a WIS frame sent to the PMA Service Interface is composed of the first two octets in row 1 (i.e., the ones in columns 1 and 2) of Figure 50-7.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The comment is certainly valid. However, Figure 50-7 is explicitly noted as being illustrative rather than normative, and so normative text cannot be based on references to this figure. Editorial license is requested so that the omission indicated by the comment can be rectified without referencing Figure 50-7.

Cl **50** *SC* **50.3.6** *P* **328** *L* **14** # **125**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A** *Low*

This section states that the WIS uses the PMA's signal detect primitive to unlock state machines, etc. However, 50.3.2.5, page 324, line 24 states that the receive process shall not use any services provided by the PMA or PMD to determine LOS. How are these 2 statements reconciled?

SuggestedRemedy

None...

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The LOS defect is a status condition that is reported to Layer Management but does not affect the functioning of the Receive Process or the Synchronization state machine at all. The PMA signal detect primitive affects all parts of the WIS receive functionality by forcing the Synchronization state machine to unlock. The former is a status flag; the latter is a control signal. This distinction should probably be brought out more clearly

The confusion probably arises because the two are closely related (an LOS condition will usually be reported in the event that the PMA signal detect goes away, even though the two are derived differently).

A note should be added to 50.3.6 to the effect that LOS is a status signal that is provided for error monitoring purposes while the PMA signal detect primitive is the actual signal that impacts WIS receive functionality. The loss of signal from the PMA can be detected by inspecting management bits other than the LOS flag.

Cl **50** *SC* **50.3.7.1** *P* **328** *L* **41** # **126**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

wrong word

SuggestedRemedy

Replace "registers is implementation" with "registers are implementation"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.3.7.1.1** *P* **328** *L* **50** # **287**

Figueira, Norival Nortel Networks

Comment Type **E** *Comment Status* **A**

The following statement about what to do when the Loopback bit is set to a logic one is not precise: "the WIS shall not transmit data onto the medium". The WIS does not transmit directly onto the medium. It transmits to the PMA sublayer.

SuggestedRemedy

Change "In this mode, the WIS shall not transmit data onto the medium, butinstead shall accept" to "In this mode, the WIS shall accept". The rest of the paragraph already takes care of what is sent to the PMA sublayer.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.3.7.1.1** *P* **328** *L* **51** # **614**

William G. Lane CSU, Chico

Comment Type **T** *Comment Status* **R** *Low*

The statement "In addition, the WIS shall transmit a continous stream of all-zero data words ..." is inconsistent with 45.2.2.1.2 which states "the WIS shall not transmit data ..."

SuggestedRemedy

The working group needs to define where and how loopback occurs (other subclauses are also affected)

Proposed Response *Response Status* **C**

REJECT.

As the interface between the WIS and PMA has an optional physical instantiation (the XSBI), it is not possible for the WIS to transmit "nothing" to the PMA during loopback. This issue was therefore discussed extensively during the Tampa meeting, and the decision was made (and voted upon, and ratified during the full TF and WG sessions) to transmit all-zeros or all-ones to the underlying sublayer during loopback at any given sublayer. In any event, the transmission of all-zeros by the WIS is as close to the transmission of nothing as one can get, because the far-end WIS will not only lose synchronization and also report an LOS defect to layer management.

Note: this comment is related to Comment #287.

Cl **50** *SC* **50.3.7.1.11** *P* **332** *L* **2** # **127**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

wrong word

SuggestedRemedy

Replace "WIS J1 TX regis-" with "WIS J1 RX regis-"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.3.7.1.6** *P* **330** *L* **51** # **797**

David W. Martin Nortel Networks

Comment Type **T** *Comment Status* **R** *Low*

The immediate downstream equipment might be a SONET STE. If there was only one STE-STE span then J0 would be redundant given J1.

SuggestedRemedy

Re-write the NOTE as follows..."The transmitted J0 octet allows a remote WIS receiver or intervening Section equipment to verify its continued connection to a specific WIS transmitter."

Proposed Response *Response Status* **Z**

REJECT.

The notion of Section equipment intervening in a WIS-to-WIS link is outside the scope of Clause 50 (see 50.1, third paragraph). A WIS can only talk directly to another WIS or an ELTE. It was understood that J0 support was provided for minimal compatibility with WAN network management practices.

Cl **50** *SC* **50.3.7.1.7** *P* **331** *L* **10** # **798**

David W. Martin Nortel Networks

Comment Type **T** *Comment Status* **R** *Low*

The immediate upstream equipment might be a SONET STE. If there was only one STE-STE span then J0 would be redundant given J1.

SuggestedRemedy

Re-write the NOTE as follows..."The received J0 octet allows a WIS receiver to verify its continued connection to a specific WIS transmitter or intervening Section equipment. The contents..."

Proposed Response *Response Status* **Z**

REJECT.

The notion of Section equipment intervening in a WIS-to-WIS link is outside the scope of Clause 50 (see 50.1, third paragraph). See Comment #797.

Cl **50** *SC* **50.3.7.1.8** *P* **331** *L* **18** # **289**

Figueira, Norival Nortel Networks

Comment Type **T** *Comment Status* **A** *Medium*

The statement "...such that the first non-zero G1 octet in a valid WIS frame shall..." is different from the definition of this register in 45.2.2.8 page 185, which states that this register is simply a copy of the last received G1 octet. The definition in 45.2.2.8 has the problem that some errors will be difficult to observe because a new G1 octet is received every 125microseconds.The definition in 50.3.7.1.8 does not provide the intended behavior, since G1 is different from zero in the normal case (RDI-P field equal to 001 indicates no defects). We should latch errors, but this requires latching only when there is a supported error condition. The supported error conditions are REI-P field from 0001 to 1000 or RDI-P field equal to 010 or 101. Please note that G1 can only come from another WIS. Therefore, RDI-P codes that cannot be generated by a WIS are not applicable.

SuggestedRemedy

Change above quoted statement to "...such that the first G1 octet with an REI-P field indicating one or more errors, i.e., with binary values from 0001 to 1000, or an RDI-P field with binary values of 010 or 101 in a valid WIS frame shall..." Subclause 45.2.2.8 must also be changed to agree with this suggested remedy.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.4.1.1** *P* **332** *L* **33-35** # **206**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A** *Medium*

Lines 33 to 35 on page 332 define the A1 constant, but don't give the explicit value. The value is easy to define, so it should be given here along with the reference.

SuggestedRemedy

Add the actual value of the A1 overhead octet to the definition.
Here is an example wording of the definition with the added value:
"An octet value (bits 1:8) of 11110110 as assigned to the A1 framing character within the SONET Section Overhead, as specified in Section 4.2.1 of ANSI T1.416-1999. Used to obtain octet and WIS frame alignment."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The wording should read "An octet value (bits 1:8) of 11110110 as assigned to the A1 framing character within the SONET Section Overhead, as specified in Table 1 of Section 4.2 of ANSI T1.416-1999. Used to obtain octet and WIS frame alignment."

This is because Section 4.2.1 only contains a reference to the A1 octet but not its actual value.

Cl **50** *SC* **50.4.1.1** *P* **332** *L* **37-39** # **207**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A** *Medium*

Lines 37 to 39 on page 332 define the A2 constant, but don't give the explicit value. The value is easy to define, so it should be given here along with the reference.

SuggestedRemedy

Add the actual value of the A2 overhead octet to the definition.
Here is an example wording of the definition with the added value:
"An octet value (bits 1:8) of 00101000 as assigned to the A2 framing character within the SONET Section Overhead, as specified in Section 4.2.1 of ANSI T1.416-1999. Used to obtain octet and WIS frame alignment."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The wording should read "An octet value (bits 1:8) of 00101000 as assigned to the A2 framing character within the SONET Section Overhead, as specified in Table 1 of Section 4.2 of ANSI T1.416-1999. Used to obtain octet and WIS frame alignment."

This is because Section 4.2.1 only contains a reference to the A2 octet but not its actual value.

Cl **50** *SC* **50.4.1.2** *P* **332** *L* **46** # **1205**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A** *Low*

A variable only needs a default value if there are times when it does not have an assigned value. This is something we used so a variable could be set to a value such as True by two separate state state machines and would have the default value when neither machine is asserting an explicit value.

SuggestedRemedy

Delete default here and on p 333 l 5.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.4.1.2** *P* **332** *L* **49** # **303**

Figueira, Norival Nortel Networks

Comment Type **E** *Comment Status* **A**

Should state signal_fail conditions based on PMA_SIGNAL.indicate directly.

SuggestedRemedy

Add that the WIS synchronization process continuously monitors PMA_SIGNAL.indicate(SIGNAL_DETECT).
Change assigned values to:
FALSE; SIGNAL_DETECT indicates OK.
TRUE; SIGNAL_DETECT indicates FAIL.
Move previous definitions of FALSE and TRUE to a note explaining what the above means.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Editorial license is requested to clean up the paragraph describing signal_fail. The description of the causes of PMA_SIGNAL.indicate(SIGNAL_DETECT) is unnecessary and superfluous, for example, and should be omitted.

Cl **50** *SC* **50.4.1.2** *P* **333** *L* **15** # **1206**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **R** *State Machine*

Why do we allow the number of octets to be variable? Also, It might happen that the first n scrambled octets after the A2 scramble to A2. If there are f A1 octets followed by f+n A2s is it still a Sync Pattern? What if the f A1s are preceeded by A1 octets.If this comment causes a change, the change should also be applied in Clause 53.

SuggestedRemedy

Proposed Response *Response Status* **C**

REJECT.

In answer to the questions posed:

1. Why do we allow the number of octets to be variable?

The number of octets to be searched for is NOT variable. The parameters "j", "k", "f", "m", etc are fixed for a given implementation. See response to Comment #214.

2. Also, It might happen that the first n scrambled octets after the A2 scramble to A2. If there are f A1 octets followed by f+n A2s is it still a Sync Pattern?

Yes, this is still a valid Sync pattern. The synchronization process is not forced to check for a precise match to all 384 A1+A2s, as this would be both onerous and completely unnecessary. This is consistent with current SONET practice.

3. What if the f A1s are preceeded by A1 octets?

This is also a valid Sync pattern. See Q2 above.

Cl **50** *SC* **50.4.1.2** *P* **333** *L* **7-16** # **208**

Don Alderrou — nSerial

Comment Type **T** *Comment Status* **A** *State Machine*

The "search" variable defined at lines 7 to 16 on page 333 is not clearly defined and is too complicated to be a variable.

SuggestedRemedy

Split this variable into three different state machines (or functions) and define the specific search process for each state machine. I think this is how it should be done.
1) The first search process seems to be searching bits to find the proper byte boundary. Once completed, it seems to shift the incoming data to that boundary for the next search process. The specific process listing the number of bits/bytes to inspect before moving on to inspect the next set needs to be defined. See the "Frame Lock process" in clause 49.2.8 and Figures 49-10 and 49-11 for an example.
2) The second search process seems to be searching bytes to find the proper frame boundary. The specific process of how many bytes are inspected with and without errors before declaring the boundary found needs to be clearly defined. See the first part of Figure 48-8 and clause 48.2.5.2.2 for an example.
3) The third search process seems to be searching frames and counting time to ensure the proper frame boundary found in the second search is valid. This seems to be similar to the second part of Figure 48-8 or the process defined in Figure 49-12 and should be defined in a similar manner. It may make sense to combine the second search (presync) and the third search (synch) into one state machine.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The comment is valid in that the "search" variable definition is rather complicated and should be considerably simplified. However, the suggested remedy does not seem to have much to do with the variable but instead relates to the entire state machine.

The intent of the "search" variable was to specify the pattern being scanned for at any given point, rather than to specify the scanning process itself. I believe that implementation of the remedies for Comments #210, #211, #212 and #213 will have the desired effect of simplifying the definition of the "search" variable, which is what is noted by the comment.

Cl **50** *SC* **50.4.1.3** *P* **333** *L* **19-27** # **209**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **R** *State Machine*

The definition for found_Hunt function at lines 19 to 27 on page 333 seems to be closely related to the "search" variable defined at lines 7 to 16 on page 333 when searching for the "Hunt_Pattern". This function is too complicated and should be combined with the "search" variable to create a new state machine.

SuggestedRemedy

Define the found_hunt function (and search pattern) as a state machine. The found_Hunt function seems to be set false before the searching of bits to find the proper byte boundary. Once completed, it is set to true and seems to shift the incoming data to that boundary for the next search process. The specific process listing the number of bits/bytes to inspect before moving on to inspect the next set needs to be defined. See the "Frame Lock process" in clause 49.2.8 and Figures 49-10 and 49-11 for an example.

Proposed Response *Response Status* **C**

REJECT.

There are many possible and valid physical implementations of the WIS Synchronization process. The Synchronization state machine has therefore been defined in an abstract logical manner, rather than a fully detailed description of a particular piece of hardware, to ensure that the range of implementations is not unnecessarily restricted.

With this in mind, the found_Hunt function should be regarded as a logical description of a mechanism implementing bit-by-bit scan for octet boundaries using the Hunt_Pattern. In fact, the commenter himself clearly illustrates this assertion, as he has inferred the actual implementation of this scanner very well! In addition, the number of bits/bytes to inspect during the scan is fully specified in the function. I therefore see no reason to change the description.

Note also that the resolution of other comments dealing with the state machine will accomplish the desired effect of simplifying and clarifying the description.

Cl **50** *SC* **50.4.1.3** *P* **333** *L* **19-27** # **211**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A** *State Machine*

The definition for found_Hunt at lines 19 to 27 on page 333 refers to a "Hunt_Pattern" but the "Hunt_Pattern" is not defined as a constant in clause 50.4.1.1.

SuggestedRemedy

Define the "Hunt_Pattern" as a constant in clause 50.4.1.1.

Proposed Response *Response Status* **C**

ACCEPT.

This will also have the effect of a partial remedy to Comment #208.

Cl **50** *SC* **50.4.1.3** *P* **333** *L* **28-38** # **212**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A** *State Machine*

The definition for found_Presync at lines 28 to 38 on page 333 refers to a "Presync_Pattern" but the "Presync_Pattern" is not defined as a constant in clause 50.4.1.1.

SuggestedRemedy

Define the "Presync_Pattern" as a constant in clause 50.4.1.1.

Proposed Response *Response Status* **C**

ACCEPT.

This will also have the effect of a partial remedy to Comment #208.

Cl **50** *SC* **50.4.1.3** *P* **333** *L* **28-38** # **210**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A** *State Machine*

The definition for found_Presync at lines 28 to 38 on page 333 and the definition for found_Sync at lines 39 to 49 on page 333 seem to be closely related to the "search" variable defined at lines 7 to 16 on page 333 when searching for the "Presync_Pattern" and the "Sync_Pattern" patterns. These functions are too complicated and should be combined with the "search" variable to create a new state machine.

SuggestedRemedy

Define the found_Presync and found_Sync functions (and the associated search patterns) as a state machine. These two functions seem very similar to the logic/processes defined in Figure 48-8 and clause 48.2.5.2.2. The specific process of how many bytes are inspected with and without errors before declaring the found_Presync true needs to be clearly defined. The found_Sync function seems to be looking for a certain number of frames before being set true and then it has a timer to ensure the proper frame boundary is maintained otherwise it will set false.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Represent the found_Sync and in_sync functions as a combination of a function and an additional state machine rather than as two functions. The state machine would describe the behavior of scanning for Sync_Patterns that are 155,520 octets apart, while the function would describe the matching of Sync_Pattern with the incoming data stream. The main state machine would then execute state transitions based on the output of the subsidiary state machine. This would also help address Comment #1208.

Cl **50** *SC* **50.4.1.3** *P* **333** *L* **39-49** # **213**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A** *State Machine*

The definition for found_Sync at lines 39 to 49 on page 333 and the definition for in_Sync at lines 1 to 10 on page 334 refer to a "Sync_Pattern" but the "Sync_Pattern" is not defined as a constant in clause 50.4.1.1.

SuggestedRemedy

Define the "Sync_Pattern" as a constant in clause 50.4.1.1.

Proposed Response *Response Status* **C**

ACCEPT.

This will also have the effect of a partial remedy to Comment #208.

Cl **50** *SC* **50.4.2** *P* **334** *L* **2** # **1208**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **R** *State Machine*

By this definition, a single bit error during the sync pattern causes loss of synchronization. This is excessively sensitive.

SuggestedRemedy

Either use 301,040 for the length of the test so that one insync can be missed or add a second sync state, SYNC_2. Exit from SYNC to SYNC_2 on in_sync=FALSE,exit from SYNC_2 to SYNC on in_sync=TRUE and to HUNT on in_sync=FALSE for 155,520 octets.

Proposed Response *Response Status* **C**

REJECT.

This is not true. The function in_sync looks for at least one valid match of the sync pattern over up to 8 sync pattern locations, so one could potentially accept up to 7 errored patterns before giving up and declaring an out-of-sync condition. (Note that until the SYNC state is entered, however, a single bit error in the sync pattern will result in the state machine reverting to the HUNT state, but this is both expected and desired.)

However, in light of this comment, it is recommended that text be added to the description on Page 334 to make this behavior explicit. In addition, the proposed response to Comment #210 should also address this issue.

Cl **50** *SC* **50.4.2** *P* **334** *L* **27** # **1207**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A** *State Machine*

The looping transition on found_Presync for the A1_ALIGN and PRESYNC states is not necessary. We stay in a state until an exit condition is satisfied. The only time a loop is needed is where the state executes an action at each entry such as incrementing a counter, starting a timer or sending a primitive.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.4.2** *P* **334** *L* **48** # **130**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

comma needs to be a period

SuggestedRemedy

Replace the comma after "Figure 50-12" with a period.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.4.3** *P* **335** *L* # **214**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A** *State Machine*

Table 50-5—Minimum and maximum parameter values on page 335 may cause interoperability problems. Since the WIS is only specified for one data rate, the ranges for the values are not required.

SuggestedRemedy

Define the specific values for the parameters listed in Table 50-5 and replace the parameterized values in the preceding text with the specific values. According to the figueira_1_0700 presentation slide 22, a value of 4 for m is suggested. Thus the "m" in Table 50-5 and the "m" in the definition for in_Sync on page 334 should be replaced by a "4"
BTW, I could not find suggested values for the other parameters since the link shown in the figueira_1_0700 presentation did not work.
http://grouper.ieee.org/groups/802/3/10G_study/public/email_attach/delineation_perf.doc
The Email from David Martin http://www.ieee802.org/3/10G_study/email/msg01139.html also has a pointer to the document which is stale.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The comment and the remedy are rejected for the following reasons:

1. There is no interoperability issue here. Variations in the parameters merely change the time taken to lock to the SONET frame and also the robustness in the face of bit errors.

2. Different implementations may select different values of these parameters, either to simplify their implementations or to achieve some robustness goal. (E.g., a parallel implementation may select values that are multiples of 16 bytes to reduce control complexity, while a serial implementation may use minimum values to reduce hardware overhead.) The standard should not unnecessarily constrain the freedom given to implementers.

3. It has long been accepted SONET/SDH practice to leave these parameters up to the implementer with no adverse effects.

However, the commenter does have a valid point in that there is no specific guidance being given to implementers as to what values are acceptable. A note shall be added after the table that states that adherence to the stipulated minimum values for the parameters will result in an implementation that provides the minimum time-to-frame and bit-error tolerance required at the normal BER. A column should also be added to the table that states (in a Purpose column) what each parameter pertains to with respect to the state machine.

Cl **50** *SC* **50.4.3** *P* **335** *L* **10-11** # **128**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

Because table 50-5 has both min & max values, the sentence must be reworded:

SuggestedRemedy

Replace the last sentence with: "Implementations shall set these parameters to values within the limits specified in the table."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **50.4.3** *P* **335** *L* **21** # **129**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A** *Low*

In 50.4.1.2, page 335, line 12, j < (192-i). Since i has a minimum value of 1, the maximum value for j is incorrect

SuggestedRemedy

Replace maximum value for j with 190.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **all** *P* *L* # **1394**

Booth, Brad Intel

Comment Type **T** *Comment Status* **R** *High*

I have some serious concerns about the information contained in this clause and its application to the standard development. It is considered outside of the scope of this standard to provide connection other that point-to-point or WAN MAC-PHY to WAN MAC-PHY. Upon reading this clause, I get the impression that there have been a lot of "SONET cloud" overhead bytes and bits that have creeped into this clause with the intent of providing capabilities that are outside of the scope of this standard.

SuggestedRemedy

Figure 50-2, remove the signal FRAME_LOCK and the LAYER MANAGEMENT block. Layer management is inferred and the only layer management should be via the MDIO/MDC.
In 50.2, delete the FRAME_LOCK service primitive. This is not provided by clause 49, and is a duplication of the information encoded in LF and RF.
Delete 50.2.3 and its subclauses.
Table 50-1, 50-2 and 50-3, unsupported overhead should be undefined, not forced to a specific value.
Table 50-4, remove all the line error reports.
Delete last paragraph in 50.3.5.
Delete 50.3.5.3 as this is handled by RF/LF and should not be duplicated here.
Delete 50.3.7.1.3 and associated register.
Delete third and last paragraphs in 50.3.7.1.5.
Delete 50.3.7.1.6 and associated register.
Delete 50.3.7.1.7 and associated register.
Delete 50.3.7.1.9 and associated register.
Delete 50.3.7.1.10 and associated register.
Delete 50.3.7.1.11 and associated register.

Proposed Response *Response Status* **C**

REJECT.

The comment and suggested remedy amount to a sweeping change to the WIS clause and the usability of the WAN-PHY that it defines.

The specific functions affected by the suggested remedy are:
1) All LCD-P defect support eliminated
2) Unsupported overhead can have random values rather than customary defaults
3) All Line-BIP, Line-AIS, Line-REI and Line-RDI functionality eliminated
4) Path-AIS defect reporting eliminated
5) Section trace functionality eliminated
6) Path trace functionality eliminated

The WIS clause explicitly, and in great detail, states that there is no intention of facilitating direct connection to standard SONET equipment. As per many previous presentations, an ELTE device must always be used for this purpose. The purpose of providing a minimum subset of management functions in the WIS is to enable management of the link to the ELTE, via the management platforms and practices commonly used in WAN networks. Deletion of the above functions will render this difficult or impossible and is clearly undesirable.

It should be noted, finally, that the functionality described above has been accepted by the task force at large as being part of the minimum set required to meet the objectives of the standard with respect to the WAN-PHY.

Motion to accept the comment and suggested remedy.

Moved: S. Haddock
Seconded: B. Quackenbush

Vote:
Y: 8
N: 49
A: 23

(Technical: 75% majority)

Cl **50** *SC* **Fig 50-1** *P* **312** *L* **1** # **1400**

Booth, Brad Intel

Comment Type **T** *Comment Status* **A** *Low*

more information than what is required to show the WIS

SuggestedRemedy

- change figure to have only one PMA, PMD, MDI and MEDIUM as this clause is for the WIS, not the PMAs and PMDs
- lines from OSI to layer model need coarser granularity for the dashing

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **Fig 50-2** *P* **314** *L* **1** # **1405**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

figure is the middle of the paragraph text

SuggestedRemedy

re-position figure

Proposed Response *Response Status* **C**

ACCEPT.

Cl **50** *SC* **Fig 50-3** *P* **317** *L* **6** # **1406**
Booth, Brad Intel

Comment Type **E** *Comment Status* **A**
figure is in the middle of the paragraph text

SuggestedRemedy
re-position figure

Proposed Response *Response Status* **C**
ACCEPT.

Cl **51** *SC* **51.1** *P* **340** *L* **1** # **615**
William G. Lane CSU, Chico

Comment Type **E** *Comment Status* **A**
The overview for this clause is missing

SuggestedRemedy
Add an overview subclause 51.1

Proposed Response *Response Status* **C**
ACCEPT. Will add "new" overview clause section 51.1

Cl **51** *SC* **51.1** *P* **340** *L* **1** # **131**
Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**
Change heading

SuggestedRemedy
Replace "Service Interface" with "PMA service interface"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **51** *SC* **51.1** *P* **340** *L* **1** # **616**
William G. Lane CSU, Chico

Comment Type **E** *Comment Status* **A**
The title of this subclause should be "PMA service interface"

SuggestedRemedy
Add "PMA" to the title

Proposed Response *Response Status* **C**
ACCEPT.

Cl **51** *SC* **51.1** *P* **340** *L* **1** # **1408**
Booth, Brad Intel

Comment Type **T** *Comment Status* **A**
Missing overview information.

SuggestedRemedy
Change 51.1 to 51.2 and insert "51.1 Overview". See clause 53 as a reference to the data that is required.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **51** *SC* **51.1** *P* **340** *L* **12** # **296**
Figueira, Norival Nortel Networks

Comment Type **T** *Comment Status* **A**
Need to define PMA_SIGNAL.indicate. Figure 51-1 implies that it is a copy of PMD_SIGNAL.indicate.

SuggestedRemedy
Include subclause for PMA_SIGNAL.indicate.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. See response to comment 1150.

Cl **51** *SC* **51.1** *P* **340** *L* **12** # **1150**
Bottorff, Paul A Nortel Networks

Comment Type **T** *Comment Status* **A**
The service interface needs a primative for signal_detect.

SuggestedRemedy
Add PMA_SIGNAL.indicate(signal_detect) as described in 53.2.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Will edit drawing to show "PMD_Signal.indicate" going into the PMA. Add "PMA_Signal.indicate" as output from PMA to the PMA Client. Add description of PMA_Signal.indicate to include the options of letting PMA_signal.indicate be identical to PMD_signal.indicate, or letting PMA_signal.indicate be a function of PMD_signal.indicate and the optional SYNC_ERR. PMA_signal.indicate should signal an error in all cases where PMD_signal.indicates signals error.

Cl **51** *SC* **51.1** *P* **340** *L* **13** # **133**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

missing primitive

SuggestedRemedy

Add PMA_SIGNAL.indicate(SIGNAL_DETECT) primitive along with its definition later in this subclause.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See response to comment 1150.

Cl **51** *SC* **51.1** *P* **340** *L* **3** # **1246**

Rich Taborek nSerial Corporation

Comment Type **T** *Comment Status* **A**

The XSBI is an optional physical instantiation of the 10GBASE-R or 10GBASE-W PMA Service Interface.

SuggestedRemedy

Clarify the Service Interface subclause to inticate the correct standing with respect to the standard.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. There will be an appropriate new "Overview" section (51.1) that will be added to include a description that includes the scope of where subclause 51 is positioned with respect to the standard. Description will include proper references to figures 49-1 and 50-1.

Cl **51** *SC* **51.1** *P* **340** *L* **3** # **297**

Figueira, Norival Nortel Networks

Comment Type **T** *Comment Status* **A**

The Serial PMA provides a Service Interface either to the PCS or the WIS. The text mentions only the PCS.

SuggestedRemedy

Change text to indicate that the Serial PMA provides a Service Interface either to the PCS or the WIS. This requires changes to all the references to the PCS that could also be applied to the WIS.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See remedy to comment 132.

Cl **51** *SC* **51.1** *P* **340** *L* **3** # **132**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

This clause seems to favor using the PCS as its client and rarely includes the WIS. This applies to many locations in the clause.

SuggestedRemedy

Replace most instances of "PCS" with "PMA client".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **51** *SC* **51.1.1.1** *P* **340** *L* **27** # **298**

Figueira, Norival Nortel Networks

Comment Type **E** *Comment Status* **A**

Incomplete sentence ("xxx").

SuggestedRemedy

For the WIS, "xxx" should point to 50.3.6. The equivalent for the PCS is 49.1.4.5.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Will reference 50.3.6 and 49.1.4.5 for the WIS and PCS data semantics respectively.

Cl **51** *SC* **51.1.1.2** *P* **340** *L* **31-32** # **134**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

The primitive is not timed with GTX_CLK.

SuggestedRemedy

Replace the sentence with: "The PMA client continuously sends tx_data-group<15:0> to the PMA at a nominal clock rate of 644.53125 MHz in LAN mode or 622.08 MHz in WAN mode."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Replace suggested remedy use of "WAN", "LAN" and "mode" with 10GBase-W, 10GBase-R,and "operation" respectively.

Cl **51** *SC* **51.1.1.2.** *P* **340** *L* **31** # **862**

Tom Mathey Independent

Comment Type **E** *Comment Status* **A**

The reference to GTX_CLK seems a little strange.

SuggestedRemedy

Provide correct reference

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See response to comment 134.

Cl **51** *SC* **51.1.2.1** *P* **340** *L* **48** # **299**

Figueira, Norival — Nortel Networks

Comment Type **E** *Comment Status* **A**

Incomplete sentence ("xxx").

SuggestedRemedy

For the WIS, "xxx" should point to 50.3.6. The equivalent for the PCS is 49.1.4.5.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Will reference 50.3.6 and 49.1.4.5 for the WIS and PCS data semantics respectively.

Cl **51** *SC* **51.1.2.2** *P* **341** *L* **1** # **136**

Brown, Benjamin J — AMCC

Comment Type **T** *Comment Status* **A**

This primitive is not timed with RX_CLK

SuggestedRemedy

Replace the last sentence of this subclause with: "The PMA continuously sends rx_data-group<15:0> to the PMA client at a nominal clock rate of 644.53125 MHz in LAN mode or 622.08 MHz in WAN mode as derived from the recovered bit clock."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Will word smith this.

Cl **51** *SC* **51.2** *P* **341** *L* **12** # **1149**

Bottorff, Paul A — Nortel Networks

Comment Type **E** *Comment Status* **A**

The term 10GBASE-X refers to 8b/10b encoding not LAN and WAN.

SuggestedRemedy

Replace 10GBASE-X with 10GBASE-R/W.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **51** *SC* **51.2** *P* **341** *L* **12** # **309**

Figueira, Norival — Nortel Networks

Comment Type **T** *Comment Status* **A**

Typo: Should read "10GBASE-R and 10GBASE-W" instead of "10GBASE-X".

SuggestedRemedy

Change "10GBASE-X" to "10GBASE-R and 10GBASE-W".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **51** *SC* **51.2** *P* **341** *L* **13** # **135**

Brown, Benjamin J — AMCC

Comment Type **T** *Comment Status* **A**

wrong PMA client

SuggestedRemedy

Replace "10GBASE-X" with "10GBASE-R or 10GBASE-W clients"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **51** *SC* **51.2.1** *P* **341** *L* **27** # **1183**

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **A**

It isn't clear whether "Logically," here is meant as "It is logical that" or that the buffering must be done logically or that the bits are logical. In any case it is unnecessary. Delete it.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **51** *SC* **51.2.2** *P* **341** *L* **36** # **295**

Figueira, Norival — Nortel Networks

Comment Type **T** *Comment Status* **A**

Described bit transmission order is inconsistent with the 64/66 PCS (Figures 49-2 and 49-3 on pages 287 and 288, respectively), the WIS (Figure 50-11 page 327), and the bit transmission order on page 343 line 42.The 64/66 PCS sends the LSB to bit 0, while the WIS sends the MSB to bit 0. Therefore, the text should only mention the bit transmission order without references to LSB or MSB.

SuggestedRemedy

Change transmission order to bit 0 first and bit 15 last. Delete or update editor's note on line 39 (no references to LSB or MSB).

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Clause will be changed to having bit 0 transmitted first and bit 15 transmitted last. Editor's note is no longer. Similar changes also to section 51.2.3 for the receive side.

Cl **51** *SC* **51.2.2** *P* **341** *L* **36** # **137**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

wrong bit oder for serialization. Same comment applies to 51.2.3, page 341, lines 51&51.

SuggestedRemedy

Make tx_data_group<0> the bit transmitted first and tx_data-group<15> the bit transmitted last.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See response to comment 295.

Cl **51** *SC* **51.3** *P* **342** *L* # **140**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

missing signals

SuggestedRemedy

The PMD_SIGNAL.indicate(signal_detect) arrow should go into the PMA. This signal is used as part of the logic to generate a new signal: PMA_SIGNAL.indicate(signal_detect). This should probably replace the sync_err optional signal that currently exists.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See response to comment 1150.

Cl **51** *SC* **51.3** *P* **342** *L* **23-24** # **138**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

Extraneous horizontal lines in figure 51-1

SuggestedRemedy

Remove extraneous horizontal lines

Proposed Response *Response Status* **C**

ACCEPT.

Cl **51** *SC* **51.3** *P* **342** *L* **26** # **308**

Figueira, Norival Nortel Networks

Comment Type **E** *Comment Status* **A**

XSBI reference diagram is incomplete. It should show the internal XSBI functions including transmitter and receiver for T+,T- and R+,R-, e.g., Figure 36-10 TBI reference diagram.

SuggestedRemedy

Include internal transmitter and receiver functions to the XSBI reference diagram.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Will elaborate the diagram.

Cl **51** *SC* **51.3** *P* **342** *L* **4** # **307**

Figueira, Norival Nortel Networks

Comment Type **E** *Comment Status* **A**

Incorrect terminology. The XSBI should not label the different options as being for LAN or WAN operations. The correct terminology is to reference either 10GBASE-W PHY and 10GBASE-R PHY.

SuggestedRemedy

Change (line 4) "for either Local-Area-Network (LAN) or Wide-Area-Network (WAN) operations" to "for the operation of PHY implementations in either the 10GBASE-R family or the 10GBASE-W family".
Change all occurrences of "WAN operation" to "10GBASE-W PHY operation" and "LAN operation" to "10GBASE-R PHY" operation in entire subclause 51.3.
- page 342, five occurrences: lines 48 to 54.
- page 343, eight occurrences: lines 1, 2, 5, 49, and 51
- page 344, four occurrences, lines 2 and 10
Change "tPERIOD-LAN" to "tPERIOD-R", page 347 lines 5 and 41.
Change "Period for LAN" to "Period for 10GBASE-R", page 347 lines 5 and 42.
Change "tPERIOD-WAN" to "tPERIOD-W", page 347 lines 7 and 45.
Change "Period for WAN" to P"eriod for 10GBASE-W", page 347 lines 7 and 45.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Will scrub the clause to remove use of "LAN' and "WAN" usage and replace with appropriate use of 10GBase-R or 10GBase-W.

Cl **51** *SC* **51.3** *P* **342** *L* **40** # **617**

William G. Lane CSU, Chico

Comment Type **E** *Comment Status* **A**

The large rectangles in Figure 51-1 are not identified

SuggestedRemedy

Label the left "PCS" and the right "PMA"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See response to comment 308.

Cl **51** *SC* **51.3** *P* **343** *L* **11** # **791**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

spelling error

SuggestedRemedy

change "Synchronoization" to "Synchronization"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **51** *SC* **51.3** *P* **343** *L* **12-16** # **142**
Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**
misspelling

SuggestedRemedy
Replace 2 instances of "Synchronoization" with "Synchronization"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **51** *SC* **51.3** *P* **343** *L* **13** # **139**
Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**
Add some description

SuggestedRemedy
This is probably where the following information should be added: "The PMA takes the PMD_SIGNAL.indicate(signal_detect) primitive from the PMD and uses it along with the internal indication of synchronization error to generate the PMA_SIGNAL.indicate(signal_detect) primitive to the PMA client."

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. See response to comment 1150.

Cl **51** *SC* **51.3** *P* **343** *L* **15** # **141**
Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**
Several instances of MHz or Mb/s that should be GHz or Gb/s

SuggestedRemedy
Replace 2 instances of MHz with GHz and 2 instances of Mb/s with Gb/s

Proposed Response *Response Status* **C**
ACCEPT.

Cl **51** *SC* **51.3** *P* **343** *L* **17** # **310**
Figueira, Norival Nortel Networks

Comment Type **T** *Comment Status* **R**
Should read "100ppm" instead of "1000ppm". All the clocks are +-100ppm until voted otherwise.

SuggestedRemedy
Change "1000ppm" to "100ppm".

Proposed Response *Response Status* **C**
REJECT. See comment 143.

Cl **51** *SC* **51.3** *P* **343** *L* **17** # **143**
Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**
wrong clock variability. This comment also applies to 51.3.2, page 344, line 21 and 51.6.2, page 349, line 19

SuggestedRemedy
Replace "1000ppm" with "100 ppm"

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. It is the wrong variability but modification should be to change from +/- 1000ppm to +/-2500 ppm. The requirement on PMA_RX_CLK is to keep the clock running with no spikes during loss of sync conditions. Under normal operating conditions, PMA_RXCLK is derived from the serial data input.

Cl **51** *SC* **51.3.1** *P* **343** *L* **24** # **145**
Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**
Extra period. This also applies to 51.4, page 344, line 36 and 51.5.2.1, page 346, line 31

SuggestedRemedy
Remove one of the periods at the end of the sentence.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **51** *SC* **51.3.1** *P* **343** *L* **42** # **794**
Booth, Brad Intel

Comment Type **E** *Comment Status* **A**
double "The"

SuggestedRemedy
delete one "The"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **51** *SC* **51.3.2** *P* **344** *L* **19** # **429**

Lysdal, Henning Giga

Comment Type **T** *Comment Status* **A**

The definition of SYNC_ERR is overly strict. It eliminates some lock-detect implementations. The request from the group was to have an indication, if the PMA_RX_CLK is derived from the serial datastream.

SuggestedRemedy

Replace the description of SYNC_ERR with the following:
This signal is used to indicate the inability of the PMA to recover the clock from the serial data stream. A logic high indicates that PMA_RX_CLK is not derived from the serial data stream.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Add "NOTE: Sync_Err logic low does not guarantee synchronization."

Cl **51** *SC* **51.3.2** *P* **344** *L* **21** # **311**

Figueira, Norival Nortel Networks

Comment Type **T** *Comment Status* **R**

Should read "100ppm" instead of "1000ppm". All clocks are +-100ppm until voted otherwise.

SuggestedRemedy

Change "1000ppm" to "100ppm".

Proposed Response *Response Status* **C**

REJECT. See response to comment 429.

Cl **51** *SC* **51.4.1** *P* **344** *L* **37** # **312**

Figueira, Norival Nortel Networks

Comment Type **E** *Comment Status* **A**

Typo: "(" at the end of the line.

SuggestedRemedy

Delete "(" and add ".".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **51** *SC* **51.4.1** *P* **344** *L* **37** # **146**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

wrong character at end of sentence

SuggestedRemedy

Replace "(" at end of sentence with "."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **51** *SC* **51.4.1** *P* **345** *L* **47** # **428**

Lysdal, Henning Giga

Comment Type **T** *Comment Status* **A**

The input range spec. (0-2.4V) is unnecessarily strict and cannot be met by the bipolar (Silicon, SiGe or GaAs) SerDes currently on the market. The original LVDS spec. had a wide input voltage range to allow large ground-offset between boxes. In .3ae transceivers the two ICs are mounted close on the same PCB, so there's virtually no ground-offset. We need maximum 200mV room for the maximum voltage swing and 250mV for the output offset voltage (1125-1375mV). Based on this a 650mV range around the center volage (1250mV) should be sufficient and not overly restrictive. This would result in a 925-1575mV range.

SuggestedRemedy

Replace input voltage range with 900mV - 1600mV

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Will modify the numbers as in suggested remedy. Additionally, clarify that TIA document is the specification for the parameters with the exception of parameters listed in Table 51-2. Present draft 2.0 parametric symbols maybe changed to reflect what is used in the TIA document.

Cl **51** *SC* **51.5.2 & 51.6.2** *P* **346** *L* **20** # **627**

Vinu Arumugham Cisco Systems, Inc.

Comment Type **T** *Comment Status* **R**

There does not appear to a be a jitter spec. (period jitter) for the PMA_TX_CLK (and PMA_RX_CLK). As a result, the worst case data valid window cannot be accurately calculated.

SuggestedRemedy

Simplify the specification by using the XGMII format to specify timing. This will preclude the need to specify jitter separately.

Specify output Tsetup+Thold=930 ps (60% of 1/644.5321258).
Specify input Tsetup=Thold=230 ps (15% of 1/644.5321258).

Please see http://www.ieee802.org/3/ae/comments/d2.0/arumugham_1_0101.pdf. The document discusses frequency independent timing specification for DDR and is easily applied to non-DDR source synchronous interfaces. This was used as the basis for the XGMII timing specification.

Proposed Response *Response Status* **C**

REJECT. IEEE802.3 has generally considered reference clock tolerance an implementation issue. This is outside the scope of this clause.

Cl **51** *SC* **51.5.2.1** *P* **346** *L* **28** # **144**
Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**
Period at end of heading

SuggestedRemedy
Remove period at end of heading

Proposed Response *Response Status* **C**
ACCEPT.

Cl **51** *SC* **51.5.2.1** *P* **346** *L* **38-40** # **147**
Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**
wave-form pictures need to be cleaned up. This comment applies to all wave-forms.

SuggestedRemedy
Clean up these pictures so the pieces line up better

Proposed Response *Response Status* **C**
ACCEPT.

Cl **51** *SC* **51.5.2.1** *P* **347** *L* # **148**
Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**
I've never heard of 1/MHz units. Same comment applies to table 51-4, page 347 and table 51-7, page 350

SuggestedRemedy
Replace typical values and units for Tperiod with: Tperiod-lan : 1.55151 ns Tperiod-wan : 1.60751 ns

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Add footnote to indicate origin of the time value.

Cl **51** *SC* **51.5.2.3** *P* **348** *L* **32** # **334**
Dartnell, Peter Nortel Networks

Comment Type **T** *Comment Status* **A**
Value of TD far too high in table 51-6

SuggestedRemedy
Max value of TD change to 2ns

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Will change to 2ns. Will also add more description to define TD parameter. Add editor's note to get inputs from logic track for feasibility.

Cl **51** *SC* **51.5.2.3** *P* **348** *L* **35** # **335**
Dartnell, Peter Nortel Networks

Comment Type **T** *Comment Status* **A**
Value of CJ in table 51-6

SuggestedRemedy
Value of CJ in table 51-6 should be 175ps MAX

Proposed Response *Response Status* **C**
ACCEPT. Changed this from editorial comment to technical.

Cl **51** *SC* **51.6.1** *P* **349** *L* **3** # **149**
Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**
wrong direction for the data

SuggestedRemedy
Replace "PCS to PMA to be de-serialized to the PMD" with "PMA to the PMA client after being de-serialized by the PMA"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **51** *SC* **51.6.2** *P* **349** *L* **10** # **316**
Edwards, Gareth D Xilinx

Comment Type **E** *Comment Status* **A**
Spelling of title of subclause, "XBSI receive interface timing" is incorrect

SuggestedRemedy
change "XBSI" to "XSBI"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **51** *SC* **51.6.2** *P* **349** *L* **14** # **150**
Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**
missing word

SuggestedRemedy
Replace "using rising edge" with "using the rising edge"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **51** *SC* **51.6.2** *P* **349** *L* **19** # **313**

Figueira, Norival — Nortel Networks

Comment Type **T** *Comment Status* **R**

Should read "100ppm" instead of "1000ppm". All clocks are +-100ppm until voted otherwise.

SuggestedRemedy

Change "1000ppm" to "100ppm".

Proposed Response *Response Status* **C**

REJECT. See comment 143.

Cl **51** *SC* **51.6.2** *P* **349** *L* **19** # **151**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

missing word

SuggestedRemedy

Replace "from the nom-" with "variation from the nom-"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **51** *SC* **51.7** *P* **351** *L* **7** # **152**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

wrong word

SuggestedRemedy

Replace "mode be provided" with "mode is provided"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* *P* *L* # **890**

Ohlen, Peter — Optillion

Comment Type **T** *Comment Status* **A** *PENALTY*

For the 1550 nm PMD a dispersion penalty measurement for the transmitter is needed in order to ensure that the transmitter chirp is not too large.

SuggestedRemedy

Add a dispersion penalty measurement in clause 52.7.xx.

---------- NEW TEXT ----------

52.7.xx Dispersion penalty measurement for 10GBASE-ER/EW

==========

The setup for measurement of dispersion penalty is shown in figure C and consists of the transmitter under test, an optical attenuator, a test fiber, a golden receiver, and a bit-error rate tester. All BER and sensitivity measurements shall be made with a 2^23-1 PRBS pattern.

The test fiber shall be an ITU-T G.652 fiber with a length chosen to have a total dispersion larger than 40*0.093/4*(x-1300^4/x^3) ps/nm where x is the wavelength of the transmitter under test. To verify that the fiber has the correct amount of dispersion, use the measurement method defined in TIA/EIA-455-175A.

The nominal sensitivity of the golden receiver, S, shall be measured in OMA and calibrated at the wavelength of the transmitter under test.

To measure the dispersion penalty the following procedure shall be used:

1. Configure the test equipment as illustrated in figure C.
2. Adjust the attenuation of the optical attenuator to have a BER of 1e-12.
3. Measure the optical modulation amplitude at the input to the golden receiver P_DUT in dB.
4. If P_DUT is larger than S, the dispersion penalty (DP) for the transmitter under test is the difference between P_DUT and S, DP = P_DUT - S. Otherwise the dispersion penalty is zero, DP = 0.

It is to be ensured that the measurements are made in the linear regime of the fiber.

Figure C -- Test setup for measurement of dispersion penalty

[Figure shows five boxes containing the "Transmitter (D.U.T.)", "optical attenuator", "test fiber", "golden receiver", and "BERT"]

The nominal sensitivity of the golden receiver shall be measured in OMA using the setup of figure C without the test fiber. The golden transmitter should use a CW laser modulated by a high-bandwidth external modulator and meet the following requirements:

1. The bandwidth shall be greater than 15 GHz.
2. The output optical eye shall be symmetric and pass the eye mask test of 52.7.5.
3. In the center 20% region of the eye, the worst case vertical eye closure as defined in 52.7.10 shall be less than 0.5 dB.

The sensitivity of the golden receiver shall be compensated for any vertical eye closure of the golden transmitter. The decision threshold of the golden receiver shall be at the average signal level. The sensitivity of the golden receiver should be as good as the receiver used in the 10GBASE-ER/EW transceiver.

----------END NEW TEXT FOR CLAUSE 52 ----------

Other changes

When the dispersion penalty measurement is introduced, the RMS spectral width is not critical, and the current specification of 0.034 nm in table 52-13 should be removed.

Specify the maximum dispersion penalty to 3 dB in table 52-13.

Because the transmission penalty is very dependent on the transmitter parameters, and the relevant penalty is measured directly, thetransmitter output power in table 53-13 (measured in OMA/2) should be Ptx = -4.38 dBm + DP.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Needs further refinement.

Cl **52** *SC* **52** *P* **353** *L* **1** # **1315**

Jonathan Thatcher World Wide Packets

Comment Type **T** *Comment Status* **R** *TECHNICALFEASIBILITY*

**** BIG TICKET ITEM ****
According to our 5 criteria, we must prove technical feasibility for each PMD type prior to going to sponsor ballot

"10 Gb/s Ethernet technology will be demonstrated during the course of the project, prior to the completion of the sponsor ballot. project, prior to the completion of the sponsor ballot."

To date, no optical technology has reported on such a demonstration.

(Commenter agreed to changes in comment)

SuggestedRemedy

Put together a plan including the definition of "demonstration" for approval by the committee. Do it.

Proposed Response *Response Status* **C**

REJECT. There is no change to the text proposed and no remedy proposed.

Vote: 29-3-30

Cl **52** *SC* **52** *P* **364** *L* **45** # **1072**

Ali Ghiasi Broadcom

Comment Type **T** *Comment Status* **R** *RIN*

Table 52-8 specifies RIN of -130 dB/Hz. To meet this level of RIN the transmitter design become very complex.

SuggestedRemedy

SM fiber based plant are specified at -26 dB, you should also specify in table 52-9 Return Loss of -26 dB for optimum cost.

Proposed Response *Response Status* **C**

REJECT. In order to not cause problems in the link if the link does not meet the 26dB spec it was decided at the Tampa meetings that RIN should be measured with 12dB reflection independent of the return loss of the receiver.

Cl **52** *SC* **52.** *P* **353** *L* **1** # **336**

Dawe, Piers Agilent

Comment Type **E** *Comment Status* **R**

"PMD" means Polarisation Mode Dispersion. The abbreviated "Physical Medium Dependent" isn't a noun. We don't have media which aren't physical. Though we have 6 port types, there are are only two media types, so they aren't really medium dependent.

SuggestedRemedy

My first suggestion was:Change "PMD" to MDS" (like PCS and WIS) throughout, except where it means Polarisation Mode Dispersion.Clause title now becomes: "Medium Dependent Sublayer (MDS) and ..."Add MDS to acronym list.but I think we can do better than that. "port"? "Optoelectronic Interface (OEI)"? Suggestions welcome!

Proposed Response *Response Status* **C**

REJECT.
Physical Medium Dependent is a commonly used Ethernet terminology and has historically been used to indicate this level of the Ethernet model. Changing this terminology for 10 Gig Ethernet would require changes to clauses not under revision in P802.3ae.

Cl **52** *SC* **52.** *P* **353** *L* **1** # **338**

Dawe, Piers Agilent

Comment Type **E** *Comment Status* **R**

medium should be plural; several fibre types

SuggestedRemedy

Change "medium" to "media".

Proposed Response *Response Status* **C**

REJECT. This is the name of the layer of the model, not a description of it. This layer is named medium regardless of the number of different media types it supports.

Cl **52** *SC* **52.** *P* **353** *L* **2** # **337**

Dawe, Piers Agilent

Comment Type **E** *Comment Status* **R**

baseband and BASE are redundant.

SuggestedRemedy

Delete baseband and BASE throughout the 802.3ae clauses (except if needed to describe or contrast a signalling scheme)

Proposed Response *Response Status* **C**

REJECT.
BASE is the nomenclature of the PMD type, and baseband is a description of the transmission type. They are not redundant.

Cl **52** *SC* **52.** *P* **353** *L* **2** # **340**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A**

"Laser" is not needed here. We don't tell implementers that they must use a laser, that's their job.

SuggestedRemedy

Delete "Laser from title, three times. Could replace with "signal" if you must.

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.1** *P* **354** *L* **11** # **387**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

Table 52?1 is a valuable innovation and can be built upon, to make this complicated clause more accessible.Table title doesn't exactly match contents.An overview table could be more informative.

SuggestedRemedy

Retitle to:
Port types and Referenced Clauses.
Change "PMD" column to "Port type"
Add column for Signaling speed.
Add column for fibre type (simply MMF or SMF -leave details to subsequent clauses)
Add column for nominal wavelength.
Add column for reach.
10G-E would need a footnote about indicative reach not normative.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. May require more than one table (as required). Editor note: Find other references of a similar nature and change to "port type"

Cl **52** *SC* **52.1** *P* **354** *L* **4** # **792**
Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

double "the"

SuggestedRemedy

delete one "the"

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.1.1.1.2** *P* **355** *L* **15** # **341**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A**

PMDs types : too many s's

SuggestedRemedy

delete s on PMDs

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.1.1.4.1** *P* **356** *L* **29** # **339**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

What does "but consequent actions based on PMD_UNITDATA.indicate, where necessary, interpret rx_bit as a logic ZERO." mean? Especially considering that we said that "The effect of receipt of this primitive by the client is unspecified by the PMD sublayer." We don't mean to impose a squelch requirement. Any consequent action would be described in another clause.

SuggestedRemedy

Delete. Add cross-reference if appropriate.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.1.2** *P* **357** *L* **9** # **342**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A**

Missing ,

SuggestedRemedy

Add , after EW

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.10** *P* **378** *L* **16** # **361**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A**

superfluous TLAs

SuggestedRemedy

Replace "PMD MDI type" with "port type". Or "PMD type"

Proposed Response *Response Status* **C**

ACCEPT. Choose "port type".

Cl **52** *SC* **52.11** *P* **378** *L* **29** # **367**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

Channel may be different to this cabling diagram.

SuggestedRemedy

Add after first sentence:A channel may contain additional connectors or other optical elements as long as the optical characteristics of the channel, such as attenuation, dispersion, reflections, polarisation mode dispersion and modal bandwidth meet the specifications.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.11** *P* **378** *L* **29** # **362**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

Building cable may be outside building

SuggestedRemedy

Delete "Building" from Figure 52?8.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Replacement terminology is specified:

(from Kolesar & Cobb communication)

Figure 52-7should change only in the terminology for the cable segments. Change Jumper Cable to Patch Cord. Change Building Cable to Link. As you will see the term "link" is very generic and can apply to cables inside or outside buildings, or combinations of both. It simply is everything up to the patch cords that connect to the equipment at the ends.

Here are the definitions of those terms from TIA 568B.1 :

link: A transmission path between two points, not including terminal equipment, work area cables, and equipment cables.

patch cord: A length of cable with a plug on one or both ends.

Cl **52** *SC* **52.11** *P* **378** *L* **43** # **365**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

Channel description table is be incomplete

SuggestedRemedy

Change table title to "Channel characteristics"
Add rows for channel dispersion and DGDmax: maximum envisioned differential group delay.

Dispersion might be specified elsewhere. 10km 40km
Dispersion see table 58-18 728 ps/nm (1550nm)
DGDmax 10ps 19ps

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Editorial changes need to be made. The 10ps value needs to be changed subject to confirmation by committee. Create channel dispersion table.

Cl **52** *SC* **52.11** *P* **378** *L* **51** # **784**

Furlong, Darrell R Aura Networks

Comment Type **E** *Comment Status* **A**

Both the 10,000 and 40,000 values are not in international format.

SuggestedRemedy

Delete the comma and replace with a space.

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.11** *P* **378** *L* **51** # **363**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **R**

40km is only informative

SuggestedRemedy

Add footnote to table 52-17: 40km is informative not normative.

Proposed Response *Response Status* **C**

REJECT. A change of 40 km from normative to informative would require a change in the task force's objectives.

Cl **52** *SC* **52.11** *P* **378** *L* **52** # **836**

Congdon II, Herbert V — Tyco Electronics

Comment Type **T** *Comment Status* **A**

Channel insertion loss values missing from table.

SuggestedRemedy

Recommend inserting these values, in order, along with 1) a note explaining channel insertion loss is calculated using cable length, maximum attenuation and two connections at 0.75 dB each and 2) channel insertion loss at 1550 nm calculated using cable length, attenuation of 0.35 dB/km, two connections at 0.75 dB each and two splices at 0.3 dB each.1.61, 1.63, 1.75, 1.81, 2.55, 5.5 or 6.5, 16.1

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. ACCEPT IN PRINCIPLE.1310 nm value needs to be changed to 2 dB connection loss. Values to be verified by committee.

Add editorial note below table "These numbers have not been verified….."

Cl **52** *SC* **52.11** *P* **378** *L* **52** # **465**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **A**

I think we should not have the channel insertion loss numbers blank in this table

SuggestedRemedy

Either delete this row, or insert the numbers from Table 52-15 etc. or reference Table 52.15 etc.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 836.

Cl **52** *SC* **52.11** *P* **378** *L* **52** # **885**

Ohlen, Peter — Optillion

Comment Type **T** *Comment Status* **A**

The channel insertion loss is omitted for the 1550 and the 1310 serial PMDs.

SuggestedRemedy

Insert 13 dB channel insertion loss for the 1550 SMF channel, and 7.04 dB inserion loss for the 1310 SMF channel.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 836 remedy.

Cl **52** *SC* **52.11** *P* **378** *L* **52** # **364**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Channel insertion loss boxes are blank

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 836

Cl **52** *SC* **52.12** *P* **379** *L* **8** # **366**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Cabling is over specified

SuggestedRemedy

Change "includes a connector plug at" to "includes any connector at"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Delete sentence.

Cl **52** *SC* **52.12.1** *P* **379** *L* **13** # **373**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Do we need to mention G.652 and G.650 as well as IEC 60793-2:1992?

SuggestedRemedy

Check!

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. G.652 is reference.

Cl **52** *SC* **52.12.1** *P* **379** *L* **14** # **776**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Fibre specs: G.652 is said to be more up to date than IEC 60793-2:1992.

SuggestedRemedy

Make reference to
ITU-T Recommendation G.652 (2000), Characteristics of a single-mode optical fibre cable as well or (for SMF only) instead of IEC 60793-2:1992.

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.12.1** *P* **379** *L* **21** # **1052**

Paul Kolesar Lucent

Comment Type **T** *Comment Status* **A**

Per motion by Kolesar and Swanson in Tampa, November, 2000 the descriptor for SMF is incorrect.

SuggestedRemedy

Change "10 um SMF" to "Type B1 SMF"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.12.1** *P* **379** *L* **27** # **1053**

Paul Kolesar Lucent

Comment Type **T** *Comment Status* **A**

Per motion by Kolesar and Swanson in Tampa, November, 2000 the attenuation for 62.5 um cable is incorrect.

SuggestedRemedy

Replace "3.75*" with "3.5" and delete note associated with the * below the table.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.12.1** *P* **379** *L* **27** # **1061**

Doug Coleman Corning

Comment Type **T** *Comment Status* **A**

Need to differentiate between OSP and ISP

SuggestedRemedy

Add footnote to address .4 or .5 as being for OSP applications.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Add text above table.

"For the single mode case, the 1310 nm attenuation is provided for Outside Plant cable as defined in TIA 568B.3."

Editor's note: However, we need to decide how to deal with dual specifications for fiber attenuation.

Cl **52** *SC* **52.12.1** *P* **379** *L* **31** # **1054**

Paul Kolesar Lucent

Comment Type **T** *Comment Status* **A**

Per motion by Kolesar and Swanson in Tampa, November, 2000 the modal bandwidth conditions are incorrect.

SuggestedRemedy

The conditions in column one should state: "(min, overfilled launch unless otherwise noted)". This text should not be bold. Add a superscript to the 2000 MHz-km value to mark a note. Add the associated note below the table stating: "Bandwidth measurement details being defined in TIA FO2.2 and IEC 86A".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Add editorial note indicating that text above MUST change and referenced standard must be approved prior to WG ballot.

Cl **52** *SC* **52.12.2** *P* **379** *L* **30** # **837**

Congdon II, Herbert V Tyco Electronics

Comment Type **T** *Comment Status* **A**

The 2000 MHz.km bandwidth is not overfilled.

SuggestedRemedy

This can be corrected in one of several ways (left to editor's discretion): 1) add a note by the 2000 number with accompanying footnote indicating that the bandwidth is based on a laser launch, not overfilled launch, or 2) delete "(min. overfilled launch)" in the title block, and add footnotes by each bandwidth number to indicate OFL or laser launch.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Correct as per remedy in 1054.

Cl **52** *SC* **52.12.2** *P* **379** *L* **51** # **368**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *CONNECTOR*

Specifying optical connectors is not desirable and not telecoms practice.

SuggestedRemedy

Change "10GBASE-SR/LR/ER/SW/LW/EW PMD" to "10GBASE-SR/SW PMD"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 370.

Cl **52** *SC* **52.12.2.1** *P* **380** *L* **11** # **466**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **E** *Comment Status* **R**

I think that the paragraph that was deleted is useful and helps to explain the note below table 52-18.

SuggestedRemedy

Re-instate the deleted paragraph.

Proposed Response *Response Status* **C**

REJECT. This is the same paragraph as above, it need not be replicated.

Cl **52** *SC* **52.12.2.2** *P* *L* # **1062**

Doug Coleman — Corning

Comment Type **E** *Comment Status* **A**

do not BOLD number 26

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.12.2.2** *P* **380** *L* **20** # **777**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **R**

This draft has
"The return loss for singlemode connections shall be greater than 26 dB."
while latest G.691 tables 5 has
"Maximum discrete reflectance between MPI-S and MPI-R dB -27"
and
"Min ORL of cable plant at MPI-S, including any connectors dB (14 or 24)".

As to the first requirement, I don't think we care whether we write down -26 or -27, let's harmonise. The second is something ITU-T think is necessary and we should consider aligning.

SuggestedRemedy

Align with other standards. Unless IEC 60793 or other authority differs, follow latest G.691 by replacing the sentence with:
"The maximum discrete reflectance between TP2 and TP3 for singlemode channels shall not exceed -27 dB. The minimum optical return loss of a channel used with 10GBASE-LR/LW PMD shall not exceed -14 dB. The minimum optical return loss of a channel used with 10GBASE-ER/EW PMD shall not exceed -24 dB."

Note -14 may be too slack, and should be considered again.

Proposed Response *Response Status* **C**

REJECT. There is no technical justification for change.

Editorial note to be added: more work is needed to determine whether new return loss specification is needed.

Cl **52** *SC* **52.12.2.2** *P* **380** *L* **20** # **369**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **R**

Does -26 dB singlemode connector return loss match other standards?

SuggestedRemedy

Check other standards and align: 26 or 27 dB

Proposed Response *Response Status* **C**

REJECT. See 777

Cl **52** *SC* **52.12.3** *P* **380** *L* **24** # **626**

William G. Lane CSU, Chico

Comment Type **T** *Comment Status* **R** *CONNECTOR*

The MDI connector(s) have not yet been defined

SuggestedRemedy

If the duplex SC connector is chosen, the text in this subclause can be replaced with a reference to 38.11.3

Proposed Response *Response Status* **C**

REJECT. See 370.

Cl **52** *SC* **52.12.3** *P* **380** *L* **24** # **370**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *CONNECTOR*

Specifying optical connectors is not desirable and not telecoms practice. Note that 802.3z only specifies to 5 km.Are the performance specifications in ISO/IEC 11801 adequate for 10 GBd operation?

SuggestedRemedy

Change"The 10GBASE-SR/LR/ER/SW/LW/EW PMD is coupled to the fiber optic cabling through a connector plug into the MDI optical receptacle. The PMD MDI optical receptacles shall be the duplex SC, meeting the followingrequirements"to"The 10GBASE-SR/SW PMD is coupled to the fiber optic cabling through a connector plug into the MDI optical receptacle. The PMD MDI optical receptacles shall be the duplex SC, meeting the followingrequirements"At end of subclause, add additional text:Any connector used in the MDI of 10GBASE-LR/ER/LW/EW PMD for links in excess of 5 km shall satisfy ....(where .... is either ITU-T G.nnn or Telcordia GR-326-CORE).Any connector used in the MDI of 10GBASE-LR/ER/LW/EW PMD for links in less than 5 km shall satisfy one of the above sets of criteria.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. We will redefine the MDI as the fiber.

Propose to delete references to particular optical connector types. Delete the requirement for an optical connector. Make reference to a standard for optical connector performance if a connector is being used.

Vote: 48-2-10

Cl **52** *SC* **52.2.1** *P* **357** *L* **24-32** # **216**

Del Hanson Tripath Technology

Comment Type **T** *Comment Status* **R**

Starting with and only showing test points TP2 and TP3 requires explanation. Subclauses 52.7.8 through 52.7.10 carry over the GbE references to TP1 and TP4.

SuggestedRemedy

Place a note in 52.2.1 explaining why this numbering is used. Correct or eliminate the references to TP1 and TP4 in 52.7.8 through 52.7.10 as part of the overall test methodology.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Cl **52** *SC* **52.2.1** *P* **357** *L* **31** # **343**

Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A**

Double arrows representing connectors are confusing, unspecified and according to Fig. 38?9, erroneous.

SuggestedRemedy

Replace double arrows with X type symbol (back-to-back arrows)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Find out if there's a rule or standard for this type of diagram that needs to be observed.

Cl **52** *SC* **52.2.4** *P* **358** *L* **24** # **432**

Mike Dudek, Mike T Dudek Cielo Communications

Comment Type **T** *Comment Status* **R**

With the use of optical modulation amplitude it would be better to set the signal detect value with respect to optical modulation amplitude

SuggestedRemedy

Replace "Input_optical_power (less than or equal to) -30dBm" with "Input_Optical_ modulation_Amplitude (less than or equal to)" 2uW (-30dBm)Change paragraph begining on line 37 toVarious implementations of the Signal Detect function are permitted by this standard. However the preferred implementation generates the SIGNAL_DETECT parameter values in response to the amplitude of the modulation of the optical signal.

Proposed Response *Response Status* **C**

REJECT. This would be a change in the way we determine whether a signal exists which is in fact not agreed upon by adopting OMA.

Withdrawn.

Cl **52** *SC* **52.3** *P* **360** *L* **22** # **834**

Congdon II, Herbert V — Tyco Electronics

Comment Type **T** *Comment Status* **A**

Table lists 2000 MHz.km as an overfilled launch bandwidth (OFL). The 2000 MHz.km bandwidth is a laser launch bandwidth

SuggestedRemedy

This can be corrected in one of several ways (left to editor's discretion): 1) split the table into two - one with the current data minus the 2000Mhz.km 50/125 fiber, and the other listing only the 2000Mhz.km 50/125 fiber and eliminate "(min. overfilled launch)" in the title block, or 2) add a note by the 2000 number with accompanying footnote indicating that the bandwidth is based on a laser launch, not overfilled launch, or 3) delete "(min. overfilled launch)" in the title block, and add footnotes by each bandwidth number to indicate OFL or laser launch.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 1054

Cl **52** *SC* **52.3** *P* **360** *L* **23** # **344**

Dawe, Piers — Agilent

Comment Type **E** *Comment Status* **A**

"10 æm SMF": we are going to rename this but since it isn't supported here...

SuggestedRemedy

Delete "10 æm"

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.3.1** *P* **361** *L* **14** # **832**

Mike Dudek — Cielo Inc

Comment Type **T** *Comment Status* **R** *TRIPLE*

The use of a triple trade off curve was agreed upon at the Tampa meeting. Changes are required to table 52-4 to implement this decsision and are specified by Mike Dudek in his offically submitted comments. The transmitter maximum rise and fall times are also overly strict (31.5ps) and should be increased to 35ps.Additionally a triple trade off curve should be added (figure X).

SuggestedRemedy

Add the following plot to the standard as figure X below Table 52-4.
http://www.ieee802.org/3/ae/public/jan01/jjarriel_2_0101.pdf

Proposed Response *Response Status* **C**

REJECT. Withdrawn

Cl **52** *SC* **52.3.1** *P* **361** *L* **14** # **899**

Mike Dudek — Cielo Inc

Comment Type **T** *Comment Status* **R** *TRIPLE*

The use of a triple trade off curve was agreed upon at the Tampa meeting. Changes are required to table 52-4 to implement this decsision and are specified by Mike Dudek in his offically submitted comments. Additionally a triple trade off curve should be added (figure X).

SuggestedRemedy

Add the following plot to the standard as figure X below Table 52-4.
http://www.ieee802.org/3/ae/public/jan01/jjarriel_1_0101.pdf

Proposed Response *Response Status* **C**

REJECT. Withdrawn

Cl **52** *SC* **52.3.1** *P* **361** *L* **14** # **433**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **A** *TRIPLE*

The use of a triple trade off curve and OMA was agreed at the meeting in Tampa Changes are required to table 52-4 to implement this decision

SuggestedRemedy

Add a footnote reference to 840 - 860Remove the 0.35 on Line 17 (spectral width) and replace with the same footnote reference.Change line 20 from "Average Launch Power (min)" to Optical Modulation Amplitude (min) remove the -5.5dBm and replace with the same footnote reference as above.Remove the Extinction Ratio (min) line.Change line 25 from "RIN" to "RIN12OMA"The footnote should read "Trade-off's are available between optical modulation amplitude, wavelength, and spectral width see figure X (triple trade off curve to be sent as an ASCII comment referencing my name, but may be sent by Joey Jarriel.)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Needs further refinement and addition of appropriate curves.

Cl **52** *SC* **52.3.1** *P* **361** *L* **15** # **872**

Ohlen, Peter — Optillion

Comment Type **E** *Comment Status* **A**

A right parenthesis is missing in table 52-4.

SuggestedRemedy

Insert a ")" on p. 361:15

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.3.1** *P* **361** *L* **16** # **441**

Mike Dudek — Cielo Communications

Comment Type **T** *Comment Status* **A** *TRIPLE*

With the use of triple trade off curves the transmitter risetime is unnecessarily stringent.

SuggestedRemedy

Line 16. Replace 31.5ps with 35ps. Use the modified triple trade off curve to be submitted by ASCII file. (Submission will reference my name, but may be made by Joey Jarriel).

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See other comments for triple trade-off curves.

Cl **52** *SC* **52.3.1** *P* **361** *L* **20** # **1317**

Jonathan Thatcher — World Wide Packets

Comment Type **T** *Comment Status* **A** *OUCH*

An average launch power (min) of -5.5 dBm is only realistic with an increase in the CDRH laser safety limit for 850 nm operation. We must have confirmation of this change prior to sponsor ballot.

SuggestedRemedy

Get confirmation or remove SR/SW before sponsor ballot. Add editors note regarding this (like note on page 360).

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Let's get confirmation.

Cl **52** *SC* **52.3.1** *P* **361** *L* **20** # **345**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A** *OMA*

Tx changing to OMA

SuggestedRemedy

Change:Average launch power (min) -5.5 dBmto OMA definition in uW and dBm

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See comment 873.

Cl **52** *SC* **52.3.1** *P* **361** *L* **23** # **346**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A** *ER*

Extinction ratio requirement is stricter than needs be but not redundant.

SuggestedRemedy

Change 6.5 to 3.0 . Do not delete the line.This number needs further review.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 888.

Cl **52** *SC* **52.3.1** *P* **361** *L* **25** # **347**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **R** *RIN*

RIN values need revisiting now Mike Dudek has pointed out that link model always dealt in OMA-RIN. We need to find room in the power budget for slightly more RIN.

SuggestedRemedy

Change to "RIN(OMA) (max) -120 dB/Hz.Add footnote:RIN measurement is made with a return loss at 12 dB.

Proposed Response *Response Status* **C**

REJECT. Needs discussion

Editor's note: Need more input.

Cl **52** *SC* **52.3.1** *P* **361** *L* **28** # **348**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

"During all conditions when the PMA is powered, the AC signal (data) into the transmit port will be valid encoded 8B/10B patterns (this is a requirement of the PCS layers) except for short durations during system power-on-reset or diagnostics when the PMA is placed in a loopback mode."This is left over from clause 38. We don't have physical PMA<>PMD "transmit ports" or 8B/10B patterns at the PMD.

SuggestedRemedy

Delete the sentence.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.3.1** *P* **361** *L* **30** # **434**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **E** *Comment Status* **A**

The serial PMD's use 64B/66B coding not 8B/10B

SuggestedRemedy

Replace 8B/10B with 64B/66B in this footnote.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. As per 348.

Cl **52** *SC* **52.3.2** *P* **362** *L* **18** # **436**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **A** *OMA*

It was agreed at the Tampa meeting to change to OMA Table 52-5 requires changes to implement this.Also the footnote refering to measuring the stressed receiver sensitivity at 9dB extinction ratio is wrong (it should have been at 6.5dB extinction ratio)

SuggestedRemedy

Replace "sensitivity -13dBm with "Sensitivity (OMA) 64 (-14.9) uW (dBm)
Replace "stressed receiver sensitivity" with "stressed receiver sensitivity (OMA) on line 21) The 62.5 um cell would become 220 (-9.6) uW (dBm). The 50 um cell would become 179 (-10.5) uW (dBm)
Delete the footnote on lines 27 and 28 referring to the extinction ratio at which the stressed receiver power should be measured.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 873.

Cl **52** *SC* **52.3.2** *P* **362** *L* **18** # **350**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A** *OMA*

Receive sensitivity to be converted to OMA.

SuggestedRemedy

Convert Receive sensitivity to OMA.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 873.

Cl **52** *SC* **52.3.2** *P* **362** *L* **22** # **351**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

SR/SW Vertical eye closure penalty needs revision.

SuggestedRemedy

Change 2.5 to ?Change 3.0 to 3.6

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Needs further work to develop correct numbers.

Cl **52** *SC* **52.3.2** *P* **362** *L* **27** # **874**

Ohlen, Peter — Optillion

Comment Type **E** *Comment Status* **A**

-12 should be written in superscript

SuggestedRemedy

Write -12 in superscript

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.3.2** *P* **362** *L* **27** # **385**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **R** *OMA*

Stressed test extinction ratio is left over from GigE. For now, we can change it to align with our average-power definitions. It can get rewritten into OMA style sometime.

SuggestedRemedy

Change 9 dB to 6.5 dB.

Proposed Response *Response Status* **C**

REJECT. See 893.

Cl **52** *SC* **52.3.2** *P* **362** *L* **4** # **435**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **E** *Comment Status* **A** *OMA*

With the change to OMA the comment on extinction ratio penalty is unnecessary

SuggestedRemedy

Remove the sentence "The receive Sensitivity includes the extinction ratio penalty"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Accepting changed phraseology recommended by 403.

Cl **52** *SC* **52.3.2** *P* **362** *L* **4** # **403**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A** *OMA*

Changing Rx to OMA

SuggestedRemedy

Change"The receive sensitivity includes the extinction ratio penalty ."to"The stressed receive sensitivity includes the extinction ratio penalty."or take a comment to convert stressed receive sensitivity to OMA.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Delete sentence.

Cl **52** *SC* **52.3.2** *P* **362** *L* **4** # **349**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

"The sampling instant is defined to occur at the eye center."This sentence may get changed (to a receive eye) or deleted later, following jitter and eye specs.Also subclause 4.2 page 365 line 4, subclause 5.2 page 370 line 4.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT. Thank you for the comment. No remedy provided.

Cl **52** *SC* **52.3.2,4.2,5.2** *P* *L* # **892**

Ohlen, Peter — Optillion

Comment Type **T** *Comment Status* **A** *OMA*

In the first paragraph of clauses 52.3.2, 52.4.2, and 52.5.2, it is stated that the receive sensitivity includes the extinction ratio penalty. With the change to OMA, the receive sensitivity does not depend on the extinction ratio, and the text should be changed accordingly.

SuggestedRemedy

Change the sentence on p. 370:4-5, p. 365:4-5, p. 362:4-5 to:
The receive sensitivity is measured using optical modulation amplitude (OMA) and does not depend on the extinction ratio.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Use change proposed in 403 in all three instances.

Cl **52** *SC* **52.3.2,4.2,5.2** *P* **362** *L* **28** # **893**

Ohlen, Peter — Optillion

Comment Type **T** *Comment Status* **A** *ER*

In the footnotes of the tables for receive characteristics, it is stated that measurements are made with a signal have a 9 dB extinction ratio and that the stressed sensitivity should be corrected for the extinction ratio penalty if another extinction ratio is used.With OMA, it is not necessary to correct for the extinction ratio. Also, if an extinction ratio is in the footnote, it should be 3 dB which is the lowest extinctino ratio suggested in another comment.Testing at a low extinction will make both external and directly modulated laser sources more linear which can be an advantage.

SuggestedRemedy

Change the single-dagger footnote on p. 362:27-28, p. 365:29-30, p. 370:30-32 to:Measured with a transmit signal having a 3 dB extinction ratio.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.3.3** *P* **363** *L* **12** # **377**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **R** *RIN*

Penalties and margins will change following recalculation and re-optimisation of RIN.

SuggestedRemedy

Change:
50u 500 MHz
Link power penalties 5.23
Unallocated margin 0.46
Similar changes to other columns.

Proposed Response *Response Status* **C**

REJECT. See comment 347.

Cl **52** *SC* **52.3.3** *P* **363** *L* **13** # **378**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Unallocated margin is sometimes misunderstood.

SuggestedRemedy

Add text:The unallocated margin is not available for use as additional insertion losses. It simply represents unknown penalties and uncertainties in the known parameters.

Proposed Response *Response Status* **C**

ACCEPT. .

Cl **52** *SC* **52.3.3** *P* **363** *L* **6** # **437**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **A**

The modal bandwidth for the 2000 MHz.Km cell is not measured with overfilled launch.

SuggestedRemedy

Change (minimum overfilled launch) to (minimum) and add a footnote reference.Footnote to read "For fibers other than the 50u 2000MHz.Km this is for an overfilled launch. For the 200MHz.Km fiber this is measured according to FOTP xxxxx.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Alternate nomenclature and methodology were specified in 1054.

Cl **52** *SC* **52.3-5** *P* *L* # **873**

Ohlen, Peter Optillion

Comment Type **T** *Comment Status* **A** *OMA*

In the last meeting it was approved (with a 75% technical vote) that optical modulation amplitude (OMA) should be used to specify receiver sensitivities and minimum transmitter optical power. It was approved that OMA should be specified in both mW's and dBm's. These changes have not been made in D2.0, and should be inserted. This applies to multiple subclauses and tables.

SuggestedRemedy

Table 52-4 (850 serial TX):
1. (p. 361:20) Specify launch power (min) in OMA as 0.357 mW and in OMA/2 as -7.48 dBm. (Instead of "average launch power (min)")
Table 52-5 (850 serial RX):
1. (p. 362:18) Specify receive sensitivity in OMA as 0.0636 mW and in OMA/2 as -14.98 dBm. (Instead of "average launch power (min)")
2. (p. 362:21) Specify stressed sensitivity in OMA as 0.179 mW and in OMA/2 as -10.48 dBm for the 50 um MMF.
3. (p. 362:21) Specify stressed sensitivity in OMA as 0.220 mW and in OMA/2 as -9.58 dBm for the 62.5 um MMF.
Table 52-8 (1310 serial TX):
1. (p. 364:39) Specify launch power (min) in OMA as 0.477 mW and in OMA/2 as -6.23 dBm. (Instead of "average launch power (min)")
Table 52-9 (1310 serial RX):
1. (p. 365:19) Specify receive sensitivity in OMA as 0.0477 mW and in OMA/2 as -16.23 dBm.
2. (p. 365:22) Specify stressed sensitivity in OMA as 0.0857 mW and in OMA/2 as -13.68 dBm.
Table 52-13 (1550 serial TX):
1. (p. 369:22) Specify launch power (min) in OMA as 1.45 mW and in OMA/2 as -1.39 dBm. (Instead of ""average launch power (min)")
Table 52-14 (1550 serial RX):
1. (p. 370:21) Specify receive sensitivity in OMA as 0.0230 mW and in OMA/2 as -19.39 dBm.
2. (p. 370:24) Specify stressed sensitivity in OMA as 0.0663 mW and in OMA/2 as -14.80 dBm.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Further refinement needed to coordinate with addition of triple tradeoff curves.

Cl **52** *SC* **52.3-5** *P* *L* # **888**

Ohlen, Peter Optillion

Comment Type **T** *Comment Status* **A** *OMA*

With the OMA proposal, which was voted for in the last meeting, the extinction ratio specification was removed. There is an implicit (very low) lower limit for the extinction ratio imposed by the maximum average power. Still, operating at a very low extinction ratio could pose some problems and it should be limited to a minimum of 3 dB.

SuggestedRemedy

Table 52-4 on p. 361 (850 serial):
Specify the minimum extinction ratio to be 3 dB.
Table 52-8 on p. 364 (1300 serial):
Specify the minimum extinction ratio to be 3 dB.
Table 52-13 on p. 369 (1505 serial):
Specify the minimum extinction ratio to be 3 dB.

Proposed Response *Response Status* **C**

ACCEPT. .

Cl **52** *SC* **52.4** *P* **364** *L* **3** # **386**

Dawe, Piers Agilent

Comment Type **E** *Comment Status* **R**

The information in Table 52?7 doesn't really deserve a table.

SuggestedRemedy

Either: Change text to:The operating range for 10GBASE-LR/LW PMDs is (shall be?) 2 m to 10 km.Or: Add a column to table 52-1 and change its title to:"Port types, reaches and Referenced Clauses."Or my preferred remedy, do both. 10G-S entry would be "see table 52-3" and 10G-E would need a footnote about indicative reach not normative.

Proposed Response *Response Status* **C**

REJECT. This table is designed for consistency with other sections, for example, 52.3. Although short, it presents the same type of information consistently for each PMD type.

Cl **52** *SC* **52.4** *P* **364** *L* **4** # **380**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

"10 æm singlemode" is deprecated

SuggestedRemedy

Replace "10 æm" by ITU-T, IEC or SONET terminology as recommended by Paul Kolesar, for the rest of the clause.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See also 1052

Editor's note and remedy: All instances of 10 um SMF will be replaced with SMF and a reference to the table on fiber types.

Cl **52** *SC* **52.4** *P* **364** *L* **6** # **782**

Furlong, Darrell R — Aura Networks

Comment Type **E** *Comment Status* **A**

I believe the value 10,000 is not in internation format. Also Line 15

SuggestedRemedy

Remove the comma and replace with a space.

Proposed Response *Response Status* **C**

ACCEPT. This occurs in multiple places in clause 52. Editor's note: replace ALL instances with accepted format (do some homework to check consistency against other clauses and existing standard). Maybe scientific notation would be less regional?

Cl **52** *SC* **52.4** *P* **364** *L* **Multiple** # **372**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A** *INTERFEROMETRIC*

Need to consider interferometric noise.

SuggestedRemedy

Homework!

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See 895-896 (Krister Frojdh)

Cl **52** *SC* **52.4.1** *P* **364** *L* **28** # **618**

William G. Lane — CSU, Chico

Comment Type **E** *Comment Status* **A**

In table 52-8, the signaling speed is not defined as a range

SuggestedRemedy

Change "range" to "nominal"

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.4.1** *P* **364** *L* **31** # **438**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **A** *TRIPLE*

At the Tampa meeting it was agreed to use triple trade off curves and OMA Table 52-8 does not do so.

SuggestedRemedy

Line 31 Wavelength range delete the 1st box and add footnote reference
Line 34 combine to one box replace the numbers with the same footnote reference
Line 39 change "Average launch power (min) to "Optical Modulation Amplitude (min) remove the -4.0 and replace with the same footnote reference
Line 43 Delete the line in the table referring to Extinction ratio
Line 44 Replace "RIN" with "RIN12OMA
Footnote should read "Trade-offs are available between Optical Modulation Amplitude, wavelength, and spectral width see figure y. (Figure y would be the triple trade off curve that will be supplied via ASCII format referencing my name, but may be submitted by Joey Jarriel).

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Further refinement may be necessary.

Editorial note below text: The maximum RMS Spectral Width may be limited. Check link model for accuracy and validity for singlemode laser.

Keep line 43 ER.

Cl **52** *SC* **52.4.1** *P* **364** *L* **32** # **1073**

Ali Ghiasi — Broadcom

Comment Type **T** *Comment Status* **R**

Rise and fall time are redundant in presence of eye mask.

SuggestedRemedy

Make rise and fall time informative or instead specify geometric rise+fall
If your rise time is very fast you can have slower fall time.

Proposed Response *Response Status* **C**

REJECT. Rise and fall times are required input to the link model.

Cl **52** *SC* **52.4.1** *P* **364** *L* **34** # **371**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **R**

RMS spectral width entry needs updating to bring in line with standard DFB measurement method.

SuggestedRemedy

Replace "RMS spectral width" row with
-20 dB spectral width (max) 1 nm

Proposed Response *Response Status* **C**

REJECT. Superceded by use of triple trade-off curves as mandated in Tampa meeting and presented in comment: 438.

Editor's note: Triple tradeoff changes are in comments 833, 438, 899, 832,433, 441.

Establish a measurement procedure to measure narrow linewidth lasers.

Cl **52** *SC* **52.4.1** *P* **364** *L* **34** # **376**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

"Spectral width" is ambiguous. Does this mean full-width or half-width?

SuggestedRemedy

Replace "spectral width" with "spectral half-width" I think

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See response 375.

Cl **52** *SC* **52.4.1** *P* **364** *L* **34** # **833**

Mike Dudek Cielo Inc

Comment Type **T** *Comment Status* **R** *TRIPLE*

The use of a triple trade off curve was agreed upon at the Tampa meeting. Changes are required to table 52-4 to implement this decsision and are specified by Mike Dudek in his offically submitted comments. Additionally a triple trade off curve should be added (figure X).

SuggestedRemedy

Add the following plot to the standard as figure X below Table 52-4
http://www.ieee802.org/3/ae/public/jan01/jjarriel_3_0101.pdf

Proposed Response *Response Status* **C**

REJECT. Withdrawn.

Cl **52** *SC* **52.4.1** *P* **364** *L* **39** # **381**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *OMA*

Tx changing to OMA

SuggestedRemedy

Change:Average launch power (min) -4 dBmto OMA definition, 477 æW and -6.23 dBm

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. As per comment 873.

Cl **52** *SC* **52.4.1** *P* **364** *L* **40** # **895**

Frojdh, Krister Optillion

Comment Type **T** *Comment Status* **A** *INTERFEROMETRIC*

A specified minimum return loss and a minimum extintion ratio for the transmitter is needed to avoid problem with interferometric noise. I will present more on this in Irvine.

SuggestedRemedy

Add two rows in table 52-8:
Extinction ratio(min) 3 dB
Return loss(min) 12 dB (or 20 dB)

(Edit in suggested remedy OKed by commenter)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See 896.

Cl **52** *SC* **52.4.1** *P* **364** *L* **42** # **382**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

Extinction ratio requirement is stricter than needs be but not redundant.

SuggestedRemedy

Change 6 to 3.0 . Do not delete the line.This number needs further review.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See comment 888.

Cl **52** *SC* **52.4.1** *P* **364** *L* **42** # **619**

William G. Lane CSU, Chico

Comment Type **T** *Comment Status* **A**

The PMD subgroup voted during the November plenary to replace Extinction ratio specification with Optical Modulation Amplitude specification

SuggestedRemedy

Revise the extinction ratio entry in table 52-8 to reflect OMA

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. As per other comments from Mike Dudek and 873 (Peter Ohlen).

Cl **52** *SC* **52.4.1** *P* **364** *L* **44** # **383**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *RIN*

RIN values need revisiting now Mike Dudek has pointed out that link model always dealt in OMA-RIN. There is room in the power budget for slightly more RIN. After further work we may remove the RIN measurement altogether and rely on path penalty, path tolerance measurements.

SuggestedRemedy

Change to "RIN(OMA) (max) -125 dB/Hz.Add footnote:RIN measurement is made with a return loss at 12 dB.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. We need to review the new RIN OMA specifications in the entire clause.

Cl **52** *SC* **52.4.1** *P* **364** *L* **47** # **384**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

"During all conditions when the PMA is powered, the AC signal (data) into the transmit port will be valid encoded 8B/10B patterns (this is a requirement of the PCS layers) except for short durations during system power-on-reset or diagnostics when the PMA is placed in a loopback mode."This is left over from clause 38. We don't have physical PMA<>PMD "transmit ports" or 8B/10B patterns at the PMD.

SuggestedRemedy

Delete the sentence.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.4.1** *P* **364** *L* **48** # **439**

Mike Dudek, Mike T Dudek Cielo Communications

Comment Type **T** *Comment Status* **A**

This serial PMD uses 64B/66B coding not 8B/10B coding

SuggestedRemedy

Replace 8B/10B with 64B/66B.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See comment 891.

Cl **52** *SC* **52.4.2** *P* **365** *L* **12** # **620**

William G. Lane CSU, Chico

Comment Type **E** *Comment Status* **A**

In table 52-9, the signaling speed is not defined as a range

SuggestedRemedy

Change "range" to "nominal"

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.4.2** *P* **365** *L* **15** # **442**

Mike Dudek, Mike T Dudek Cielo Communications

Comment Type **T** *Comment Status* **A** *OMA*

The change to OMA agreed at the Tampa meeting requires changes to table 52-9

SuggestedRemedy

Change line 19 from "Receiver Sensitivity -14.0 dBm" to "Receiver Sensitivity OMA 48 (-16.2) uW (dBm)
Change line 22 from "Stressed receiver sensitivity -11.45 dBm" to "Stressed receiver sensitivity OMA 86 (-13.7) uW (dBm)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 873.

Cl **52** *SC* **52.4.2** *P* **365** *L* **19** # **389**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *OMA*

Receive sensitivity to be converted to OMA.

SuggestedRemedy

Change Receive sensitivity to 48 uW and -16.23 dBm.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 873.

Cl **52** *SC* **52.4.2** *P* **365** *L* **21** # **896**

Frojdh, Krister — Optillion

Comment Type **T** *Comment Status* **A** *INTERFEROMETRIC*

The current combination of ER and return loss of receiver will give problems with interferometric noise. This will be further covered in my Irvine presentation

SuggestedRemedy

Table 52-9
Return loss (min) 20 dB

(Edit in suggested remedy OKed by commenter)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Interferometric noise needs to be studied further and measured where possible. A IN ad hoc will suggest necessary steps and submit changes as required as a single technical comment to the next draft (D2.1).

This draft (D2.1) will contain editorial notes presenting the comment and solution currently proposed.

Cl **52** *SC* **52.4.2** *P* **365** *L* **22** # **621**

William G. Lane — CSU, Chico

Comment Type **T** *Comment Status* **A**

Because the PMD subgroup voted during the November plenary to replace Extinction ratio specification with Optical Modulation Amplitude specification, the extinction ratio footnote for the stressed receive sensitivity in table 52-9 is no longer appropriate

SuggestedRemedy

Delete the extinction ratio footnote

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 893.

Cl **52** *SC* **52.4.2** *P* **365** *L* **23** # **410**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

LR/LW Vertical eye closure penalty needs revision to account for PMD.

SuggestedRemedy

Change 1.71 to 1.78

Proposed Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.4.2** *P* **365** *L* **29** # **443**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **R**

The Extinction Ratio for measuring the stressed receiver sensitivity is incorrect and no longer needed.

SuggestedRemedy

Delete the footnote to table 52-9 begining "measured with a transmit ...."

Proposed Response *Response Status* **C**

REJECT. See 893.

Cl **52** *SC* **52.4.2** *P* **365** *L* **29** # **390**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **R** *OMA*

Stressed test extinction ratio is left over from GigE. For now, we can change it to align with our average-power definitions. It can get rewitten into OMA style sometime.

SuggestedRemedy

Change 9 dB to 6.0 dB.

Proposed Response *Response Status* **C**

REJECT. See 893.

Cl **52** *SC* **52.4.2** *P* **365** *L* **4** # **440**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **A** *OMA*

With the change to OMA the sentence referring to extinction ratio is unnecessary

SuggestedRemedy

Delete the sentence begining "The receiver ...."

Proposed Response *Response Status* **C**

ACCEPT. See 406.

Cl **52** *SC* **52.4.2** *P* **365** *L* **4** # **406**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **R** *OMA*

Changing Rx to OMA

SuggestedRemedy

Change"The receive sensitivity includes the extinction ratio penalty ."to"The stressed receive sensitivity includes the extinction ratio penalty."or take a comment to convert stressed receive sensitivity to OMA.

Proposed Response *Response Status* **C**

REJECT. See 403

Cl **52** *SC* **52.4.2,5.2** *P* **365-370** *L* # **894**

Ohlen, Peter — Optillion

Comment Type **T** *Comment Status* **A**

For the 1310 and 1550 PMDs, there is no upper cut-off specified for the receiver, whereas there is a 12.3 GHz cut-off specified for 850.I think there should be an upper cut-off for all serial PMDs that should be the same if there are no good reasons that they should be different.

SuggestedRemedy

Table 52-9 (1310), p. 365:25
Insert 12.3 GHz in the empty cell.
Table 52-14 (1550), p. 370:27
Insert 12.3 GHz in the empty cell.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.4.3** *P* **365** *L* **49** # **391**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A** *RIN*

Penalties and margins will change following incorporation of PMD and recalculation and re-optimisation of RIN.

SuggestedRemedy

Change:Link power penalties to 2.46 dBUnallocated margin to 0.50 dB

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.4.3** *P* **365** *L* **50** # **392**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Unallocated margin is sometimes misunderstood.

SuggestedRemedy

Add text:The unallocated margin is not available for use as additional insertion losses. It simply represents unknown penalties and uncertainties in the known parameters.

Proposed Response *Response Status* **C**

ACCEPT. See 378.

Cl **52** *SC* **52.4.3** *P* **366** *L* **3** # **444**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **A**

The lowest wavelength is now 1265 nm

SuggestedRemedy

Replace "1290" with "1265"

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.5** *P* **367** *L* **3** # **396**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Table 52?11 needs revision to clarify that it's a dispersion and attenuation based standard.Here I assume that dispersion is measured at 1550 nm.

SuggestedRemedy

Replace "PMD Type" column with "Parameter"Replace "Nominal wavelength" and Minimum Range" column with three columns, "Minimum" "Maximum" and "Units"Insert rows:
Channel attenuation min 7 max 13 dB
Channel dispersion min 0 max 728 ps/nm
Operating distance min 2 max See text m
Change first sentence of text to:The operating range for 10GBASE-LR/LW PMDs is designed to achieve a typical range of 40 km on typical G.652 fiber using light in the 1550 nm band.Check sign of dispersion.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. ER/EW is PMD type. Could be two separate tables as required for editorial purposes.

Cl **52** *SC* **52.5** *P* **367** *L* **6** # **783**

Furlong, Darrell R — Aura Networks

Comment Type **E** *Comment Status* **A**

The value 40,000 is not in international format. Also line 15

SuggestedRemedy

Remove the comma and replace with a space.

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.5** *P* **367** *L* **Multiple** # **374**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **R** *INTERFEROMETRIC*

Path penalty technique should include reflections.

SuggestedRemedy

Proposed Response *Response Status* **C**

REJECT. No remedy provided.

Editorial note: Following discussion of interferometric noise

Cl **52** *SC* **52.5** *P* **371** *L* **8** # **835**

Congdon II, Herbert V Tyco Electronics

Comment Type **T** *Comment Status* **A**

The channel loss value of 13 dB becomes too restrictive at 40km and may require premium (low loss) fiber to satisfy the requirement. Additionally, cabling attenuation delta, splice loss and fiber overlength in loose tube cables reduce the margin even further. Cabling attenuation delta is any increase in attenuation from the bare fiber attenuation to the cabled fiber attenuation (usually some finite, positive value). Generally, at least one splice point (usually two or more) will be required in a 40 km run. Typically, cables are designed to have more fiber length than cable length.

SuggestedRemedy

Possible suggestions: 1) increase the budget to 15 dB (may be the simplest way to solve this problem, but may create a host of other issues), or 2) add a note explaining that premium cable performance may be necessary for lengths longer than 35 km.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. (Option 2) This specification is well defined by fiber types and by the channel characteristics. 40 km represents an objective of the committee that is certainly acheivable under specified fiber and link conditions.

Editor's note: Straw poll 17 to 7 for normative (in Serial PMD breakout at Irvine)

Cl **52** *SC* **52.5.1** *P* **367** *L* **20** # **388**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

We agreed (voted, I think) to tell the cabling installers what to do but leave them to work out how to do it.

SuggestedRemedy

Change text to:The 10GBASE-ER/EW channel shall have an attenuation between 7? and 13 dB. Attenuators shall be used if necessary to achieve the minimum attenuation. An example attenuator management plan is shown in Figure 52?2 and Table 52?12.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Will be removing table as per another comment, and adding graph. Add text above graph "The 10GBASE-ER/EW channel shall have an attenuation between 7? and 13 dB".

Ed note: Vote taken was to: "Move to incorporate table and figure as shown in bradshaw_1_1100 for attenuation management at 1550 nm".

Cl **52** *SC* **52.5.1** *P* **367** *L* **21** # **393**

Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A**

sentence ends in ,

SuggestedRemedy

Change to . (but see another comment anyway)

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.5.1** *P* **367** *L* **32** # **886**

Ohlen, Peter Optillion

Comment Type **T** *Comment Status* **A**

The left-most column should indicate a range for the link loss, and the attenuator should be a fixed attenuator chosen for that range of link loss.

SuggestedRemedy

New table values:

Link loss	....	Attenuator
0-2	....	10 dB
2-7	....	5 dB
7-13	....	0 dB

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Will remove table.

Cl **52** *SC* **52.5.1** *P* **367** *L* **34** # **445**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **A**

Table 52-12 numbers do not seem to compute and I could not find bradshaw_1_1100 on the web site to clarify.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Suggest we remove this table.

Cl **52** *SC* **52.5.1** *P* **367** *L* **38** # **394**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

The last line of Table 52?12 describes an out-of-standard link/channel loss. The maximum is 12, allowing 1 for connectors, making 13.

SuggestedRemedy

Change last line of table to:
12 0 to 4 -13 to -8 0 -13 to -8

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The table is to be removed.

Cl **52** *SC* **52.5.2** *P* **369** *L* **11** # **622**

William G. Lane — CSU, Chico

Comment Type **E** *Comment Status* **A**

In table 52-13, the signaling speed is not defined as a range

SuggestedRemedy

Change "range" to "nominal"

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.5.2** *P* **369** *L* **14** # **395**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Tx: We agreed that wavelength range would be tweaked to match ITU-T C band

SuggestedRemedy

Change "1530 to 1565" to whatever ITU-T say. Try reading latest draft G.691?

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.5.2** *P* **369** *L* **17** # **375**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

"Spectral width" is ambiguous. Does this mean full-width or half-width?

SuggestedRemedy

Replace "spectral width" with "spectral half-width" I think

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Multiple instances of this terminology exist within Clause 52. For each instance, leave "Spectral Width", footnote it with definition below table:

"RMS Spectral Width" is the standard deviation for a Gaussian distribution fit for a multimode laser spectrum.

Cl **52** *SC* **52.5.2** *P* **369** *L* **17** # **397**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **R**

RMS spectral width entry needs updating to bring in line with standard DFB measurement method and path penalty specification.

SuggestedRemedy

Replace "RMS spectral width" row with

-20 dB spectral width (max) 1 nm

Add new row to table:

Path penalty 2 dB (or as agreed).

Add note to refer to the path penalty text.

Proposed Response *Response Status* **C**

REJECT. Remove RMS Spectral Width row altogether. As per 371.

Cl **52** *SC* **52.5.2** *P* **369** *L* **20** # **897**

Frojdh, Krister — Optillion

Comment Type **T** *Comment Status* **R** *PEAKPOWER*

For 1550 nm, eye safety is no problem. The peakpower is instead limited by saturation of the receiver.Receiver saturation is typically controlled by either peakpower or the modulated power (OMA), not by the average. An change to peakpower would be more relevant. This would allow future high power sources that could be used for higher link insertion losses. A minimum ER is also needed. I will cover this in a presentation in Irvine.

SuggestedRemedy

Peak launch power (max) 7 dBm.
(Definition should be Pav+OMA/2)
ER (min) 3 dB

(Remedy change OKed by commenter)

Proposed Response *Response Status* **C**

REJECT. Put in editor's note subject to further refinement and verification by March plenary. The editor will reinitiate this comment.

Cl **52** *SC* **52.5.2** *P* **369** *L* **22** # **399**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A** *OMA*

ER/EW Tx changing to OMA

SuggestedRemedy

Change:
Average launch power (min) -4 dBm
to OMA definition, 1453 æW and -1.39 dBm

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 873.

Cl **52** *SC* **52.5.2** *P* **369** *L* **22** # **446**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **A** *OMA*

At the Tampa meeting it was decided to use OMA. Table 52-13 needs to be revised based on this decision

SuggestedRemedy

Line 22 replace "Average launch power (min) 0dBm" with "Optical Modulation Amplitude (min) 1450 (-1.4) uW (dBm)
Delete line 26 "extinction ratio...."
Line 27 replace "RIN" with "RIN12OMA

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. This needs to be coordinated with other commenters. Keep Line 27 change.

Cl **52** *SC* **52.5.2** *P* **369** *L* **25** # **400**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Extinction ratio requirement is stricter than needs be but not redundant.

SuggestedRemedy

Change 8.0 to 3.0 . Do not delete the line.This number needs further review.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 888.

Cl **52** *SC* **52.5.2** *P* **369** *L* **26** # **623**

William G. Lane — CSU, Chico

Comment Type **T** *Comment Status* **A**

The PMD subgroup voted during the November plenary to replace Extinction ratio specification with Optical Modulation Amplitude specification

SuggestedRemedy

Revise the extinction ratio entry in table 52-8 to reflect OMA specifications

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 873.

Cl **52** *SC* **52.5.2** *P* **369** *L* **27** # **401**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A** *RIN*

RIN values need revisiting now Mike Dudek has pointed out that link model always dealt in OMA-RIN. There is room in the power budget for slightly more RIN. After further work we may remove the RIN measurement altogether and rely on path penalty, path tolerance measurements.

SuggestedRemedy

Change to "RIN(OMA) (max) -125 dB/Hz.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 400.

Cl **52** *SC* **52.5.2** *P* **369** *L* **27** # **889**

Ohlen, Peter — Optillion

Comment Type **T** *Comment Status* **A** *RIN*

The RIN for the 1550 PMD is now specified at -140 dB/Hz, which is a very hard requirement that can be difficult to achieve. Lowering the RIN specification to -130 dB only gives a total RIN penalty of 0.04 dB (from the Excel link model) which is still quite q low penalty.Keeping the specification at -140 dB/Hz would not give us any real benefit, but would make it much harder to make the components.

SuggestedRemedy

Change the RIN specification in table 52-13 for the 1550 serial PMD to -130 dB/Hz.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Cl **52** *SC* **52.5.2** *P* **369** *L* **30** # **402**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

"During all conditions when the PMA is powered, the AC signal (data) into the transmit port will be valid encoded 8B/10B patterns (this is a requirement of the PCS layers) except for short durations during system power-on-reset or diagnostics when the PMA is placed in a loopback mode."This is left over from clause 38. We don't have physical PMA<>PMD "transmit ports" or 8B/10B patterns at the PMD.

SuggestedRemedy

Delete the sentence.

Proposed Response *Response Status* **C**

ACCEPT. See 348.

Cl **52** *SC* **52.5.2** *P* **369** *L* **31** # **447**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **A**

This serial PMD uses 64B/66B not 8B/10B

SuggestedRemedy

Replace 8B/10B with 64B/66B.

Proposed Response *Response Status* **C**

ACCEPT. See 348.

Editor's Note: This occurs many times, needs a consistent solution (PRBS for WAN PHY, 64B/88B for LAN PHY?

Cl **52** *SC* **52.5.3** *P* **365** *L* **4** # **407**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **R** *OMA*

Changing Rx to OMA

SuggestedRemedy

Change"The receive sensitivity includes the extinction ratio penalty ."to"The stressed receive sensitivity includes the extinction ratio penalty."or take a comment to convert stressed receive sensitivity to OMA.

Proposed Response *Response Status* **C**

REJECT. See 403.

Cl **52** *SC* **52.5.3** *P* **370** *L* **12** # **624**

William G. Lane — CSU, Chico

Comment Type **E** *Comment Status* **A**

In table 52-14, the signaling speed is not defined as a range

SuggestedRemedy

Change "range" to "nominal"

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.5.3** *P* **370** *L* **15** # **408**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Rx: We agreed that wavelength range would be tweaked to match ITU-T C band

SuggestedRemedy

Change "1530 to 1565" to whatever ITU-T say. Try reading latest draft G.691?

Proposed Response *Response Status* **C**

ACCEPT. Values are already correct.

Cl **52** *SC* **52.5.3** *P* **370** *L* **18** # **409**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A** *OMA*

Receive sensitivity to be converted to OMA.

SuggestedRemedy

Change Receive sensitivity to 23 uW and -19.39 dBm.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.. See 873 (mislabeled line number).

Cl **52** *SC* **52.5.3** *P* **370** *L* **21** # **449**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **A** *OMA*

Table 52-14 needs to be changed based on the decision in Tampa to use OMA.

SuggestedRemedy

Line 21 replace "Receiver sensitivity -18dBm" with "Receiver sensitivity OMA 23(-19.4) uW (dBm)"
Line 23 replace "stressed receive sensitivity -13.41dBm" with "stressed receive sensitivity OMA 66 (-14.8) uW (dBm)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 873.

Cl **52** *SC* **52.5.3** *P* **370** *L* **22** # **404**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **R**

Does -26 dB return loss match other standards?

SuggestedRemedy

If ITU-T or IEC have -27 dB, change to that.

Proposed Response *Response Status* **C**

REJECT. See other comment on -27 dB value: 777.

Cl **52** *SC* **52.5.3** *P* **370** *L* **23** # **625**

William G. Lane — CSU, Chico

Comment Type **T** *Comment Status* **R**

Because the PMD subgroup voted during the November plenary to replace Extinction ratio specification with Optical Modulation Amplitude specification, the extinction ratio footnote for the stressed receive sensitivity in table 52-14 is no longer appropriate

SuggestedRemedy

Delete the extinction ratio footnote

Proposed Response *Response Status* **C**

REJECT. See 893.

Cl **52** *SC* **52.5.3** *P* **370** *L* **25** # **411**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

ER/EW Vertical eye closure penalty needs revision to account for path penalty specification.(Note to self: Uw now 0.0332)

SuggestedRemedy

Change 2.72 to 2.79

Proposed Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.5.3** *P* **370** *L* **30** # **412**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **R** *OMA*

Stressed test extinction ratio is left over from GigE. For now, we can change it to align with our average-power definitions. It can get rewitten into OMA style sometime.

SuggestedRemedy

Change 9 dB to 8.0 dB.

Proposed Response *Response Status* **C**

REJECT. See 893.

Cl **52** *SC* **52.5.3** *P* **370** *L* **31** # **450**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **R** *OMA*

The stressed receiver sensitivity should not be measured with an extinction ratio of 9dB and this footnote is not needed with the use of OMA

SuggestedRemedy

Delete the footnote beginning "measured with a transmit...."

Proposed Response *Response Status* **C**

REJECT. See 893.

Cl **52** *SC* **52.5.3** *P* **370** *L* **4** # **448**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **A** *OMA*

The reference to extinction ratio is no longer needed with the use of OMA

SuggestedRemedy

Delete the sentence "The receiver ....."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 403.

Cl **52** *SC* **52.5.4** *P* **369** *L* **12** # **398**

Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A**

Rogue c's

SuggestedRemedy

Delete superscript c : two occurrences in table 52-15

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.5.4** *P* **371** *L* **10** # **413**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **R**

Does -26 dB return loss match other standards?

SuggestedRemedy

If ITU-T or IEC have -27 dB, change to that.

Proposed Response *Response Status* **C**

REJECT. See 777.

Cl **52** *SC* **52.5.4** *P* **371** *L* **12** # **414**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *RIN*

Penalties and margins will change following incorporation of PMD and recalculation and re-optimisation of RIN.

SuggestedRemedy

Change:
Link power penalties to 3.59 dB
Unallocated margin to 1.42 dB

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.5.4** *P* **371** *L* **12-13** # **875**

Ohlen, Peter Optillion

Comment Type **E** *Comment Status* **A**

There is no footnote "c" below the table.

SuggestedRemedy

Remove "c", substitute it with the correct footnote sign, or add the appropriate footnote.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Will be removing the 'c'. Thought I got all of these things.

Cl **52** *SC* **52.5.4** *P* **371** *L* **13** # **427**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

Unallocated margin is sometimes misunderstood.

SuggestedRemedy

Add text:
The unallocated margin is not available for use as additional insertion losses. It simply represents unknown penalties and uncertainties in the known parameters.

Proposed Response *Response Status* **C**

ACCEPT. See 378

Cl **52** *SC* **52.5.4** *P* **371** *L* **17** # **876**

Ohlen, Peter Optillion

Comment Type **E** *Comment Status* **A**

The reference to table 52-7 of wrong and should read "52-11".

SuggestedRemedy

Change the table reference to "52-11".

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.5.4** *P* **371** *L* **18** # **451**

Mike Dudek, Mike T Dudek Cielo Communications

Comment Type **E** *Comment Status* **A**

Incorrect table reference.

SuggestedRemedy

Replace "Table 52-7" with "Table 52-11"

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.5.4** *P* **371** *L* **7** # **405**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Channel/link/path criteria are loss and dispersion. Distance is now indicative only.Note to self
40 km nominal =
726.5 ps/nm if measured at 1565 nm
728 ps/nm if measured at 1550 nm

SuggestedRemedy

Move Channel Insertion loss to top item in table 52-15.
Insert new second item: Channel dispersion 762.5 ps/nm
Change "Operating distance" to "Indicative operating distance" (or maybe ITU-T's words).
Check dispersion figure vs. ITU-T documents.
Check dispersion sign.
Check standard wavelength for dispersion measurement.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Need refinement and provisos to operating distance need to be removed. Change to 1550 nm dispersion value.

Cl **52** *SC* **52.5.4** *P* **371** *L* **8** # **452**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **R**

It appears that only 1dB has been allocated for connector losses and 1.64dB is unallocated. I suggest that 2dB is allocated for connector losses leaving 0.64dB unallocated.

SuggestedRemedy

Line 8 Change "13" to "14"Line 13 change "1.64" to "0.64"

Proposed Response *Response Status* **C**

REJECT. This should be part of a larger discussion on allocation of budget between connectors, unallocated, etc.

Cl **52** *SC* **52.6** *P* **371** *L* **22** # **431**

Lysdal, Henning — Giga

Comment Type **T** *Comment Status* **R** *JITTER*

This is a placeholder comment for a problem that most people are aware off. The methodology used to specify jitter (separate power and jitter budgets) yields unrealistic (tougher than SONET) receiver specifications. Especially the receiver conformance test signal with 65ps jitter will be hard (= expensive) to meet. The problem arise for two reasons: 1) the jitter budget is specified separate to the power budget. In ITU they specify the jitter budget at a fixed point in the power budget (where BER=10E-9), there is an existance proof that this yields a realistic budget. 2) the jitter budget is specified with no jitter-frequency conditions. In the 1550nm single-mode case SONET provides an existence proof. However in the multi-mode implementations we can't prove that we meet our distance objective until we have a power and jitter budget and a set of demonstrater parts that meet these and comprise a working link.

SuggestedRemedy

Change the jitter specificaiton methodology to the one used by the ITU and relax the spec where appropriate. For the multi-mode PMDs, optics vendors should test a link using the specified fiber and SONET PMAs. If this does not meet the distance criteria, we know we will end up with a PMA/PMD spec. that's tougher than SONET. I would expect this to cause us to revisit the objectives or the PMD selection.

Proposed Response *Response Status* **C**

REJECT. Jitter ad hoc will present jitter methodology.

Cl **52** *SC* **52.6** *P* **371** *L* **24** # **424**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Jitter corner is wrong

SuggestedRemedy

Change 637 kHz to 6 MHz or if within 20% of 6 MHz, value from ITU-T recommendation.

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.6** *P* **371** *L* **24** # **217**

Del Hanson — Tripath Technology

Comment Type **T** *Comment Status* **A** *JITTER*

In 52.6 through section 52.7.5, there are many carry-over references to Clause 38 of GbE.

SuggestedRemedy

Decide on jitter testing methodology for this standard and remove the Clause 38 references.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Need a jitter methodology.

Cl **52** *SC* **52.6** *P* **371** *L* **35** # **453**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **A**

Jitter contribution from the cable is likely to be different for the 3 different serial systems and hence there should be different jitter budgets for each system.

SuggestedRemedy

Triplicate section 52.6 as 52.3.4, 52.4.4, and 52.5.5 changing the title as appropriate and renumbering other sections.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. In general the methodology should be common, but the numbers different. As to where to put these numbers, it would be beneficial to NOT triplicate the entire sections, but point out the differences in numbers where applicable. I.E, put the jitter metholodology up front, and the numbers with each specific PMD, with references back to the methodology. This was brought up in one of the Serial-PMD conference calls.

Cl **52** *SC* **52.6** *P* **373** *L* **37** # **1074**

Ali Ghiasi — Broadcom

Comment Type **T** *Comment Status* **R**

TP2 to TP3 DJ portion of TJ is too low.

SuggestedRemedy

Most of channel degradation are deterministic sugggest to increase the DJ to 0.1 UI.

Proposed Response *Response Status* **C**

REJECT. This section is a placeholder. The values are wrong, so let's not go into details trying to fix every one. See 217.

Cl **52** *SC* **52.7** *P* *L* # **887**

Ohlen, Peter — Optillion

Comment Type **T** *Comment Status* **A** *OMA*

There are no specifications on how OMA should be measured.

SuggestedRemedy

Insert a subclause after 52.7.3 describing OMA measurements.
52.7.xx Optical modulation amplitude (OMA) test procedure
==========
OMA is the difference in optical power for the nominal "1" and "0" levels of the optical signal. OMA shall be measured for a node transmitting a repeating "00001111" pattern corresponding to a 1.25 GHz (10GBASE-EW) or 1.29 GHz (10GBASE-ER) square wave.
The recommended technique for measuring optical modulation amplitude is illustrated in figure A. Optionally, a 4th order Bessel Thompson filter as specified in 52.7.5 can be used after the O/E converter. The measurement system consisting of the O/E converter, the optional filter and the oscilloscope has the following requirements:
a) Then bandwidth of the measurement system shall be at least 7.5 GHz.
b) The measurement system shall be calibrated at the appropriate wavelength for the transmitter under test.
With the device under test transmitting the square wave described above, use the following procedure to measure optical modulation amplitude.
a) Configure the test equipment as illustrated in figure A.
b) Measure the mean optical power P1 of the logic "1" as defined over the center 20% of the time interval where the signal is in the high state. (See figure B)
c) Measure the mean optical power P0 of the logic "0" as defined over the center 20% of the time interval where the signal is in the low state. (See figure B)
d) OMA = P1 - P0.
An alternative method of measurement is to measure the average optical power A (in mW) and the extinction ratio E = P1/P0 (absolute ratio NOT dB), with P1 and P0 defined as above. Then OMA = 2A((E-1)/(E+1)).
Figure A -- Recommended test equipment for measurement of optical modulation amplitude.
[Figure shows four boxes containing the "Transmitter (D.U.T.)", "O/E converter", "optional filter", and "oscilloscope"]
Figure B -- Optical modulation amplitude waveform measurement
[figure illustrates the square wave used for the measurements, and shows the 20% measurement windows, the zero level, and the definitions of P1, P0 and OMA]

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. OMA measurement technique is required and should be specified here. Methodology for OMA measurement should be coordinated with commenter #454 (Mike Dudek).

Cl **52** *SC* **52.7.1** *P* **371** *L* **52** # **415**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

To measure spectral width, there is no need for a validly coded 10G Ethernet signal. A PRBS will do.

SuggestedRemedy

change to "... modulated conditions using an appropriate PRBS or a valid 10GBASE-SR/LR/ER/SW/LW/EW or OC-192 or STM-64 signal.Check standards for choice of PRBS.Add PRBS to Abbreviations list.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Need to get appropriate text and references.

Cl **52** *SC* **52.7.10** *P* **374** *L* **45** # **354**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Receiver testing can be done with random data.

SuggestedRemedy

Change"The conformance test signal shall be generated using the short continuous random test pattern defined in subclause 36A.5."to"The conformance test signal shall be generated using an appropriate PRBS or a valid 10GBASE-SR/LR/ER/SW/LW/EW or OC-192 or STM-64 signal.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 459.

Cl **52** *SC* **52.7.10** *P* **374** *L* **48** # **882**

Ohlen, Peter — Optillion

Comment Type **T** *Comment Status* **A**

The test signal defined in 36A.5 is based on 8b/10b code groups and not suitable for 10G serial.

SuggestedRemedy

Specify that a 2^23-1 PRBS pattern is used to generate the conformance test signal.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 459.

Cl **52** *SC* **52.7.10** *P* **374** *L* **48** # **459**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **A**

The pattern used for this test should be changed to one appropriate for 64B/66B coding. eg. PRBS 2exp23 -1.

SuggestedRemedy

Line 48 replace "the short continuous test pattern defined in clause 36A.5" with "a PRBS sequence of 2exp23-1.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.7.10** *P* **374** *L* **51** # **356**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

DCD is not 65ps.

SuggestedRemedy

Change to c".. no less than specified in table 52-17". Add new table 52-17-Duty Cycle DistortionPort type | Minimum DCD (ps)and populate.Alternatively, put the DCD values in tables 52?5, 52?9 and 52?14.Current values are S: 9.7 ps, L and E: 8 ps.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Needs further refinement. 8ps is new number.

Cl **52** *SC* **52.7.10** *P* **374** *L* **51** # **460**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **R**

The Dj component needs to be scaled to 10Gbit/s

SuggestedRemedy

Replace "65ps" with "6ps".

Proposed Response *Response Status* **C**

REJECT. Changed to 8 ps as per 356.

Cl **52** *SC* **52.7.10** *P* **375** *L* **28** # **461**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **A** *OMA*

Define what the stressed receiver sensitivity OMA is.

SuggestedRemedy

Insert a line at line 28"The stressed receiver OMA is AN "

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Needs further refinement.

Cl **52** *SC* **52.7.10** *P* **375** *L* **42** # **883**

Ohlen, Peter — Optillion

Comment Type **T** *Comment Status* **A**

At bandwidths larger than 10 GHz, laser sources are generally not linear. Therefore the words "linearly modulated" should be removed. As the shape of the eye is verified after the transmitter it is not really necessary to use a linear transmitter.

SuggestedRemedy

Remove "linearly modulated" on p. 375:42, and "linear" in figure 52-6.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change wording to "approximately" linear.

Cl **52** *SC* **52.7.10** *P* **375** *L* **44** # **358**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Description of eye verification can be simplified. Need to change "filter" to "response"

SuggestedRemedy

Replace:"The vertical and horizontal eye closures to be used for receiver conformance testing are verified using a fast photodetector and amplifier. This receiver is specified in G.691 as the ITU-T STM-64 reference. This represents a 7.5 GHz reference receiver with a fourth order Bessel-Thompson filter."with:"The vertical and horizontal eye closures to be used for receiver conformance testing are verified using an optical reference receiver with a 7.5 GHz fourth order Bessel-Thompson response as specified in G.691 as the ITU-T STM-64 reference."

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.7.10** *P* **376** *L* **1** # **359**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Not so special.Draft says: "Special care should be taken to ensure that all the light from the fiber is collected by the fast photodetector and that there is negligible mode selective loss, especially in the optical attenuator." These days attenuators and reference receivers can be bought in so the degree of care needed in the lab is not so special.

SuggestedRemedy

Delete "Special".

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.7.10** *P* **376** *L* **8** # **357**

Dawe, Piers — Agilent

Comment Type **E** *Comment Status* **A**

BT means either bit time (subclause 1.4.50) or a phone company.

SuggestedRemedy

In figure 38-5, replace "BT" with "Bessel-Thompson".

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.7.11** *P* **376** *L* **21** # **360**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Measurement of the receiver 3 dB electrical upper cutoff frequency is not feasible this way: would need extra fast lasers.

SuggestedRemedy

Consider using two lasers and an optical power combiner.Consider deleting test.Consider stressing multimode receiver with split-and-delayed pulses.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Using two lasers and optical combiner.

Cl **52** *SC* **52.7.11** *P* **376** *L* **22** # **884**

Ohlen, Peter — Optillion

Comment Type **T** *Comment Status* **A**

At frequencies above 10 GHz, most (if not all) transmitters are nonlinear. Therefore the measurement procedure described in cl. 52.7.11 may be inadequate for measuring the receiver 3-dB electrical cut-off frequency.

SuggestedRemedy

An alternative set-up where the data signal and the RF signal are generated optically at different wavelengths and then combined could be used.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 360.

Cl **52** *SC* **52.7.11** *P* **376** *L* **28** # **462**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **A**

The 8B/10B pattern is not appropriate

SuggestedRemedy

Replace "the short continuous random test pattern defined in subclause 36A.5" with" a prbs 2exp23 -1 sequence

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 459.

Cl **52** *SC* **52.7.11** *P* **376** *L* **47** # **463**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **A** *OMA*

Using OMA in this section simplifies it.

SuggestedRemedy

Line 47 remove "Measure the laser's extinction ratio according to 38.6.3. With the exception of extinction ratio"
Line 53 replace "taking into account the extinction ratio of the source, set the optical power" with "set the Optical Modulation Amplitude"Page 377 line 4 replace "Optical Power" with "Optical Modulation Amplitude"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. More changes are necessary to this section to remove extraneous references to clause 38.

Cl **52** *SC* **52.7.2** *P* **372** *L* **4** # **416**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

To measure optical power, there is no need for a validly coded 10G Ethernet signal. A PRBS will do.

SuggestedRemedy

change to "... with the node transmitting an appropriate PRBS or a valid 10GBASE-SR/LR/ER/SW/LW/EW or OC-192 or STM-64 signal.Check standards for choice of PRBS.Add PRBS to Abbreviations list.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 415.

Cl **52** *SC* **52.7.2** *P* **372** *L* **4** # **355**

Dawe, Piers — Agilent

Comment Type **E** *Comment Status* **A**

Transmitter tests do not only apply to nodes; can apply to parts.

SuggestedRemedy

Change "node" to "transmitter" or "DUT" or "PMD" or its replacement term. Also at line 9.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Let's discuss this.

Cl **52** *SC* **52.7.3** *P* **372** *L* # **877**

Ohlen, Peter — Optillion

Comment Type **T** *Comment Status* **A**

Currently it is suggested that a repeating K28.7 pattern (five "1" + five "0") should be used for extinction ratio measurements, which corresponds to a 125 MHz square wave at 1.25 Gb/s. For 10 GbE is would simpler to use 4x"1" + 4x"0", which corresponds to a 1.25 Gb/s square wave.

SuggestedRemedy

<MODIFIED TEXT IN 52.7.3>

Extinction ratio shall be measured using the methods specified in TIA/EIA-526-4A. The extinction ratio is measured under fully modulated conditions with worst case reflections. This measurement may be made with the node transmitting a data pattern consisting of a repeating sequence of 4 logical zeros (light off) followed by 4 logical ones (light on). For example: ...11110000111100001111000011110000...
Note: this pattern generates a 1.25 GHz square wave.
---<END NEW TEXT>
Alternatively, this pattern could be described in an annex to clause 52 which would be refered to in 52.7.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.7.3** *P* **372** *L* **6** # **454**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **A** *OMA*

OMA measurement method is required instead of Extinction ratio

SuggestedRemedy

Replace subclause 52.7.3 with either a reference to ANSI T11 FC-PI Annex A.5 or the text below. Note that the figures have not imported into this document. They can be found in dudek_2_1100. However I believe that a framemaker version of this Annex has been made available which could reduce work for the editors.52.7.3_ Optical modulation amplitude (OMA) test procedureThe recommended technique for measuring optical modulation amplitude requires test equipment with the following minimum requirements:
a) An oscilloscope with 5000 MHz bandwidth (minimum)
b) A signal generator capable of supplying a 1000 MHz square wave with rise and fall characteristics compliant with 802.3ae transmitter requirements.
c) Optical to electrical converter with 5000 MHz minimum bandwidth. The O/E converter shall be calibrated at the appropriate wavelength for the transmitter under test.
d) A 4th order Bessel Thomson filter with a 3 dB bandwidth of 0.75 Baudrate (optional).
While supplying the optical transmitter with 1000MHz square wave, use the following procedure to measure optical modulation amplitude.
a) Configure the test equipment as illustrated in Figure B.1 such that the O/E converter is used as a front end for the oscilloscope input electrical channel.
b) With a valid waveform displayed on the oscilloscope, place the first cursor at the mean voltage level of the logic "1" as defined over the center 20% of the time interval which is in the high state. (See figure)
c) Place the second cursor on the mean voltage level of the logic "0" as defined over the center 20% of the time interval which the laser is in the low state.
d) Measure and record the voltage difference between the two cursors.
e) Calculate the OMA by multiplying the voltage difference by the conversion gain of the O/E converter at the wavelength of the laser source.
Figure A.2 - Optical modulation amplitude test equipment configuration
Figure A.3 - Optical modulation amplitude waveform measurement
An alternative method of measurement is to measure the average optical power A (in mW) and the extinction ratio E (absolute ratio NOT dB) as described in OFSTP-4. The OMA = 2A((E-1)/(E+1))

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. OMA measurement technique is required and should be specified here. Methodology for OMA measurement should be coordinated with commenter #887 (Peter Ohlen).

Cl **52** *SC* **52.7.3** *P* **372** *L* **8** # **417**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **R**

Extinction ratio measurements: This clause may get radically changed to accommodate OMA. If it doesn't, our obvious path is to follow SONET/ITU-T who will tell us how to measure Extinction ratio on scrambled data. If we were to propose optional test patterns for enhanced accuracy or speed, "LAN" patterns should keep the 66 bit frame lenght and the 2-bit master transition untouched. Candidate patterns would be runs of 64-1-1-64-1-1 (equals 65-65-1-1) bits or of 8-8-8-8-8-8-8-1-1 bits.

SuggestedRemedy

Delete all text in clause and refer to appropriate ITU-T recommendation O.nnn or similar from TIA/EIA or ANSI

Proposed Response *Response Status* **C**

REJECT. The clause has been substantially changed with the introduction of OMA.

Cl **52** *SC* **52.7.4** *P* **372** *L* **15** # **455**

Mike Dudek, Mike T Dudek Cielo Communications

Comment Type **T** *Comment Status* **A** *RIN*

The measurement method for RIN12OMA should be described instead of RIN

SuggestedRemedy

Replace section 52.7.4 with either a reference to ANSI T11 FC-PI A.4 or the text below.Note that the figures can be found in Dudek_2_1100.52.7.4_ Relative intensity noise (RIN) (OMA) measuring procedure
This procedure describes a component test which may not be appropriate for a system level test depending on the implementation.
52.7.4.1_ Test objective
When lasers which are subject to reflection induced noise effects are operated in a cable plant with a low optical return loss the lasers will produce an amount of noise which is a function of the magnitude and polarization state of the reflected light.The magnitude of the reflected light tends to be relatively constant. However, the polarization state varies significantly as a function of many cable parameters, particularly cable placement. In a cable plant which is physically fixed in place the variation is slow. If the fibre is subject to motion, such as occurs in a jumper cable, the change may be sudden and extreme. The effect is unpredictable changes in the noise from the laser with the result that the communication link may exhibit sudden and unexplainable bursts of errors.The solution to this is to assure that the lasers used do not generate excessive noises under conditions of the worst case combination of polarization and magnitude of reflected optical signal.The noise generated is a function of the return loss of the cable plant. For the Fibre Channel the specified return loss is 12 dB resulting in the notation of RIN[12] for the relative intensity noise.
52.7.4.2_ General test description
The test arrangement is shown in figure . The test cable between the Device Under Test (DUT) and the detector forms an optical path having a single discrete reflection at the detector with the specified optical return loss. There shall be only one reflection in the system as the polarization rotator can only adjust the polarization state of one reflection at a time.
Figure A.1 - RIN (OMA) test setup
Both the OMA power and noise power are measured by AC coupling the O/E converter into the high frequency electrical power meter. If needed, an amplifier may be used to boost the signal to the power meter.A low pass filter is used between the photodetector and the power meter to limit the noise measured to the passband appropriate to the data rate of interest.In order to measure the noise the modulation to the DUT shall be turned off.
A.4.3_ Component descriptions
Test Cable: The test cable and detector combination must be configured for a single dominate reflection with an optical return loss of 12dB. (The Optical return loss may be determined by the method of FOTP-107) If multiple lengths of cable are required to complete the test setup they should be joined with splices or connectors having return losses in excess of 30 dB. The length of the testcable is not critical but should be in excess of 2 m.Polarization Rotator: The polarization rotator shall be capable of transforming an arbitrary orientation elliptically polarized wave into a fixed orientation linearly polarized wave. A polarization rotator consisting of two quarter wave retarders has the necessary flexibility.O/E converter (and amplifier): The O/E converter may be of any type which is sensitive to the wavelength range of interest. The frequency response of the O/E converter shall be higher than the cut-off frequency of the low pass filter. If necessary, the noise may be amplified to a level consistent with accurate measurement by the power meter.Filter: The low pass filter shall have a 3 dB bandwidth of approximately 75% of the bit rate. Recommended values are shown in table . The total filter bandwidth used in the RIN calculation shall take the low frequency cut-off of the d.c. blocking capacitor into consideration. The low frequency cutoff is recommended to be <1 MHz.Table A.1 - Filter 3 dB point
Bit rate Filter 3dB point
1,0625 GBd 800 MHz
2,125 GBd 1 600 MHz
4,250 GBd 3 200 MHZ
The filter should be placed in the circuit as the last component before the power meter so that any high frequency noise components generated by the detector/amplifier are eliminated. If the power meter used has a very wide bandwidth care should be taken in the filter selection to ensure that the filter does not lose its rejection at extremely high frequencies.Power Meter: The power meter should be an RF type designed to be used in a 50 W coaxial system. The meter shall be capable of being zeroed in the absence of input optical power to remove any residual noise from the detector or its attendant amplifier, if used.A.4.4_ Test Procedure
a) Connect and turn on the test equipment. Allow the equipment to stabilize for the manufacturers recommended warm up time.b) With the DUT disconnected zero the power meter to remove the contribution of any noise power from the detector and amplifier, if used.c) Connect the DUT, turn on the laser, and ensure that the laser is not modulated.d) Operate the polarization rotator while observing the power meter output to maximize the noise read by the power meter. Note the maximum power, PN.e) Turn on the modulation to the laser and note the power measurement, PM.
f) Calculate RIN from the observed detector current and electrical noise by use of the equation:
Equation 4 - Relative intensity noise
RIN12 (OMA) = 10 log [PN/(BW*PM)] (dB/Hz)
Where:
RIN12 (OMA) = Relative Intensity Noise referred to optical modulation amplitude
PN = Electrical noise power in Watts with modulation off
PM = Electrical noise power in Watts with modulation on
BW = Low pass bandwidth of filter - high pass bandwidth of DC blocking capacitor [noise bandwidth of the measuring system (Hz)].
For testing multimode components or systems, the polarization rotator shall be removed from the setup and the single mode fiber replaced with a multimode fiber. Step d) of the test procedure shall be eliminated.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Remove references to extraneous standards. Needs further refinement.

Cl **52** *SC* **52.7.5** *P* **372** *L* **24** # **422**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

Eye mask: Need to specify the line rate and the test procedure.

SuggestedRemedy

Add new text to the effect of:Measurement with the node transmitting an appropriate PRBS or a valid 10GBASE-SR/LR/ER/SW/LW/EW or OC-192 or STM-64 signal.Reference measurement procedure ITU-T O.nnn or ANSI or TIA/EIA as appropriate.Measurement at 10.3125 GBd shall qualify for type W and type R use, measurement at 9.95328 GBd shall qualify for type W use only.

(changes Oked by commenter)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. References need to be corrected and other text changes may be necessary: needs further refinement.

Cl **52** *SC* **52.7.5** *P* **372** *L* **25** # **353**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **R**

The transmit mask is a useful way of jitter qualification.

SuggestedRemedy

Delete "and jitter" from the sentence "The transmit mask is not used for response time and jitter specification."

Proposed Response *Response Status* **C**

REJECT. Jitter ad hoc still in process of developing jitter specification and test methodology.

Cl **52** *SC* **52.7.5** *P* **372** *L* **29** # **419**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

Reference receiver from G.691 rather than reference filter from G.957

SuggestedRemedy

Change "using a fourth-order Bessel Thompson filter" to "using a receiver with a fourth-order Bessel Thompson response"And line 39: change "filter is defined in ITU-T G.957," with "receiver is defined in ITU-T G.691,"and line 42: change "This Bessel Thompson filter is not intended to represent the noise filter used within an optical receiver, but is intended toprovide uniform measurement conditions at the transmitter." with "This Bessel Thompson receiver is not intended to represent the noise filter used within a compliant optical receiver, but is intended to provide uniform measurement conditions at the transmitter."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.7.5** *P* **372** *L* **29** # **420**

Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A**

IEEE and ITU-T differ in their spelling of Thompson/Thomson. Surely there was one person?

SuggestedRemedy

Check spelling of Thompson/Thomson.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Excellent query. I cannot find a definitive answer at this time. I need help. Call to arms: Find Mr. T(h)om(p)son and ask him how to spell his name.

The correct spelling is: Bessel-Thomson.

Cl **52** *SC* **52.7.5** *P* **372** *L* **36** # **456**

Mike Dudek, Mike T Dudek Cielo Communications

Comment Type **T** *Comment Status* **A**

The filter bandwidth for the Bessel Tompson filter is incorrect

SuggestedRemedy

Replace "0.9375GHz" with "7.5GHz"

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.7.5** *P* **372** *L* **36** # **423**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**

Bessel fr is wrong

SuggestedRemedy

Change "fr = 0.9375GHz" to "fr = 7.5 GHz (or whatever G.691 says if different)

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.7.5** *P* **372** *L* **36** # **878**

Ohlen, Peter Optillion

Comment Type **T** *Comment Status* **A**

Currently, the measurement filter is specified as a 0.9375 GHz Bessel-Thompson filter. A 7.5 GHz filter should be used for 10 Gb/s.

SuggestedRemedy

Change to "f_r = 7.5 GHz"

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **52.7.5** *P* **373** *L* **4** # **421**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Revision to transmit eye mask - hardware costs and harmonisation with SONET

SuggestedRemedy

Change time points to 0.3, 0.4, 0.6, 0.7 UIChange Normalized Amplitude points to -0.4, 0.25, 0.75, 1.4

Proposed Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.7.7** *P* **373** *L* **42** # **457**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **A**

References to extinction ratio should be removed.

SuggestedRemedy

Line 42 remove "using a worst case extinction ratio penalty"
Line 46 remove "After correcting for the extinction ratio of the source"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 879.

Cl **52** *SC* **52.7.7** *P* **373** *L* **42** # **879**

Ohlen, Peter — Optillion

Comment Type **T** *Comment Status* **A** *OMA*

In subclause 52.7.7 it is described how receive sensitivity should be corrected if different extinction ratios are used. With the introduction of OMA there is no need to correct for extinction ratio.

SuggestedRemedy

1. Remove the word "penalty" on line 42.
2. Remove ""After correcting ..... source, " on line 46.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.7.8** *P* **374** *L* **13** # **881**

Ohlen, Peter — Optillion

Comment Type **T** *Comment Status* **A**

The golden PLL is specified to have a -3 dB cut-off at 637 kHz, which is too low at 10 Gb/s.

SuggestedRemedy

Change 637 kHz to 4 MHz.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 424 for numbers.

Cl **52** *SC* **52.7.8** *P* **374** *L* **13** # **425**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Jitter corner is wrong

SuggestedRemedy

Change 637 KHz to 6 MHz or if within 20% of 6 MHz, value from ITU-T recommendation.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 424.

Cl **52** *SC* **52.7.8** *P* **374** *L* **2** # **458**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **A**

This jitter section needs significant work. The test pattern 36A.3 is not appropriate for the 64B/66B signal. The roll off frequency (line 13)should be scaled to 6MHz. etc. I think the remedy needs to wait for the results of the jitter sub group.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. This section is a placeholder and needs to be replaced. However, references to inapplicable test patterns shall be removed as per this comment.

Cl **52** *SC* **52.7.8** *P* **374** *L* **5** # **880**

Ohlen, Peter — Optillion

Comment Type **T** *Comment Status* **A**

This section refers to jitter measurements at TP4. Since TP4 is no longer a compliance point, the section from line 4-9 should be removed.

SuggestedRemedy

Remove the section on line 4-9 on p. 374.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. This section is a placeholder, and it's content is wrong, however references to nonexistent test points can be removed as per this comment.

Cl **52** *SC* **52.7.8** *P* **374** *L* **6** # **426**

Dawe, Piers — Agilent

Comment Type **E** *Comment Status* **A** *OMA*

Changing to OMA

SuggestedRemedy

Change:
"The optical power shall be 0.5 dB greater than (to account for eye opening penalty) the stressed receive sensitivity level in Table 52?5 for 10GBASE-SR/SW, in Table 52?9 for 10GBASE-LR/LW, and in Table 52?14for 10GBASE-ER/EW. This power level shall be corrected if the extinction ratio differs from the specified extinction ratio (min) of 9 dB."to:"To account for eye opening penalty, the optical power (OMA) shall be 0.5 dB greater than the stressed receive sensitivity level in Table 52?5 for 10GBASE-SR/SW, in Table 52?9 for 10GBASE-LR/LW, and in Table 52?14for 10GBASE-ER/EW."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **52.7.9** *P* **374** *L* **33** # **352**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Whole subclause needs review

SuggestedRemedy

Delete or replace subclause

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The jitter subsection is effectively a placeholder, and needs to be replaced with text and content recommended by the work of the Jitter Ad Hoc.

Cl **52** *SC* **52.8.2** *P* **377** *L* **24** # **464**

Mike Dudek, Mike T Dudek — Cielo Communications

Comment Type **T** *Comment Status* **A**

The European laser safety standards have been updated since the 1st edition.

SuggestedRemedy

Replace "1st edition (11/1993) with the updated reference.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Need to find appropriate reference.

Cl **52** *SC* **all** *P* *L* # **1409**

Booth, Brad — Intel

Comment Type **E** *Comment Status* **A**

H2 headings are formatted to start at top of page

SuggestedRemedy

ensure 52.2 to 52.12 are set to start anywhere

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **52** *SC* **All** *P* **Multiple** *L* **Multiple** # **379**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A**

Should "link" be called "channel" as in ISO 11801, EN 50173 and TIA/EIA-568-B3 and later in this clause? Or should we align with the terminology of ITU-T and SONET? Probably we should attempt both, for campus wiring and outside the building.

SuggestedRemedy

Check other standards for link/channel/path terminology.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Let's figure out the appropriate terminology, but base our choice on Ethernet, not on other standards.

Cl **52** *SC* **multiple** *P* *L* # **891**

Ohlen, Peter — Optillion

Comment Type **T** *Comment Status* **A**

In the tables specifying the transmitter characteristics in clause 52 there are footnotes (e.g. on p. 361, line 30) stating that the AC signal into the transmit port will be a valid 8b/10b signal, which is not the case for the serial PMDs.

SuggestedRemedy

State that the input signal to the transmit port will be a valid 10GBASE-Serial data stream or one of the test patterns to be defined in clause 52A:Changed text in the single dagger footnotes of table 52-4 (p. 361:29), 52-8 (p. 364:48), 52-13 (p. 369:31):During all conditions when the PMA is powered, the AC signal (data) into the transmit port will be valid encoded 10G-Serial data stream or one of test patterns defined in 52A except for short durations during system power-on-reset or diagnostics when the PMA is placed in a loopback mode.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Remove annex ref. Remove requirement for specific pattern. Change nomenclature where required.

Cl **52** *SC* **Table 52-10** *P* **366** *L* **3** # **1059**
Doug Coleman Corning

Comment Type **T** *Comment Status* **A**

1290nm is used for attenuation.

SuggestedRemedy

Use 1265nm for worst case or segregate table for encoding types.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Use 1265 nm.

Cl **52** *SC* **Table 52-17** *P* **378** *L* **53** # **1060**
Doug Coleman Corning

Comment Type **T** *Comment Status* **A**

Channel Insertion Loss values.

SuggestedRemedy

Values were omitted and need to be added to table. We suggest the following numbers:

62.5um	62.5um	50um	50um	50um	10um SMF	10um SMF	Units
28	35	69	86	300	10000	40000	M
1.60	1.62	1.74	1.80	2.55	6	18	dB

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See 836.

Cl **52** *SC* **Table 52-3** *P* *L* # **1057**
Doug Coleman Corning

Comment Type **T** *Comment Status* **A**

Delete SMF from Table. Multimode fiber is identified in the preceding paragraph.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **52** *SC* **Table 52-6** *P* *L* # **1058**
Doug Coleman Corning

Comment Type **T** *Comment Status* **R**

The 50um 2000MHz bw is RML not OFL. Attenuation values for 840nm should be apparent to check numbers.

SuggestedRemedy

Proposed Response *Response Status* **C**

REJECT. Reference comment 1054.

Cl **53** *SC* **53.1** *P* **386** *L* **33-36** # **1045**
Robert Grow Intel

Comment Type **E** *Comment Status* **A**

The expansion of acronyms is in random order. Though there may be historical reasons for this (i.e., higher layers to lower layers when there was one protocol stack) there is no descernable reason for order in the current pictures.

SuggestedRemedy

Put in alphabetical order

Proposed Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.1.3** *P* **387** *L* **21** # **919**
Healey, Adam Agere Systems

Comment Type **T** *Comment Status* **A**

LW-4 PMA requires a data delay limitation to guarantee support of 802.3 Annex 31A/B flow control. Recommended allocations are as follows:TX path latency: 6 XSBI cycles for lane split and margin (9.7 ns)RX path latency: worst-case skew plus 6 cycles for lane combine and margin (24.2 ns)An XSBI cycle in this case is based on a 622.08 MHz clock.Given the proposed pause reaction time (31B.3.7) of 40 pause_quanta (20,480 BT), the additional latency proposed here has no impact on system performance.

SuggestedRemedy

Add table with format based on Table 48-5 with the following two entries:XSBI => MDI: 97 BTMDI => XSBI: 242 BT

Proposed Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.1.3** *P* **387** *L* **25** # **153**
Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

space in wrong place

SuggestedRemedy

Replace "theLW4- PMD" with "the LW4-PMD"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.1.3** *P* **387** *L* **34-35** # **154**
Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**
need proper end to bullets. Comment also applies to lines 41,43&44.

SuggestedRemedy
Add a semicolon to end of bullet d) and a period to end of bullet e) In next section, add semicolons to end of bullets c) & e) and a period to end of bullet f)

Proposed Response *Response Status* **C**
ACCEPT.

Cl **53** *SC* **53.1.3** *P* **387** *L* **36** # **155**
Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**
wrong word

SuggestedRemedy
Replace "WIS" with "LW4-PMA"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **53** *SC* **53.1.4** *P* **388** *L* **7** # **156**
Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**
extra comma

SuggestedRemedy
Replace "in terms of, octets" with "in terms of octets"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **53** *SC* **53.2** *P* **389** *L* # **158**
Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**
Since the service interface here is identical to the one described in clause 51, it doesn't need to be repeated here

SuggestedRemedy
Remove service primitive descriptions and merely state that they are identical with those defined in clause 51.1.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **53** *SC* **53.2** *P* **389** *L* **20** # **1146**
Bottorff, Paul A Nortel Networks

Comment Type **T** *Comment Status* **A**
We only need a single PMA service interface for clause 51 and 53.

SuggestedRemedy
Cross reference 53.2 in clause 51.1(page 340).

Proposed Response *Response Status* **C**
ACCEPT.

Cl **53** *SC* **53.2** *P* **389** *L* **21** # **157**
Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**
wrong heading

SuggestedRemedy
Replace "Service Interface" with "PMA service interface"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **53** *SC* **53.2** *P* **389** *L* **35** # **315**
Figueira, Norival Nortel Networks

Comment Type **E** *Comment Status* **A**
Both clauses 51 and 53 define the PMA Service Interface. This is redundant.

SuggestedRemedy
Define the PMA Service Interface in either clause 51 or clause 53 (but not both).

Proposed Response *Response Status* **C**
ACCEPT. Delete the service interface from clause 53 and reference clause 51.

Cl **53** *SC* **53.3.1** *P* **391** *L* # **159**
Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**
This figure has the bit ordering backwards. tx_data-group<15:0> is serialized bit<0> first

SuggestedRemedy
swap "bit 15" and "bit 0" for all "word n"s (5 instances)

Proposed Response *Response Status* **C**
ACCEPT.

Cl **53** *SC* **53.3.3** *P* **392** *L* **22** # **160**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

Always keeping the "<15:0>" with "data-group" apears quite cumbersome, especially when trying to pluralize the groups.

SuggestedRemedy

I recommend leaving it to the discretion of the editor when to use "data-group<15:0>" and when to just use "data-group". Effective use of this discretion can make much of this section and the next much more readable.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.3.3** *P* **392** *L* **27** # **161**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

misspelling

SuggestedRemedy

Replace "Nest a frame" with "Next a frame"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.3.4** *P* **392** *L* **44** # **162**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

Missing word

SuggestedRemedy

Replace "PMA may gener-" with "The PMA may gener-"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.3.4** *P* **393** *L* **1** # **1147**

Bottorff, Paul A Nortel Networks

Comment Type **T** *Comment Status* **A**

The skew budget for SerDes-Tx complicates implementation.

SuggestedRemedy

Raise SerDes-Tx from 5 UI to 13 UI. This will prevent the need to synchronize the lanes before beginning transmission.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.4.1.1** *P* **393** *L* **46-50** # **800**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **R**

Lines 46 to 50 on page 393 define the A1 constant, but don't give the explicit value. The value is easy to define, so it should be given here along with the reference.

SuggestedRemedy

Add the actual value of the A1 overhead octet to the definition.
Here is an example wording of the definition with the added value:
"An octet value (bits 1:8) of 11110110 as assigned to the A1 framing character within the SONET Section Overhead, as specified in Section 4.2.1 of ANSI T1.416-1999. Used to obtain octet and A1/A2 frame alignment on each of the 4 PMD lanes."

Proposed Response *Response Status* **C**

REJECT.

This clause follows the conventions of the clause 50 referencing ANSI T1.416-1999 whenever possible. Direct import of values should not be done. The process of defining all of the information explicitly rather than providing pointers can be carried on without limit until all relevant portions of ANSI T1.105-1995 and T1.416-1999 have been imported into the text.

Cl **53** *SC* **53.4.1.1** *P* **394** *L* **1-4** # **801**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **R**

Lines 1 to 4 on page 394 define the A2 constant, but don't give the explicit value. The value is easy to define, so it should be given here along with the reference.

SuggestedRemedy

Add the actual value of the A2 overhead octet to the definition.
Here is an example wording of the definition with the added value:
"An octet value (bits 1:8) of 00101000 as assigned to the A2 framing character within the SONET Section Overhead, as specified in Section 4.2.1 of ANSI T1.416-1999. Used to obtain octet and A1/A2 frame alignment on each of the 4 PMD lanes."

Proposed Response *Response Status* **C**

REJECT.

This clause follows the conventions of the clause 50 referencing ANSI T1.416-1999 whenever possible. Direct import of values should not be done. The process of defining all of the information explicitly rather than providing pointers can be carried on without limit until all relevant portions of ANSI T1.105-1995 and T1.416-1999 have been imported into the text.

Cl **53** *SC* **53.4.1.2** *P* **394** *L* # **163**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

this list of variables, as well as the list of functions should be alphabetized

SuggestedRemedy

Re-order the lists of variables and functions to alphabetize them

Proposed Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.4.1.2** *P* **394** *L* **14** # **1214**

Thaler, Pat Agilent Technologies

Comment Type **E** *Comment Status* **A**

The variables list should be in alphabetical order.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.4.1.2** *P* **394** *L* **18** # **1213**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

A variable only needs a default value if there are times when it does not have an assigned value. This is something we used so a variable could be set to a value such as True by two separate state state machines and would have the default value when neither machine is asserting an explicit value.

SuggestedRemedy

Delete default

Proposed Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.4.1.2** *P* **394** *L* **22** # **164**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

missing word. This also applies to 53.4.1.2, page 395, line 10

SuggestedRemedy

Replace "The input end" with "At the input end"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.4.1.2** *P* **394** *L* **28-36** # **802**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A**

The "tx_search" variable defined at lines 28 to 36 on page 394 is not clearly defined and is too complicated to be a variable.

SuggestedRemedy

Split this variable into three different state machines (or functions) and define the specific search process for each state machine. I think this is how it should be done.
1) The first search process seems to be searching bits to find the proper byte boundary. Once completed, it seems to shift the incoming data to that boundary for the next search process. The specific process listing the number of bits/bytes to inspect before moving on to inspect the next set needs to be defined. See the "Frame Lock process" in clause 49.2.8 and Figures 49-10 and 49-11 for an example.
2) The second search process seems to be searching bytes to find the proper frame boundary. The specific process of how many bytes are inspected with and without errors before declaring the boundary found needs to be clearly defined. See the first part of Figure 48-8 and clause 48.2.5.2.2 for an example.
3) The third search process seems to be searching frames and counting time to ensure the proper frame boundary found in the second search is valid. This seems to be similar to the second part of Figure 48-8 or the process defined in Figure 49-12 and should be defined in a similar manner. It may make sense to combine the second search (presync) and the third search (synch) into one state machine.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The comment is valid in that the "tx_search" variable definition is rather complicated and should be considerably simplified. However, the suggested remedy does not seem to have much to do with the variable but instead relates to the entire state machine.

The intent of the "tx_search" variable was to specify the pattern being scanned for at any given point, rather than to specify the scanning process itself. We believe that implementation of the remedies for Comments #804, #805, #806, #807, and #808 will have the desired effect of simplifying the definition of the "search" variable, which is what is noted by the comment.

Cl **53** *SC* **53.4.1.2** *P* **394** *L* **31-36** # **165**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

These numbers don't match up with table 53-2 on page 402

SuggestedRemedy

Either change these numbers to match table 53-2 or reference table 50-5 for these numbers.

Proposed Response *Response Status* **C**

ACCEPT.

Eliminate the max limits from the definition of tx_search values.

Cl **53** *SC* **53.4.1.2** *P* **395** *L* **11** # **166**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

wrong word

SuggestedRemedy

Replace "The output or each" with "The output of each"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.4.1.2** *P* **395** *L* **13-22** # **803**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A**

The "rx_search_[x]" variable defined at lines 13 to 22 on page 395 is not clearly defined and is too complicated to be a variable.

SuggestedRemedy

Split this variable into three different state machines (or functions) and define the specific search process for each state machine. I think this is how it should be done.
1) The first search process seems to be searching bits to find the proper byte boundary. Once completed, it seems to shift the incoming data to that boundary for the next search process. The specific process listing the number of bits/bytes to inspect before moving on to inspect the next set needs to be defined. See the "Frame Lock process" in clause 49.2.8 and Figures 49-10 and 49-11 for an example.
2) The second search process seems to be searching bytes to find the proper frame boundary. The specific process of how many bytes are inspected with and without errors before declaring the boundary found needs to be clearly defined. See the first part of Figure 48-8 and clause 48.2.5.2.2 for an example.
3) The third search process seems to be searching frames and counting time to ensure the proper frame boundary found in the second search is valid. This seems to be similar to the second part of Figure 48-8 or the process defined in Figure 49-12 and should be defined in a similar manner. It may make sense to combine the second search (presync) and the third search (synch) into one state machine.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. ACCEPT IN PRINCIPLE.

The comment is valid in that the "rx_search_[]" variable definition is rather complicated and should be considerably simplified. However, the suggested remedy does not seem to have much to do with the variable but instead relates to the entire state machine.

The intent of the "rx_search_[]" variable was to specify the pattern being scanned for at any given point, rather than to specify the scanning process itself. I believe that implementation of the remedies for Comments #809 and #810 will have the desired effect of simplifying the definition of the "search" variable, which is what is noted by the comment.

Cl **53** *SC* **53.4.1.2** *P* **395** *L* **34** # **1223**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

The PMD has no way to indicate valid data is being received. Furthermore, signal_fail is set True in the receive data groups state diagram and is never set false nor is it used. Also, since it defaults to True, it will always be True even if the state machine doesn't enter that state.

SuggestedRemedy

Remove the signal_fail variable and the deskew failed state.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the default value of signal_fail to FALSE and rework state diagram to update signal_fail when all lanes are in receive synchronization.

Cl **53** *SC* **53.4.1.3** *P* **395** *L* **43-54** # **805**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A**

The definition for tx_found_Hunt at lines 43 to 54 on page 395 refers to a "Hunt_Pattern" but the "Hunt_Pattern" is not defined as a constant in clause 53.4.1.1.

SuggestedRemedy

Define the "Hunt_Pattern" as a constant in clause 53.4.1.1.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Eliminate tx_found_Hunt, see comment 1215 proposed response.

Cl **53** *SC* **53.4.1.3** *P* **395** *L* **43-54** # **804**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A**

The definition for tx_found_Hunt function at lines 43 to 54 on page 395 seems to be closely related to the "tx_search" variable defined at lines 28 to 36 on page 394 when searching for the "Hunt_Pattern". This function is too complicated and should be combined with the "tx_search" variable to create a new state machine.

SuggestedRemedy

Define the tx_found_hunt function (and tx_search pattern) as a state machine. The tx_found_Hunt function seems to be set false before the searching of bits to find the proper byte boundary. Once completed, it is set to true and seems to shift the incoming data to that boundary for the next tx_search process. The specific process listing the number of bits/bytes to inspect before moving on to inspect the next set needs to be defined. See the "Frame Lock process" in clause 49.2.8 and Figures 49-10 and 49-11 for an example.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Eliminate tx_found_Hunt function and simplify machine by eliminating the HUNT state in figure 53-5 as proposed for the response to comment 1215.

Cl **53** *SC* **53.4.1.3** *P* **395** *L* **47-53** # **167**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

Why is it i/2? Same comment for page 396, line 4

SuggestedRemedy

Either replace the i/2 with i or explain why the i/2 is there.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The i/2 parameter adjusts for the fact that i is expressed in octets while the function operates on 16 bit wide data-groups.

Based on the proposed response for 1215 tx_found_Hunt is removed from the funtion list.

Cl **53** *SC* **53.4.1.3** *P* **396** *L* **1-12** # **807**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A**

The definition for tx_found_Presync at lines 1 to 12 on page 396 refers to a "Presync_Pattern" but the "Presync_Pattern" is not defined as a constant in clause 53.4.1.1.

SuggestedRemedy

Define the "Presync_Pattern" as a constant in clause 53.4.1.1.

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

This is also a partial response to 802.

Cl **53** *SC* **53.4.1.3** *P* **396** *L* **1-25** # **806**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **R**

The definition for tx_found_Presync at lines 1 to 12 on page 396 and the definition for tx_found_Sync at lines 13 to 25 on page 396 seem to be closely related to the "tx_search" variable defined at lines 28 to 36 on page 394 when searching for the "Presync_Pattern" and the "Sync_Pattern" patterns. These functions are too complicated and should be combined with the "tx_search" variable to create a new state machine.

SuggestedRemedy

Define the tx_found_Presync and tx_found_Sync functions (and the associated tx_search patterns) as a state machine. These two functions seem very similar to the logic/processes defined in Figure 48-8 and clause 48.2.5.2.2. The specific process of how many bytes are inspected with and without errors before declaring the tx_found_Presync true needs to be clearly defined. The tx_found_Sync function seems to be looking for a certain number of frames before being set true and then it has a timer to ensure the proper frame boundary is maintained otherwise it will set false.

Proposed Response *Response Status* **C**

REJECT.

There are many possible and valid physical implementations of the Synchronization process. The Synchronization state machine has therefore been defined in an abstract logical manner, rather than a fully detailed description of a particular piece of hardware, to ensure that the range of implementations is not unnecessarily restricted.

With this in mind, the tx_found_Presync function should be regarded as a logical description of a mechanism implementing dat-groups by data-group scan for data-group boundaries using the Presynct_Pattern. In fact, the commenter himself clearly illustrates this assertion, as he has inferred the actual implementation of this scanner very well! In addition, the number of data-groups to inspect during the scan is fully specified in the function. I therefore see no reason to change the description.

Cl **53** *SC* **53.4.1.3** *P* **396** *L* **1-37** # **808**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **A**

The definition for tx_found_sync at lines 13 to 25 on page 396 and the definition for tx_in_Sync at lines 26 to 37 on page 396 refer to a "Sync_Pattern" but the "Sync_Pattern" is not defined as a constant in clause 53.4.1.1.

SuggestedRemedy

Define the "Sync_Pattern" as a constant in clause 53.4.1.1.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.4.1.3** *P* **396** *L* **27** # **1211**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **R**

By this definition, a single bit error during the sync pattern causes loss of synchronization. This is excessively sensitive. I made the same comment on the WIS receive sync machine. It is somewhat less important here because bit errors should be less likely on the XSBI or PMA service interface.This comment also applies to the receive sync state diagram which is similar to the WIS case.

SuggestedRemedy

Either use 301,040 for the length of the test so that one insync can be missed or add a second sync state, SYNC_2. Exit from SYNC to SYNC_2 on in_sync=FALSE,exit from SYNC_2 to SYNC on in_sync=TRUE and to HUNT on in_sync=FALSE for 155,520 octets.

Proposed Response *Response Status* **C**

REJECT.

This is not true. The functions tx_in_sync and rx_in_sync_[] look for at least one valid match of the sync pattern over up to 8 sync pattern locations, so one could potentially accept up to 7 errored patterns before giving up and declaring an out-of-sync condition. (Note that until the SYNC state is entered, however, a single bit error in the sync pattern will result in the state machine reverting to the HUNT state, but this is both expected and desired.)

However, in light of this comment, it is recommended that text be added to the description on Page 334 to make this behavior explicit. In addition, the proposed response to Comment #210 should also address this issue.

Cl **53** *SC* **53.4.1.3** *P* **396** *L* **28** # **786**

Furlong, Darrell R Aura Networks

Comment Type **E** *Comment Status* **R**

Number not in international format. Pg 396 line 28,32,36 Value "77,760"Pg 397 line 34,45,46,50 Value "38,880"Pg 398 line 2 Value "19,440"

SuggestedRemedy

Replace comma with a space.

Proposed Response *Response Status* **C**

REJECT.

IEEE style does not use international format.

Cl **53** *SC* **53.4.1.3** *P* **396** *L* **40** # **1219**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

Is tx_at_A2 just based on a counter/timer from the last A1/A2 transition or is it doing something else? Define any requirments on the method for locating the first A2 data group.Also applies to the receive bits state diagram.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Add "by counting 77,760 data-groups from last tx_at_A2. The first tx_at_A2 is determined by an offset of f+2 octets from the beginning of the Sync_Pattern."

Cl **53** *SC* **53.4.1.3** *P* **396** *L* **45** # **168**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

This function needs a WAIT value

SuggestedRemedy

Add a value of: "WAIT; Not yet at the first A2 data-group". Also, the other definitions need to be modified to be active only when actually at the first A2 data-group then TRUE is when this first A2 data-group has the correct A2 value and FALSE is when this first A2 data-group has an incorrect value.

Proposed Response *Response Status* **C**

ACCEPT.

The name of the FALSE condition will also be changed to FAIL.

Cl **53** *SC* **53.4.1.3** *P* **396** *L* **46-51** # **169**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

How is this function different from the tx_sync variable?

SuggestedRemedy

Remove this function or provide a description of how this is different from tx_sync.

Proposed Response *Response Status* **C**

ACCEPT.

Remove tx_dg16 and replace with tx_sync.

Cl **53** *SC* **53.4.1.3** *P* **396** *L* **48** # **1218**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

Function definitions need to define how the function determines its output. Some of these say what the output means but not how it is determined. For instance, look at tx_dg15. How does it determine whether the transmitter is in sync. tx_sync=TRUE tells whether the transmitter is in sync, but if its that simple what is the purpose of the function?

SuggestedRemedy

If tx_dg16 is doing additional tests to obtain its result, then define them here. Otherwise, replace tests of the function with tests of tx_sync and delete the function.

Proposed Response *Response Status* **C**

ACCEPT.

Same as comment 169.

Cl **53** *SC* **53.4.1.3** *P* **397** *L* **19-41** # **810**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **R**

The definition for rx_found_Presync at lines 19 to 29 on page 397 and the definition for rx_found_Sync at lines 31 to 41 on page 397 seem to be closely related to the "rx_search" variable defined at lines 13 to 22 on page 395 when searching for the "Presync_Pattern" and the "Sync_Pattern" patterns. These functions are too complicated and should be combined with the "rx_search" variable to create a new state machine.

SuggestedRemedy

Define the rx_found_Presync and rx_found_Sync functions (and the associated rx_search patterns) as a state machine. These two functions seem very similar to the logic/processes defined in Figure 48-8 and clause 48.2.5.2.2. The specific process of how many bytes are inspected with and without errors before declaring the rx_found_Presync true needs to be clearly defined. The rx_found_Sync function seems to be looking for a certain number of frames before being set true and then it has a timer to ensure the proper frame boundary is maintained otherwise it will set false.

Proposed Response *Response Status* **C**

REJECT.

Same rationale as for Comment #809. The description is that of an abstract logical behavior rather than an explicit and highly detailed physical implementation. In addition, the commenter has had no trouble inferring the physical implementation from the description. The number of octets to be scanned is also stipulated clearly in the description.

Note that a possible (partial) resolution to this comment could be to represent the rx_found_Sync and rx_in_sync functions as a combination of a function and an additional state machine rather than as two functions. The state machine would describe the behavior of scanning for Sync_Patterns that are 38,880 octets apart, while the function would describe the matching of Sync_Pattern with the incoming data stream. The main state machine would then execute state transitions based on the output of the subsidiary state machine.

Cl **53** *SC* **53.4.1.3** *P* **397** *L* **9-18** # **809**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **R**

The definition for rx_found_Hunt function at lines 9 to 18 on page 397 seems to be closely related to the "rx_search" variable defined at lines 13 to 22 on page 395 when searching for the "Hunt_Pattern". This function is too complicated and should be combined with the "rx_search" variable to create a new state machine.

SuggestedRemedy

Define the rx_found_hunt function (and rx_search pattern) as a state machine. The rx_found_Hunt function seems to be set false before the searching of bits to find the proper byte boundary. Once completed, it is set to true and seems to shift the incoming data to that boundary for the next rx_search process. The specific process listing the number of bits/bytes to inspect before moving on to inspect the next set needs to be defined. See the "Frame Lock process" in clause 49.2.8 and Figures 49-10 and 49-11 for an example.

Proposed Response *Response Status* **C**

REJECT.

There are many possible and valid physical implementations of the Synchronization process. The Synchronization state machine has therefore been defined in an abstract logical manner, rather than a fully detailed description of a particular piece of hardware, to ensure that the range of implementations is not unnecessarily restricted.

With this in mind, therx_ found_Hunt function should be regarded as a logical description of a mechanism implementing bit-by-bit scan for octet boundaries using the Hunt_Pattern. In fact, the commenter himself clearly illustrates this assertion, as he has inferred the actual implementation of this scanner very well! In addition, the number of bits/bytes to inspect during the scan is fully specified in the function. I therefore see no reason to change the description.

Cl **53** *SC* **53.4.1.3** *P* **398** *L* **11** # **170**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

Incorrect definition of EMPTY

SuggestedRemedy

Replace current definition with the following: "Any rx_pipo_state_[x] variable = EMPTY"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.4.1.3** *P* **398** *L* **20** # **171**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

missing words

SuggestedRemedy

Replace "The receive NOT_EMPTY" with "The receive SIPO is NOT_EMPTY"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.4.2.1** *P* **399** *L* **16** # **1212**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **A**

The looping transition on found_Presync for the A1_ALIGN and PRESYNC states is not necessary. We stay in a state until an exit condition is satisfied. The only time a loop is needed is where the state executes an action at each entry such as incrementing a counter, starting a timer or sending a primitive.This comment also applies to the receive sync state diagram.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Remove WAIT loops in Transmit sync state diagram 53-5 and Receive sync state diagram 53-8.

Cl **53** *SC* **53.4.2.1** *P* **399** *L* **6** # **1209**

Thaler, Pat Agilent Technologies

Comment Type **T** *Comment Status* **R**

The reason we need this state machine is because the Sonet Frame has to start in a specific lane in order for the receive sync to be able to demux the 16 bit words. The transmitter gets the data with octet alignment.It would make this PMA simpler if the WIS would provide an output indicating the first word of a Frame.

(editor made this technical)

SuggestedRemedy

Consider doing so.

Proposed Response *Response Status* **C**

REJECT.

This simplification to the LW4-PMA would require changes to the XSBI and to the WIS. The current transmit sync state machine operates with the current specifications of clauses 50 and 51.

Cl **53** *SC* **53.4.2.1** *P* **399** *L* **6** # **1215**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

It is clear why the WIS receive machine has separate states for HUNT and A1_ALIGN because the hunt has to be done on a bit basis and it is best to be only looking for a short pattern that way. Since the PMA Transmit sync always has octet sync, what is the advantage of having separate states?

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove the HUNT state and begin the machine at A1_ALIGN. In addition, the funtion tx_found_Hunt will be removed from the function list and the Hunt_Pattern will be removed from the definition of tx_search.

The machine will enter from power_on or RESET to A1_ALIGN.

Cl **53** *SC* **53.4.2.1** *P* **400** *L* # **811**

Don Alderrou — nSerial

Comment Type **T** *Comment Status* **A**

Figure 53-6-Transmit lane split state diagram on page 400 shows/tests the tx_at_A2 function with the value of "WAIT" to loop-back to the Find_first_A2 state. The definition of the tx_at_A2 function at lines 39 to 45 on page 396 does not define the "WAIT" value. The diagram is inconsistent with the definition.

SuggestedRemedy

Add the "WAIT" value to the definition of the tx_at_A2 function at lines 39 to 45 on page 396 or change the state diagram to not use the "WAIT" value.

Proposed Response *Response Status* **C**

ACCEPT.

Change the state diagram to not use the WAIT state. See comment 174.

Cl **53** *SC* **53.4.2.1** *P* **400** *L* # **174**

Brown, Benjamin J — AMCC

Comment Type **T** *Comment Status* **A**

The RESET state writes to the PISO buffers. While tx_sync is false (and power_on & RESET are also false) the RESET state is continuously re-entered. This means the PISO buffer is continuously being written to without any sense of timing to a clock. In the Transmit bits state diagram, while tx_sync is false, the PISO is not being read. Therefore, I see 2 problems: 1) Unless the PISO is infinitely long, it will overflow while tx_sync is false 2) Without any reference to a clock, the writes to the PISO occur with no timing between

SuggestedRemedy

Remove the write to PISO in state RESET Add PMA_UNITDATA.request to each state transition to provide a "clock"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove the RESET state transitioning directly to FIND FIRST A2 from power_on or RESET. Remove loop transition for tx_at_A2=WAIT and tx_at_a2=FALSE allowing the machine to stall in the FIND FIRST A2 state. Add PMA_UNITDATA.request to each state transition for clocking.

Cl **53** *SC* **53.4.2.1** *P* **400** *L* **13** # **1216**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

tx_at_A2 does not take the value Wait. tx_at_A2 = FALSE does not indicate a failure condition. It only means that we haven't reached the start of frame yet. Also, assuming that tx_at_A2 only takes the value true when tx_sync=FALSE, then there is no reason to have separate states for RESET and FIND FIRST A2 since they take perform the same actions.This comment also applies to the receive bits state diagram.

SuggestedRemedy

Delete the RESET state and move its entry arrow to FIND FIRST A2.Change the condition for looping in FIND FIRST A2 to tx_at_A2=FALSE

Proposed Response *Response Status* **C**

ACCEPT.

See comment 174 response.

Also change Receive bits state diagram removing the RESET state, rx_at_A2=WAIT and rx_at_A2=FALSE transitions.

Cl **53** *SC* **53.4.2.1** *P* **400** *L* **2** # **1222**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Normally, when we have a state machine that makes a state transition once per output as this does, we either have a variable that paces the transitions (like SUDI in Clause 48) or we note in the description of the machine that it makes a transition once per output period. This machine is a bit odd because in 2 states it produces 4 outputs and in the others it produces one so if it is treated as a clocked machine, it has to ignore 3 out of 4 clocks when in RESET and FIND FIRST A2.

SuggestedRemedy

Either explain its clocked nature in the text or add a pacing variable to the transition terms.

Proposed Response *Response Status* **C**

ACCEPT.

See comment 174.

Add PMA_UNITDATA.request to each transition to provide a clock reference.

Cl **53** *SC* **53.4.2.1** *P* **400** *L* **23** # **1217**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

Perhaps there should be a transition to FIND FIRST A2 or to TRANSMIT LANE 0 from TRANSMIT LANE 0, 1 and 2.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment 174.

Add a transition from TRANSMIT LANE 0, 1, 2, 3 to FIND FIRST A2.

Cl **53** *SC* **53.4.2.1** *P* **401** *L* # **179**

Brown, Benjamin J — AMCC

Comment Type **T** *Comment Status* **A**

Generating wrong clock & need a clock to know when to transition between states for Figure 53-7

SuggestedRemedy

Replace PMD_UNITDATA.indicate with PMD_unitdata.request within the states for clock generation to the PMD. I don't know what to use for a clock source for the state machine. It must somehow indicate a PMA_UNITDATA.request x 16 clock.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Figure 53-7 is being removed. See comment 1221.

Define a function creating a clock from PMA_UNITDATA.indicate by multipling by 4. Use this for the transmit reference as needed.

Cl **53** *SC* **53.4.2.1** *P* **401** *L* **21** # **1220**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

tx_lane is another function that appears to just be outputing the value of tx_sync. There is no need for the indirection. Delete the function and use tx_sync directly. Also, it is confusing to have a function that has the same name as a variable. If there is a reason to retain the function, rename it.This comment also applies to the receive bits state diagram.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment 1220.

Remove this state machine and the tx_lane function replacing with tx_sync.

Cl **53** *SC* **53.4.2.1** *P* **401** *L* **6** # **1221**

Thaler, Pat — Agilent Technologies

Comment Type **T** *Comment Status* **A**

It is not clear that this state machine serves a purpose. When tx_sync goes false, the transmit lane split machine will load all 1s into the tx_piso FIFOs. Therefore, we don't need to go to the reset state here to make the output be all 1s. Also, if one retains the reset state, add an action to empty the tx_piso values. Otherwise, when one comes out of sync they will have overflowed (assuming they are some kind of fifos).

SuggestedRemedy

Delete the state machine.

Proposed Response *Response Status* **C**

ACCEPT.

The RESET state is not needed leaving only a single state. The operation of sending tx_piso_[] output to the PMD service interface will be described in words.

Cl **53** *SC* **53.4.2.2** *P* **401** *L* # **813**

Don Alderrou — nSerial

Comment Type **T** *Comment Status* **A**

Figure 53-9-Receive bits state diagram on page 401 shows the value of the rx_pipo_state_[x] variable set to "EMPTY" in the first two states. The definition of the rx_pipo_state_[x] variable at lines 1 to 7 on page 395 defines three values. The diagram is inconsistent with the definition.

SuggestedRemedy

Add more states to to the diagram on page 401 to set all of the three values defined for the rx_pipo_state_[x] variable at lines 1 to 7 on page 395 or change the variable definition to only use the "EMPTY" value.

Proposed Response *Response Status* **C**

ACCEPT.

Add NOT_EMPTY state to RECEIVE 16 BITS state. Define a counter which is incremented in the RECEIVE 16 BITS state and decremented by the Receive data groups state machine. Add a state past RECEIVE 16 BITS called PIPO FULL which is entered when the receive count is at the PIPO depth. Move the state of the PIPO to OVERFLOW if the next 16 bit clock occurs while in the PIPO FULL state.

Cl **53** *SC* **53.4.2.2** *P* **401** *L* # **175**

Brown, Benjamin J — AMCC

Comment Type **E** *Comment Status* **A**

Figure 53-9 is out of order (comes before) Figure 53-8. In fact, I don't see Figure 53-9 reference at all in the text other than indirectly in 53.3.3, page 392, lines 37&38.

SuggestedRemedy

Re-order these figures and provide a specific reference to this figure.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.4.2.2** *P* **401** *L* # **178**

Brown, Benjamin J — AMCC

Comment Type **T** *Comment Status* **A**

Need a "clock" to move between transitions in state machine for Figure 53-9

SuggestedRemedy

Add PMD_UNITDATA.indicate to each state transition to provide a "clock"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The machine clocks every 16 PMD_UNITDATA.indicate events. Form a wait timer which clocks every 16 PMD_UNITDATA.indicates. Use the wait timer to condition the state changes.

Cl **53** *SC* **53.4.2.2** *P* **401** *L* # **812**

Don Alderrou — nSerial

Comment Type **T** *Comment Status* **A**

Figure 53-9-Receive bits state diagram on page 401 shows/tests the rx_at_A2_[x] function with the value of "WAIT" to loop-back to the Find_first_A2 state. The definition of the rx_at_A2_[x] function at lines 1 to 7 on page 398 does not define the "WAIT" value. The diagram is inconsistent with the definition.

SuggestedRemedy

Add the "WAIT" value to the definition of the rx_at_A2_[x] function at lines 1 to 7 on page 398 or change the state diagram to not use the "WAIT" value.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove the rx_at_A2_[] = WAIT and rx_at_A2_[] = FALSE transitions from the state machine. Also remove the RESET state beginning the state machine at FIND FIRST A2.

Cl **53** *SC* **53.4.2.2** *P* **402** *L* # **176**

Brown, Benjamin J AMCC

Comment Type **E** *Comment Status* **A**

Extraneous vertical line

SuggestedRemedy

Remove vertical line below and to the left of state HUNT.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.4.2.2** *P* **402** *L* # **177**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

Need a "clock" to move between transitions in state machine for Figure 53-8

SuggestedRemedy

Add PMD_UNITDATA.indicate to each state transition to provide a "clock"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.4.2.2** *P* **403** *L* # **180**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

Generating wrong clock & need a clock to know when to transition between states for Figure 53-10

SuggestedRemedy

Replace PMA_UNITDATA.indicate with PMA_unitdata.request within the states for clock generation to the PMA client. I don't know what to use for a clock source for the state machine. It must somehow indicate a PMD_UNITDATA.indicate / 16 clock.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

PMA_UNITDATA.indicate is the correct primative for sending to the WIS. The machine needs a clock at PMD_UNITDATA.indicate/4 for all transitions. We propose a comment in the text that this machine is clocked by PMD_UNITDATA.indicate/4 derived from any one of the lanes.

Cl **53** *SC* **53.4.3** *P* **399** *L* # **814**

Don Alderrou nSerial

Comment Type **T** *Comment Status* **R**

Table 53-2-Minimum and maximum parameter values on page 402 may cause interoperability problems. Since the 10GBASE-LW4 PMA is only specified for one data rate, the ranges for the values are not required.

SuggestedRemedy

Define the specific values for the parameters listed in Table 53-2 and replace the parameterized values in the preceding text with the specific values. According to the figueira_1_0700 presentation slide 22, a value of 4 for m is suggested. Thus the "m" in Table 53-2 and the "m" in the definition for tx_in_Sync on page 396 should be replaced by a "4"

BTW, I could not find suggested values for the other parameters since the link shown in the figueira_1_0700 presentation did not work.
http://grouper.ieee.org/groups/802/3/10G_study/public/email_attach/delineation_perf.doc
The Email from David Martin http://www.ieee802.org/3/10G_study/email/msg01139.html also has a pointer to the document which is stale.

Proposed Response *Response Status* **C**

REJECT.

The comment and the remedy are rejected for the following reasons:
1. There is absolutely no interoperability issue arising from different selections of the parameters in the table. Variations in the parameters merely change the time taken to lock to the SONET frame and also the robustness in the face of bit errors.
2. Different implementations may elect to select different values of these parameters, either to simplify their implementations or to achieve some robustness goal. The standard should not unnecessarily constrain the freedom given to implementers.
3. Different applications with varying bit error rates and bit error characteristics may be supported using different values for these parameters. The standard should not unnecessarily restrict the potential application space.
4. Different implementations, both existing and future, may select different values of these parameters according to implementation convenience. (E.g., a parallel implementation may select values that are multiples of 16 bytes to reduce control complexity, while a serial implementation may use minimum values to reduce hardware overhead.) The standard should not unnecessarily reduce the latitude given to implementers.
5. It has long been accepted SONET/SDH practice to leave these parameters up to the implementer with no adverse effects.

The minimum values specified in the table are provided so that all implementations may conform to a certain minimum degree of robustness in the face of bit errors. However, there is no good reason to limit the range beyond this.

Cl **53** *SC* **53.4.3** *P* **399** *L* **53** # **172**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **R**

misleading information

SuggestedRemedy

Replace "preceding state diagram" with "preceding receive state diagram". This holds true if the numbers in the description of the tx_search variable remain the same and are referenced by the values in table 50-5. Along with the above change, a comment should be made here about referencing table 50-5 for the transmit state diagram descriptions. However, this comment does not hold true if the numbers in the description of the tx_search variable are changed to match those in the receive direction.

Proposed Response *Response Status* **C**

REJECT. REJECT.

Changes to the tx_search variable allow the use of the parameters in table 53-2.

Cl **53** *SC* **53.4.3** *P* **399** *L* **53-54** # **173**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

Since table 53-2 has both min and max values, this sentence needs to be re-worded

SuggestedRemedy

Replace the last sentence with: "Implementations shall set these parameters to values within the limits specified in the table."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **53** *SC* **53.4.3** *P* **402** *L* # **181**

Brown, Benjamin J AMCC

Comment Type **T** *Comment Status* **A**

2 comments: 1) This table is nto referenced explicitly in the text. 2) The max value of j is incorrect

SuggestedRemedy

1) Add an explicit reference to this table, probably in 53.4.3, page 399 2) J is defined as j < 48-i. With a minimum value for i of 1, the max value of j must be no greater than 46.

Proposed Response *Response Status* **C**

ACCEPT.

Add the proposed reference.

The max value of j will be changed to 46.

Cl **54** *SC* **54** *P* **409** *L* **1** # **1316**

Jonathan Thatcher World Wide Packets

Comment Type **T** *Comment Status* **R**

**** BIG TICKET ITEM ****
According to our 5 criteria, we must prove technical feasibility for each PMD type prior to going to sponsor ballot"10 Gb/s Ethernet technology will be demonstrated during the course of the project, prior to the completion of the sponsor ballot. project, prior to the completion of the sponsor ballot."To date, no optical technology has reported on such a demonstration.

SuggestedRemedy

Put together a plan including the definition of "demonstration" for approval by the committee. Do it.

Proposed Response *Response Status* **C**

REJECT.

During the 10 Gigabit Ethernet proposal phase a lot of evidence for the technical feasibility of the WWDM PMD was presented. This was the basis for WWDM PMD's being voted into the draft standard.

This is a general comment which seems to be directed at all of the 10 Gigabit Ethernet PMD's (and presumably the PHY's). It will be passed to the IEEE 802.3ae working group for discussion.

No change to the draft has been requested.

Cl **54** *SC* **54.1** *P* **411** *L* **4043** # **1144**

Bottorff, Paul A Nortel Networks

Comment Type **T** *Comment Status* **A**

The picture of 10GBASE-LX4 should be an architecture reference not an implemenation. XAUI is an XGMII extender and therefore can not attach to a PMD without a PCS and PMA layer.

SuggestedRemedy

Change the picture to show PMD attached to the LX4-PMA and PCS described in clause 48. XAUI should be removed from this diagram.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **54** *SC* **54.1** *P* **412** *L* **19** # **10003**

Shimon Muller

Comment Type **T** *Comment Status* **X**

SUPI is not a defined interface in this draft. Therefore, there should be no reference to it on Figure 54-2.

SuggestedRemedy

Remove the SUPI interface from this figure.

Proposed Response *Response Status* **O**

Cl **54** *SC* **54.12** *P* *L* # **1413**

David Dolfi Agilent Technologies

Comment Type **T** *Comment Status* **A**

The current Table 54.14, Optical fiber and cable characteristics, is inconsistent with the corresponding table (52.18) in Clause 52 for serial PMDs. Specifically, the latter table gives values of 0.4 or 0.5 (dB/km) for the loss of 10 um single mode fiber at 1310 nm, while Table 54.14 lists only the 0.5 dB/km value, even though the fiber is essentially the same in both cases.

SuggestedRemedy

I recommend changing the relevant entry in Table 54.14 to "0.5 or 0.4" to be consistent with Table 52.18.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Same value will be used as per the Serial PMD.

Cl **54** *SC* **54.14.2.1** *P* **434** *L* **12** # **795**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

"Names(s)"

SuggestedRemedy

change to "Name(s)"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **54** *SC* **54.2** *P* **412** *L* **1921** # **1145**

Bottorff, Paul A Nortel Networks

Comment Type **T** *Comment Status* **A**

SUPI is not supported as a physical interface by the standard.

SuggestedRemedy

Remove SUPI from the diagram. Replace PMA with LW4-PMA.

Proposed Response *Response Status* **C**

ACCEPT. See comment 1411

Cl **54** *SC* **54.2.3** *P* **414** *L* **24** # **1247**

Rich Taborek nSerial Corporation

Comment Type **T** *Comment Status* **R**

PMD_SIGNAL.indicate should support all 4 lanes for consistency with its PCS and MDIO.

SuggestedRemedy

Redefine PMD_SIGNAL.indicate as a vector PMD_SIGNAL.indicate<3:0>.

Proposed Response *Response Status* **Z**

REJECT.

Comment withdrawn

Cl **54** *SC* **54.3.1** *P* **415** *L* **15** # **793**

Booth, Brad Intel

Comment Type **E** *Comment Status* **A**

spelling error

SuggestedRemedy

change "instantation" to "instantiation"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **54** *SC* **54.4** *P* **417** *L* **6** # **54001**

Eric Grann

Comment Type **T** *Comment Status* **A**

The current passband specifications for each wavelength of the WWDM solution, as defined in Clause 54 Table 54-2, Table 54-4, Table 54-5, Table 54-8, and Table 54-9, is +5.7nm. This passband specification constrains both the transceiver manufacturers and the laser manufacturers. For a transceiver operating in a 0 to 70 degree C environment, the junction temperature of the laser can have a larger temperature range due to heating effects over time. These heating effects are due to several factors, some of which are electric power of the ACIS in the package at turn on and in a minimum and maximum condition, varying air flow, packaging variations, and average current changes on the laser. In a worst case condition, one might see an additional 20 degrees C of change in the laser junction temperature. The total worst case laser junction temperature delta could be as high as 90 degrees C. A survey of several laser manufacturers, both DFB and VCSEL manufacturers, indicates a worst case laser wavelength thermal drift of 0.09nm/oC. With a current passband spec of +5.7nm (11.4nm total width), the laser manufacturing tolerances are currently 11.4 - (90*0.09) = +1.65nm (3.3nm total). This manufacturing tolerance significantly reduces the fabrication yield. By relaxing this spec to 6nm, the VCSEL manufacturing yields can be almost doubled, and therefore almost halve the cost of the devices. A passband specification of +7.0nm (14nm total) would achieve these relaxed manufacturing tolerances, with minimal change and minimal complexity of the wavelength selecting filters within the demultiplexer of the transceiver.

SuggestedRemedy

Change the passband specification within Clause 54 Table 54-3, Table 54-5, Table 54-6, Table 54-9, and Table 54-10 to + 7.0nm.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Our current information is that the current draft is adequate. The suggested remedy may have technical problems. However, a group of interested participants has agreed to investigate the issue. The intent is to finish the investigation in March and make any necessary changes to the draft.

Cl **54** *SC* **54.5** *P* **417** *L* **26** # **785**

Furlong, Darrell R Aura Networks

Comment Type **E** *Comment Status* **A**

Number not in international format. Also line 27 and 40. Pg 419 line 48 Value "10,000" Pg 422 line 49 Value "10,000" Pg 431 line 14 Value "10,000"

SuggestedRemedy

Replace comma with a space.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **54** *SC* **54.6.1** *P* *L* # **1415**

David Dolfi Agilent Technologies

Comment Type **T** *Comment Status* **A**

For a WDM system, the center wavelength is not the best way to specify the wavelength channels. A better specification is the wavelength range of each channel.

SuggestedRemedy

I recommend replacing the Lane center wavelength specification with a wavelength range for each channel, defined consistently with the current center wavelength specification:

Lane L0: 1270.0 - 1281.4 nm
Lane L1: 1294.5 - 1305.9 nm
Lane L2: 1319.0 - 1330.4 nm
Lane L3: 1343.5 - 1354.9 nm

Proposed Response *Response Status* **C**

ACCEPT.

If wavelength changes in the future, the values can be updated att that time.

Cl **54** *SC* **54.6.1** *P* *L* # **1414**

David Dolfi — Agilent Technologies

Comment Type **T** *Comment Status* **A**

The current specification for transmit max RMS spectral width (Table 54-9) is not suitable for specifying the spectral distribution of sources with two discrete modes. In particular, this parameter is not an accurate way to characterize dispersion related penalties such as Mode Partition Noise. A different way of characterizing the spectral distribution is necessary. In order to enable a common measurement methodology for all source types, the spectral distributions for sources whose spectral distribution can be adequately described by an RMS spectral width should be specified in a way which is consistent with that of sources having two discrete modes. This should be consistent with the current RMS spectral width specification (0.62 nm).

SuggestedRemedy

I recommend replacing the current specification for RMS spectral width in Table 54-9 with the following specifications:

For sources with a distribution of two discrete modes:
Spectral window containing 90% of source spectral power (max): 1.0 nm
Spectral window containing 99% of source spectral power (max); 1.4 nm

For sources with a continuous spectral distribution:
Spectral window containing 90% of source spectral power (max): 2.0 nm
Spectral window containing 99% of source spectral power (max); 3.2 nm

The spectral window specifications for the continuous case is consistent with a Gaussian spectral distribution having an RMS spectral width of 0.62 nm.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Will add editor's note containing this proposal, after committee confirms methodology will move it into the text of the draft.

Cl **54** *SC* **54.6.1** *P* *L* **1** # **1063**

Doug Coleman — Corning

Comment Type **E** *Comment Status* **A**

Single-mode should be hyphenated.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **54** *SC* **54.6.4** *P* **422** *L* **28** # **1075**

Ali Ghiasi — Broadcom

Comment Type **T** *Comment Status* **R**

Table 54-8

TP4 DJ of 0.462 is very large especillay with added SJ.

SuggestedRemedy

TP3 to TP4 DJ is unreasonably high, suggest to reduce the total DJ at TP4 to <0.41 UI.

Proposed Response *Response Status* **C**

REJECT.

Any proposal to change the jitter values would require detailed experimental and theoretical data supporting the proposed change.

Cl **54** *SC* **54.7.4** *P* **425** *L* **28** # **1076**

Ali Ghiasi — Broadcom

Comment Type **T** *Comment Status* **R**

Table 54-12

TP4 DJ of 0.462 is very large especillay with added SJ.

SuggestedRemedy

TP3 to TP4 DJ is unreasonably high, suggest to reduce the total DJ at TP4 to <0.41 UI.

Proposed Response *Response Status* **C**

REJECT.

Any proposal to change the jitter values would require detailed experimental and theoretical data supporting the proposed change.

Cl **54** *SC* **54.8.1** *P* *L* # **1416**

David Dolfi
Agilent Technologies

Comment Type **T** *Comment Status* **A**

The Center wavelength and spectral width measurement methodology specified in this Subclause is not compatible with the proposed (Comment #2) redefinitions of spectral width.

SuggestedRemedy

I recommend that 54.8.1 be changed to read as follows:

"The Wavelength ranges and spectral windows of each wavelength lane are to be measured with an optical spectrum analyzer (OSA) over the wavelength range specified in Table 54-9. The optical spectrum analyzer should have a resolution bandwidth equal to the spectral window values for the particular source type as specified in Table 54-9. At the extremes of the channel wavelength range, The lane boundaries should coincide with the edge rather than the center of the spectral window of the OSA. The measurement shall be made with all channels modulated simultaneously, using valid 10GBASE-LX4/LW4 signals."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Will add editor's note containing this proposal, after committee confirms methodology will move it into the text of the draft.

Cl **54** *SC* **54.8.10** *P* *L* # **1418**

David Dolfi
Agilent Technologies

Comment Type **T** *Comment Status* **A**

The test set-up for producing the TP3 test conformance signal (Fig 54-7) is inappropriate for WWDM.

SuggestedRemedy

I recommend that the second paragraph of sub-Clause 54.8.10 and Figure 54-7 be replaced with the following:

"Figure 54-7 shows a possible test set up for producing the conformance test signal at TP3. The coaxial cable is adjusted in length to produce the correct DCD component of DJ. Since the coaxial cable can produce the incorrect ISI, a limiting amplifier is used to restore fast rise and fall times. A Bessel-Thompson filter is selected to produce the minimum ISI induced eye closure as specified per Figure 54-6. This conditioned signal is used to drive a high bandwidth, tunable, wavelength tunable source.

The Figure shows this function being performed by a cw tunable source in combination with an external optical modulator. However, any other method capable of this combined function will suffice. Similarly, the remaining sources must supply to their respective channels modulated signals at specific wavelengths, as specified in 54.xxx.yyy. This could be accomplished with tunable or fixed sources at the wavelengths required. The vertical and horizontal eye closures to be used for receiver conformance testing are verified using a fast phtotdetector and amplifier. The bandwidth of the phtotdetector shall be at least ___ GHz, and be coupled through a ___GHz fourth-order Bessel Thompson filter to the oscilloscope input. Special care should be taken to ensure that all the light from the fiber is collected by the fast photodetector and that there is negligible mode selective loss, especially in the optical attenuator.

The source for the channel under test shall be set to supply a signal at the output of the optical multiplexer which is at a -5 dB power level with respect to the other channels. Each channel is to be tested with its adjacent channels set at the near end of their wavelength range. This is to occur sequentially, as described in 54.xxx.yyy. The channel under test is to be tuned over its wavelength range during a given measurement to account for wavelength dependent losses within the channel."

Note: Figure 54-7 is contained in the file
http://www.ieee802.org/3/ae/comments/d2.0/dolfi_1_0101.pdf

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Will add editor's note containing this proposal, after committee confirms methodology will move it into the text of the draft. Remove extra "tunable"

Cl **54** SC **54.8.11** P L # **1420**
David Dolfi Agilent Technologies

Comment Type **T** *Comment Status* **A**

There is no wording in the current sub-Clause 54.8.11 which indicates how the 3 dB Electrical upper cutoff frequency is to be performed for a 4 channel WDM receiver. This test, unlike the other receiver tests, can be done individually on each channel without the other channels being on. This simply needs to be mentioned somewhere in the sub-Clause.

SuggestedRemedy

I recommend that the following sentences be added to the beginning of sub-Clause 54.8.11:

"The receiver cutoff frequency measurement shall be performed on each wavelength channel independently, with the other channels receiving no input signal, using a laser source with its output wavelength within the specified wavelength range of the channel to be tested."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change text to:

"The receiver cutoff frequency measurement shall be performed on each wavelength channel independently using a laser source with its output wavelength within the specified wavelength range of the channel to be tested."

Cl **54** SC **54.8.2** P L # **1417**
David Dolfi Agilent Technologies

Comment Type **T** *Comment Status* **A**

The measurement methodology for optical power is unspecified in the current draft.

SuggestedRemedy

I recommend that 54.8.2 read as follows:

"The absolute optical power shall be measured using the methods specified in TIA/EIA-455-95, with the addition of an optical spectrum analyzer (OSA) as an in-line monochrometer between the source and optical power meter. The test set-up is shown in Figure XXX below. The wavelength and resolution bandwidth setting of the OSA are to be the same as for the wavelength range/99% spectral window measurement outlined in 54.8.1. The optical insertion loss of the monochrometer is to be calibrated and factored out of the measurement, as specified in (Either some document or in an Appendix to this Clause). The measurement shall be made with all channels modulated simultaneously, using valid 10GBASE-LX4/LW4 signals."

Note: Figure XXX is contained in the file
http://www.ieee802.org/3/ae/comments/d2.0/dolfi_1_0101.pdf

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Will add editor's note containing this proposal, after committee confirms methodology will move it into the text of the draft.

Cl **54** SC **54-10** P L # **1065**
Doug Coleman Corning

Comment Type **T** *Comment Status* **A**

uW should be converted to dBm.

SuggestedRemedy

Continuity

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment 1064

Cl **54** SC **Fig 54-1** P **411** L **30** # **1410**
Booth, Brad Intel

Comment Type **T** *Comment Status* **A**

diagram is different than that used throughout the rest of the draft and should not show XAUI attachment directly to the PMD

SuggestedRemedy

make diagram consistent with other clauses and remove the XAUI-PMD attachment

Proposed Response *Response Status* **C**

ACCEPT.
See comment 1144

Cl **54** SC **Fig 54-2** P **412** L **5** # **1411**
Booth, Brad Intel

Comment Type **T** *Comment Status* **A**

diagram should be combined with figure 54-1 to make one diagram for the whole clause and SUPI doesn't exist

SuggestedRemedy

merge left side of diagram into figure 54-1, delete the right side and any reference to SUPI

Proposed Response *Response Status* **C**

ACCEPT.

Cl **54** *SC* **new** *P* *L* # **1419**

David Dolfi
Agilent Technologies

Comment Type **T** *Comment Status* **A**

A new sub-Clause to Clause 54 is necessary in order to describe the test suite for receiver testing. This includes jitter, receiver sensitivity testing, and any other tests which require the TP3 conformance test signal. It is NOT required for the 3 dB bandwidth measurement.

SuggestedRemedy

I recommend that the following sub-Clause be added to Clause 54:

54.xxx.yyy Receiver test suite for WDM conformance testing

"The receiver tests requiring the TP3 conformance test signal are performed on a per channel basis. This clause describes the conditions of the remaining channels during these tests. These channels shall be modulated simultaneously, using valid 10GBASE-LX4/LW4 signals. Basically, the channel directly adjacent to the channel under test will be wavelength tuned to the end of its wavelength range (consistent with its wavelength and spectral window specifications). In the case of the interior channels, which have two adjacent channels, each adjacent channel is tuned individually and receiver testing is done twice, once for each adjacent channel in proximity. The non-adjacent channels are to be tuned to the center of their respective wavelength ranges. These conditions are summarized graphically in Figure YYY below for each channel under test.

Note: Figure YYY is contained in the file
http://www.ieee802.org/3/ae/comments/d2.0/dolfi_1_0101.pdf

As noted, the two interior channels (L1, L2) require two different wavelength configurations since they have two adjacent channels. Therefore, there will be twice as many tests to perform on these channels as on exterior channels L0, L3."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **54** *SC* **Table 54-14** *P* *L* # **1066**

Doug Coleman
Corning

Comment Type **E** *Comment Status* **A**

Two 500 Mhz-m BW are used.

SuggestedRemedy

One should be removed as it looks as though it was left from the 802.3z Table.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **54** *SC* **Table 54-6** *P* *L* # **1064**

Doug Coleman
Corning

Comment Type **T** *Comment Status* **A**

uW should be converted to dBm.

SuggestedRemedy

This provides continuity between documents and between previous Tables.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Both microwatts and dBm will be used (global search for OMA parameters).

Coordinate with clause 52.