Cl **0** *SC* **0** *P* **0** *L* **0** # 341

Geoff Thompson GraCaSI S.A.

Comment Type **TR** *Comment Status* **R**

The capability to carry OAM information in addition to the 1Gb/s data is beyond and outside the scope of the project as defined in the PAR.

SuggestedRemedy

Modify the scope of the PAR to include this function and get it approved ASAP (i.e. by 12/2015) so this can not become an issue at Sponsor Ballot.

Response *Response Status* **W**

REJECT.

1000BASE-T1-specific Operations, Administration, and Maintenance (1000BASE-T1 OAM) link is critical for the proper operation of a 1000BASE-T1 link. The scope of the PAR already includes management aspects of the 1000BASE-T1 link.

Cl **00** *SC* **0** *P* *L* # 50

Anslow, Pete Ciena

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

Cross-references to items that are not included in the draft should be coloured forest green by applying the character tag "External" to the text.
Cross-references to items that are in the draft should work as links.

SuggestedRemedy

All instances of the following (except in the front matter) should be coloured forest green by applying the character tag "External" to the text:
"Clause 4"
"Clause 21"
"Clause 22"
"Clause 36"
"Clause 38"
"Clause 40"
"Clause 41"

The specific instances of the following should be coloured forest green by applying the character tag "External" to the text:
"Clause 28" in 98.5 (this is currently the wrong green).
"Clause 35" in 97.3.1
"Clause 37" in 34.1.2

All instances of the following should be cross-references (except in the front matter):
"Clause 45" (one instance in 98.3 is correct)
"Clause 78"

Response *Response Status* **C**

ACCEPT.

Cl **00** *SC* **0** *P* **1** *L* **1** # 28

Laubach, Mark Broadcom Corporation

Comment Type **ER** *Comment Status* **A** *EZ*

All dashes used as minus signs (including exponents, as we were told by P Anslow) need to be endash Ctrl+q Shift+p. Eg. the minus signs in Table 97-12 versus the ones in Eq 97-20 are different, the exponent in Eq 97-19 looks like a short dash, etc.

SuggestedRemedy

Find and fix all as appropriate in the draft.

Response *Response Status* **W**

ACCEPT.

Cl **00** *SC* **0** *P* **1** *L* **1** # 24

Laubach, Mark Broadcom Corporation

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

Am trying to find a clear statement in the draft supporting objective: "Define optional startup procedure which enables the time from power_on=FALSE to valid data to be less than 100ms"? Searching for "power_on", "100", or "optional startup procedure" did't find anything. Both PICS are not revealing on an optional startup procedure. I do see what appears to be a non-optional maxwait_timer and a value of 97.5 ms, and the paragraph text on page 100, line 29 and elsewhere. So I'm guessing that the 97.5 ms is intended to satisfy the < 100 ms in the objective. Where is the "optional" supported?.

SuggestedRemedy

Suggest stating clearly somewhere in the draft where there is support for the "optional startup procedure with the < 100 ms requirement" as stated in the objective or alternatively remove "optional" from the objective.

Response *Response Status* **C**

REJECT.

The time required to complete the startup procedure is indeed derived from the value of maxwait_timer, which is below 100ms, to address the objective. No change to text is required.

Cl **00** *SC* **0** *P* **1** *L* **17** # 64

Booth, Brad Microsoft

Comment Type **ER** *Comment Status* **R**

Use of twisted pair and twisted-pair should be made consistent with definitions in 1.4.396 and 1.4.397, respectively. The former is in reference to two wires that create a pair; whereas the latter refers to a cable.

FYI... it's either a twisted pair or a single twisted-pair cable... there is no such thing as a single twisted pair as that's implied.

As a side note, while single twisted-pair cable is the term used in the specification, wouldn't it be more accurate to call it one-pair twisted-pair cable?

SuggestedRemedy

Review the draft for text that uses "single balanced twisted-pair" and insert "cable" after twisted-pair.
Review the draft for "single twisted pair" or "single twisted-pair" and replace with "single twisted-pair cable".

Response *Response Status* **W**

REJECT.

Per discussion in TF, there are multiple different applications, in which 1000BASE-T1 will be operated over a pair of twisted wires, no exterior cable jacket will be present, especially in the middle of cable bundles. The requirement to include exterior cable jacket for all 1000BASE-T1 applications would increase the bundle size, which is highly undesirable.

Cl **00** *SC* **0** *P* **1** *L* **27** # 60

Booth, Brad Microsoft

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

Second sentence doesn't read correctly due to pluralization and missing words.

SuggestedRemedy

Change sentence to read:
This amendment adds a point-to-point 1 Gb/s Physical Layer (PHY) specification and management parameters for operation on a single balanced twisted-pair copper cable.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change sentence to read:
This amendment adds a point-to-point 1 Gb/s Physical Layer (PHY) specification and management parameters for operation on a single balanced twisted-pair.

Cl **00** *SC* **0** *P* **27** *L* **5** # 49

Anslow, Pete Ciena

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

For amended clauses, the usual practice is to include one of each level of heading above an amended subclause. Here, 30.3.2 and 30.3.2.1 are missing.

SuggestedRemedy

Add the headings for
30.3.2 and 30.3.2.1
30.5.1 and 30.5.1.1
30.6.1 and 30.6.1.1
35.1
78.1
78.1.3
78.1.3.3

Response *Response Status* **C**

ACCEPT.

Cl **00** *SC* **0** *P* **31** *L* **28** # 72

Remein, Duane Huawei

Comment Type **ER** *Comment Status* **R** *EZ*

The specific reference to automotive here is not needed and counterproductive. If I use this technology in a boat or a house or an airplane will it not work? is it non-compliant in these applications?
I suggest removing the term automotive where is is not essential to the meaning of the sentence.
Please note that there are several other instances of the word automotive in this draft which I agree are useful (for example where the text uses this term to delineate a uniquely harsh environment) and I am not suggesting removal of those.

SuggestedRemedy

Change the following locations:
Cl 34.1 pg 31 line 28 change:
“including the automotive link segment defined for 1000BASE-T1 PMD” to
“including Type A link segment defined for 1000BASE-T1 PMD

Cl 97.1 pg 57 line 17 change:
“referred to as an automotive link segment (Type A) or additional link segment (Type B),” to
“referred to as Type A or Type B link segments,”

Cl 97.1.2 pg 57 line 41 (to read "a link segment") change:
“a) An automotive link segment supporting up to four inline connectors using a single balanced twisted-pair for at least 15 meters (referred to as link segment type A)
b) An additional link segment supporting up to four inline connectors using a single balanced twisted-pair for at least 40 meters to support applications requiring additional physical reach, such as industrial and automation controls and transportation (aircraft, railway, bus and heavy trucks). This link segment is referred to as link segment type B.” to
“a) A Type A link segment supporting up to four inline connectors using a single balanced twisted-pair for at least 15 meters
b) A Type B link segment supporting up to four inline connectors using a single balanced twisted-pair for at least 40 meters to support applications requiring additional physical reach, such as industrial and automation controls and transportation (aircraft, railway, bus and heavy trucks).”

Cl 97.5.5 pg 114 line 38 change:
“a) An automotive link segment supporting up to four inline connectors using a single balanced twisted-pair for at least 15 m. This link segment is referred to as link segment type A
b) An additional link segment supporting up to four inline connectors using a single balanced twisted-pair for at least 40 m to support applications requiring additional physical reach, such as industrial and automation controls and transportation (aircraft, railway, bus and heavy trucks). This link segment is referred to as link segment type B.” to
“a) A Type A link segment supporting up to four inline connectors using a single balanced twisted-pair for at least 15 meters
b) A Type B link segment supporting up to four inline connectors using a single balanced twisted-pair for at least 40 meters to support applications requiring additional physical reach, such as industrial and automation controls and transportation (aircraft, railway, bus and heavy trucks).”
Cl 97B.1.1 pg 193 line 22 change:
“The automotive link segment test configurations …“ to
“The Type A link segment test configurations …“

In Cl 34.1 pg 31 line 27 strike "the automotive media" so the sentence reads: "There are a number of other PHY types and their associated media,
including 1000BASE-T1 which uses a single balanced twisted-pair."

Response *Response Status* **W**

REJECT.

The response to comment #36, D1.5 still holds (see http://www.ieee802.org/3/bp/comments/8023bp_D15_approved.pdf)

Cl **00** *SC* **0** *P* **57** *L* **52** # 96

Lusted, Kent Intel

Comment Type **ER** *Comment Status* **A** *EZ*

The draft uses the abbreviation "RS FEC" for Reed Solomon FEC. The correct abbreviation for Reed Solomon is "RS-FEC" per the base standard, Clause 1.5

The first instances is pg 57, line 52. Approximately 11 instances in the draft.

SuggestedRemedy

Change all instances of "RS FEC" to "RS-FEC"

Response *Response Status* **W**

ACCEPT.

Cl **00** *SC* **45.2.1** *P* **35** *L* **13** # 154

Grow, Robert RMG Consulting

Comment Type **ER** *Comment Status* **A** *EZ*

The change to the reserved row conflicts with changes made in P802.3bw (it is defining registers 1.2100 through 1.2102), P802.3bn (1.1900 through 1.1957), etc.

SuggestedRemedy

Indicate in the editing instruction that publication editor should adjust reserved register ranges to reflect registers defined by other approved amendments.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Change editorial instruction to read: "Change reserved register space (1.1809 through 1.32767) in Table 45-3 as shown below, with changes per P802.3bn and P802.3bw"

Update changes to Reserved rows in Table 45–3 to accommodate changes per P802.3bn and P802.3bw

Cl **01** *SC* **1.3** *P* **24** *L* **44** # 299

Scruton, Peter University of New Ham

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

Under ISO 11452 reference are comments enclosed in parenthesis: " (There are many parts to this. I did not list all the parts and dates.) ".

SuggestedRemedy

List sections as appropriate, or remove the aforementioned text.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See changes per comment #13.

Cl **01** *SC* **1.3** *P* **24** *L* **6** # 13

Carlson, Steven HSD

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

The references inserted in 1.3 are also inserted in P802.3bw, and are not needed. As P802.3bw will publish prior to P802.3bp, they will be added there.

SuggestedRemedy

Deleted the references inserted in 1.3

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Everything can be removed except IEC 62153-4-14:2012 as this reference is not part of IEEE P802.3bw

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

Carlson, Steven HSD

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

The abbreviation "EMC" is used in the draft but is not in 1.5.

SuggestedRemedy

Add to 1.5:

EMC electromagnetic compatibility

Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1.5** *P* **25** *L* **27** # 276

Zimmerman, George CME Consulting, Inc.

Comment Type **ER** *Comment Status* **A** *EZ*

802.3bq D2.2 already adds abbreviation ACRF:
ACRF Attenuation to Crosstalk Ratio - Far End

SuggestedRemedy

Coordinate with 802.3bq and consider expanding note in front matter to highlight possible overlap (this may be the only instance)

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Remove ACRF

Cl **30** *SC* **30.3.2.1.2** *P* **27** *L* **7** # 306

Law, David HP Ltd

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

The IEEE P802.3bw and IEEE P802.3by draft amendments, which may publish before this draft amendment, as well as IEEE P802.3bq and IEEE P802.3bn, are all modifying this subclause. This should be noted in the editing instructions. Suggest an editor's note be added stating that the editing instruction need to be updated once the publication order of the various amendments becomes settled.

SuggestedRemedy

[1] Suggest the editing instruction for 30.3.2.1.2 'aPhyType' and 30.3.2.1.3 'aPhyTypeList' be changed to read 'Insert the following new entry in "APPROPRIATE SYNTAX" (as modified by IEEE Std 802.3bw-201X, IEEE Std 802.3by-201X and TBD) after the entry for "1000BASE-T":'.

[2] Suggest the editing instruction for 30.5.1.1.2 'aMAUType' be changed to read 'Insert the following new entry in "APPROPRIATE SYNTAX" (as modified by IEEE Std 802.3bw-201X, IEEE Std 802.3by-201X and TBD) after the entry for "1000BASE-TFD":'.

[3] In each case add an editor's note that reads 'Editor's Note (to be removed prior to publication): The editing instruction need to be updated once the publication order of the various amendments becomes settled.'.

Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.5.1.1.4** *P* **27** *L* **26** # 317

Law, David HP Ltd

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

Subclause 30.5.1.1.4 'aMediaAvailable' states that 'Any MAU that implements management of Clause 28 or Clause 73 Auto-Negotiation will map remote fault indication to MediaAvailable "remote fault."'. Shouldn't this be updated to include Clause 98 Auto-Negotiation as well?

SuggestedRemedy

Suggest the following be added to the subclause 30.5.1.1.4:

Change the forth sentence of the third paragraph of "BEHAVIOUR DEFINED AS" (as modified by IEEE Std 802.3bw-201X, IEEE Std 802.3by-201X and TBD) as follows:

Any MAU that implements management of Clause 28<underscore>,</underscore><strikeout> or</strikeout> Clause 73<underscore> or Clause 98</underscore> Auto-Negotiation will map remote fault indication to MediaAvailable "remote fault."

Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.5.1.1.4** *P* **27** *L* **26** # 319

Law, David HP Ltd

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

The editing instructions in IEEE P802.3bw for subclause 30.5.1.1.4 aMediaAvailable 'Insert into the third paragraph in BEHAVIOUR DEFINED AS section of 30.5.1.1.4 after the second sentence as follows:' are identical to the editing instructions here, these instructions therefore need updated. In addition the IEEE P802.3by draft amendment, which may publish before this draft amendment, is also modifying this subclause. I've also submitted a comment on IEEE P802.3bq to modify this subclause. This should therefore be noted in the editing instructions, and an editor's note added stating that the editing instruction need to be updated once the publication order of the various amendments becomes settled.

SuggestedRemedy

[1] Change the editing instructions to read 'Insert the following new text into the third paragraph of "BEHAVIOUR DEFINED AS" (as modified by IEEE Std 802.3bw-201X, IEEE Std 802.3by-201X and TBD) after the third sentence inserted by IEEE Std 802.3bw:'

[2] Delete the text 'BEHAVIOUR DEFINED AS'.

[3] Add an editor's note that reads 'Editor's Note (to be removed prior to publication): The editing instruction need to be updated once the publication order of the various amendments becomes settled.'.

Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.6.1.1.5** *P* **27** *L* **48** # 320

Law, David HP Ltd

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

The IEEE P802.3by draft amendment, which may publish before this draft amendment, as well as IEEE P802.3bq draft amendment, are also modifying the "APPROPRIATE SYNTAX" of this subclause. This should be noted in the editing instructions, and an editor's note added stating that the editing instruction need to be updated once the publication order of the various amendments becomes settled.

IEEE P802.3by is adding two new enumeration, "RS-FEC25G Req" and "BASE-RFEC25G Req". Based on this the current editing instruction to insert the enumeration "Force MS" after the enumeration "FEC Requested" will place it in the middle of four FEC related enumerations which doesn't seem the best approach. Suggest the enumeration "Force MS" be placed after the new enumeration "BASE-RFEC25G Req".

SuggestedRemedy

Change the three subclause 30.6.1.1.5 editing instructions related to "APPROPRIATE SYNTAX" to read:

Insert the following new entry in "APPROPRIATE SYNTAX" (as modified by IEEE Std 802.3by-201X) after the entry for "1000BASE-TFD":

Change the following entry in "APPROPRIATE SYNTAX" (as modified by IEEE Std 802.3by-201X) as follows:

Insert the following new entry in "APPROPRIATE SYNTAX" (as modified by IEEE Std 802.3by-201X) after the entry for "BASE-RFEC25G Req" inserted by IEEE Std 802.3by-201X:

Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.6.1.1.5** *P* **27** *L* **48** # 307

Law, David HP Ltd

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

Suggest 'Force master slave as ...' should be changed to read 'Force MASTER-SLAVE as ...' to match the formatting used in referenced subclause 98.2.1.2.5.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.6.1.1.7** *P* **28** *L* **34** # 242

Hajduczenia, Marek Bright House Network

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

Missing "." before ";"

SuggestedRemedy

Add missing "." per comment

Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.6.1.1.9** *P* **29** *L* **3** # 243

Hajduczenia, Marek Bright House Network

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

Missing "." at the end of added sentence.

SuggestedRemedy

Add missing "." with underline (new text)

Response *Response Status* **C**

ACCEPT.

Cl **34** *SC* **34** *P* **31** *L* **1** # 43

Dawe, Piers Mellanox

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

"Introduction to 1000 Mb/s baseband network": just one network?

SuggestedRemedy

Introduction to 1000 Mb/s baseband networks (with an s)

Response *Response Status* **C**

REJECT.

Title is consistent with 802.3-2012/2015 versions. Please submit a maintenance request against the base standard.

Cl **34** *SC* **34.1** *P* **31** *L* **14** # 155
Grow, Robert RMG Consulting

Comment Type **TR** *Comment Status* **A** *Changes to 34.1; EZ*

This change also is not appropriate for inclusion in the draft. Please do not start another port type list that projects will need to come back and edit because you want to list 1000BASE-T1, and then subsequent projects will similarly then feel obligated to add to (e.g., P802.3bv). Adding applications to the introduction will similarly cause one more thing that might cause other projects to add their applicatons because this introduced a specific application. The edits also make the statement read as untrue because of adding the port type list. 1000BASE-T1 does not deliver similar topologies as those specifed for 100BASE-T. Link length is a big part of topology and 100BASE-FX, 100BASE-TX and 100BASE-T4 all support at least 100m.

SuggestedRemedy

Remove edit to paragraph. Also edit or remove the editing instruction as appropriate for other comments being accepted.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Change
Change the second and third paragraph of 34.1, adding references to 1000BASE-T1 PHY
to
Change the second paragraph of 34.1, adding references to 1000BASE-T1 PHY

Remove second para altogether (lines 11-19)

Cl **34** *SC* **34.1** *P* **31** *L* **15** # 108
Effenberger, Frank Huawei Technologies

Comment Type **E** *Comment Status* **A** *EZ; Changes to 34.1*

The word "automotive" is used twice on this page (line 15 and line 28). This looks out of place. The link being described is 1000Base-T1 - it could be used for any suitable application.

SuggestedRemedy

Suggest deleting "automotive" from the two places on this page. The text still reads correctly, and it eliminates the unnecessary limitation of application.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See changes per comment #155
See comment #72

Cl **34** *SC* **34.1** *P* **31** *L* **15** # 308
Law, David HP Ltd

Comment Type **E** *Comment Status* **A** *EZ; Changes to 34.1*

Suggest that '1000BASE-T1 PMD' should be changed to read just '1000BASE-T1' (see line 9 and 28).

SuggestedRemedy

Change the text '... link segment defined for 1000BASE-T1 PMD.' to read '... link segment defined for 1000BASE-T1.'.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See changes per comment #155

Cl **34** *SC* **34.1** *P* **31** *L* **16** # 280
Zimmerman, George CME Consulting, Inc.

Comment Type **T** *Comment Status* **A** *Changes to 34.1; EZ*

1000BASE-T1 is more than just a PMD. It includes a PCS and PMA as well. In similar references, other BASE-T PHYs are referenced just by the PHY type, not a specific sublayer

SuggestedRemedy

Change "including the automotive link segment defined for 1000BASE-T1 PMD"
to "including the automotive link segment defined for 1000BASE-T1 in Clause 97"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See changes per comment #155

Cl **34** *SC* **34.1** *P* **31** *L* **7** # 151
Grow, Robert RMG Consulting

Comment Type **ER** *Comment Status* **A** *Changes to 34.1; EZ*

Clause 34 base text has been changed by P802.3bx. Changes to the second paragraph are not appropriate.

SuggestedRemedy

Remove change to second paragraph and correct editing instruction.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Remove editing instruction in line 5 and text in lines 7-8. Leave 34.1 header with title

See also comment #155

Cl **34** *SC* **34.1** *P* **31** *L* **8** # 314

Law, David HP Ltd

Comment Type **ER** *Comment Status* **A** *Changes to 34.1; EZ*

The base text shown here appears to be from IEEE Std 802.3-2012. In IEEE P802.3 (IEEE 802.3bx) draft D3.2 the second paragraph has been rewritten and now reads 'The Gigabit Ethernet MAC layer interface connects through a Gigabit Media Independent Interface layer to Physical Layer entities (PHY sublayers). The set of PHY sublayer specifications include operation over multiple media (e.g., copper cables, fiber optic cables and backplanes).'

SuggestedRemedy

Based on the rewritten, more generic, text found in IEEE P802.3 (IEEE 802.3bx) draft D3.2 the suggest change does not work, and I don't think necessary anymore. Instead the second paragraph of subclause 34.1 should be deleted from this draft.

Response *Response Status* **W**

ACCEPT.

See changes per comment #151

Cl **34** *SC* **34.1.2** *P* **31** *L* **20** # 152

Grow, Robert RMG Consulting

Comment Type **ER** *Comment Status* **A** *Changes to 34.1.2; EZ*

Clause 34 base text has been changed by P802.3bx. This change is no longer appropriate nor desirable.

SuggestedRemedy

Delete the complete change (subclause title, editing instruction and changed paragraph).

Response *Response Status* **W**

ACCEPT.

Cl **34** *SC* **34.1.2** *P* **31** *L* **24** # 313

Law, David HP Ltd

Comment Type **ER** *Comment Status* **A** *Changes to 34.1.2; EZ*

The base text shown here appears to be from IEEE Std 802.3-2012. In IEEE P802.3 (IEEE 802.3bx) draft D3.2 this paragraph has been rewritten and now reads 'Various clauses of this standard comprise a family of Physical Layer implementations for operation at 1000 Mb/s. Each PHY type includes specifications for encoding and decoding of information, and how those encoded data are transmitted on the supported transmission medium or media. These PHY types may share some PHY sublayer components and signaling methods, or may use signaling methods specific to the supported media and applications.'.

SuggestedRemedy

Based on the rewritten, more generic, text found in IEEE P802.3 (IEEE 802.3bx) draft D3.2 I don't think the suggested additional text is necessary. Instead subclause 34.1.2 'Physical Layer signaling systems' should be deleted from this draft.

Response *Response Status* **W**

ACCEPT.

See also comment #152

Cl **34** *SC* **34.1.2** *P* **31** *L* **28** # 266

Zimmerman, George CME Consulting, Inc.

Comment Type **E** *Comment Status* **A** *EZ; Changes to 34.1.2*

"There are a number of other PHY types and their associated media,
including the automotive media 1000BASE-T1 which uses a single balanced twisted-pair."
reads strange, as though 1000BASE-T1 is the media.

SuggestedRemedy

Delete inserted text on line 28'including...-pair."
Insert new sentence on line 27, after "multimode fibers." and before "There are":
"1000BASE-T1 uses an automotive media consisting of a single balanced twisted-pair."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See changes per comment #152

Cl **34** *SC* **34.1.3** *P* **31** *L* **29** # 312
Law, David HP Ltd

Comment Type **ER** *Comment Status* **A** *Changes to 34.1.3; EZ*

The base text shown here appears to be from IEEE Std 802.3-2012. IEEE P802.3 (IEEE 802.3bx) draft D3.2 however includes the text 'Some Gigabit Ethernet PHY types only support full duplex operation. Topologies composed of full duplex only devices do not allow repeaters.' at the end of the paragraph. Based on this the change shown here is not required.

SuggestedRemedy

Delete subclause 34.1.3 'Repeater' from this draft.

Response *Response Status* **W**

ACCEPT.

Cl **34** *SC* **34.1.3** *P* **31** *L* **30** # 153
Grow, Robert RMG Consulting

Comment Type **ER** *Comment Status* **A** *Changes to 34.1.3; EZ*

Clause 34 base text has been changed by P802.3bx. The new P802.3/D2.2 text includes the sentence: "Topologies composed of full duplex only devices do not allow repeaters." The change to add the proposed sentence is not needed, nor is adding a port type list desirable.

SuggestedRemedy

Delete the complete change (subclause title, editing instruction and changed paragraph).

Response *Response Status* **W**

ACCEPT.

See also comment #312

Cl **35** *SC* **35.1.1** *P* **33** *L* **20** # 67
Booth, Brad Microsoft

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

Adding Clause 97 to this statement is incorrect. Item g) is indicating that the number of signals associated with the GMII is similar to the number of signals used in the PMA service interface defined in Clause 36 which can physically be instantiated as TBI (ten bit interface). The same statement is not true for Clause 40 or Clause 97.

SuggestedRemedy

Delete Clause 35 and associated edits from the draft.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45** *P* **35** *L* **1** # 260
Hajduczenia, Marek Bright House Network

Comment Type **TR** *Comment Status* **A**

CLause 45 is missing PICS

SuggestedRemedy

Use PICS per PICS-for-Clause-45.pdf

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1** *P* **35** *L* **13** # 321
Law, David HP Ltd

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

The IEEE P802.3bw draft amendment, which may publish before this draft amendment, as well as the P802.3bn draft amendment, both modify Table 45-3 and the Table in this draft does not reflect the changes made in IEEE P802.3bw.

SuggestedRemedy

[1] Change the editing instructions to read "Change reserved register space (as modified by IEEE Std 802.3by-201X) in Table 45-3 as shown below (unchanged rows not shown):

[2] Add an editor's note that reads 'Editor's Note (to be removed prior to publication): The editing instruction need to be updated once the publication order of the various amendments becomes settled.'.

[3] Change the 'Register address' column of the first row of the Table 45-3 to read '1.2103 through 1. <strikeout>32767</strikeout><underscore>2303</underscore>'

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1** *P* **35** *L* **25** # 244
Hajduczenia, Marek Bright House Network

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

Register 1.18 was taken verbatim from P802.3bw D3.0

SuggestedRemedy

Change "P802.3bw D1.4" to "P802.3bw" globally in the whole draft (2 instances) - we are referencing the latest version of P802.3bw draft.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1** *P* **35** *L* **7** # 309
Law, David HP Ltd

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

Please format editing instructions in bold italic here, and throughout the draft.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.130.a3** *P* **36** *L* **43** # 267
Zimmerman, George CME Consulting, Inc.

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

low-power mode is hyphenated inconsistently (missing hyphen in line 43"

"This action may also initiate a >>low power mode<< in any other..."

also on line 52, same page.

SuggestedRemedy

replace "low power" with "low-power"

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.130.a3** *P* **36** *L* **44** # 283
Zimmerman, George CME Consulting, Inc.

Comment Type **TR** *Comment Status* **D**

Low-power mode isn't well defined. Missing entirely from clause 97, it is described only in the management bit, and that it requires only that the PHY respond to transactions to exit it. Exit WHAT? most 'low power' modes are defined at least by an absence of transmit signal on the line.
Also, definition states that "The behavior of the 1000BASE-T1 PMA/PMD in transition to and from the low-power mode is implementation specific and any interface signals should not be relied upon."

If you don't know anything about the mode, it is impossible to tell when the device is "in transition" and therefore you can't rely on the interface signals. Some description or limits on transition time are needed to make this statement meaningful.

SuggestedRemedy

Add requirement on the maximum transition time to and from low-power mode to Clause 97, and consider some minimal functional description of low-power mode, such as a requirement on the maximum power at the MDI while in low-power mode.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **45** *SC* **45.2.1.130a** *P* **35** *L* **46** # 53
Anslow, Pete Ciena

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

There is no editing instruction associated with 45.2.1.130a.
As it is defining register 1.2304 it should appear in the draft after 45.2.1.131 which is for register 1.2100. This means that the subclause should be 45.2.1.133 and the table should be 45-98c.

Same issues for 45.2.1.130b through 45.2.1.130e.

SuggestedRemedy

Move 45.2.1.130a through 45.2.1.130e to be after 45.2.1.131 in the draft.
Since they will then be the highest numbered subclauses in 45.2.1, they should be numbered 45.2.1.133 through 45.2.1.137. Renumber tables 45-98a through 45-98e to be 45-98c through 45-98g (as tables 45-98a and 45-98b have been inserted by P802.3bw).
Precede them with the editing instruction:
"Insert 45.2.1.133 through 45.2.1.137 after 45.2.1.132 (as inserted by IEEE Std 802.3bw-201x) as follows:"

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.130a.1** *P* **36** *L* **27** # 75
Remein, Duane Huawei

Comment Type **TR** *Comment Status* **A**

If bit 1.2304.15 is indeed a copy of 1.0.15 then it should display identical functionality.

SuggestedRemedy

Change sentence at line 27 to read "During a reset, the 1000BASE-T1 PMD/PMA shall respond to reads from register bits 1.2304.15, 1.8.15:14, and 1.0.15."

Add change instruction to 45.2.1.1.1 Reset (1.0.15) as follows:
"Change the last 2 sentences of the first paragraph of 45.2.1.1.1 to read as follows:
During a reset, a PMD/PMA shall respond to reads from register bits 1.0.15, 1.8.15:14, and 1.2304.15. All other register bits should be ignored."
Use appropriate mark up text for changed sentence. Original wording (per 802.3bx D3.2) is: "During a reset, a PMD/PMA shall respond to reads from register bits 1.0.15 and 1.8.15:14. All other register bits should be ignored."

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Change sentence at line 27 to read "During a reset, the 1000BASE-T1 PMD/PMA shall respond to reads from register bits 1.2304.15, 1.8.15:14, and 1.0.15."

Update PICS as needed.

No changes needed in 45.2.1.1.1

Cl **45** *SC* **45.2.1.130a.3** *P* **36** *L* **40** # 71
Remein, Duane Huawei

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

Opening this para (that describes bit 1.2304.11) with a description about bit 1.2305.8 is a bit confusing. The comment about bit 1.2305.8 is not needed in any case as it is well described on the next page.

SuggestedRemedy

Strike the sentence "The ability of 1000BASE-T1 PMA/PMD to support a low-power mode is indicated by register bit 1.2305.8."

Response *Response Status* **C**

ACCEPT.

This is really a technical comment.

Cl **45** *SC* **45.2.1.130b** *P* **37** *L* **27** # 300
Scruton, Peter University of New Ham

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

Table 35-98b, Item 1.2305.0, column R/W indicates LH behavior while 45.2.1.130b.7 Receive link status (1.2305.0)
Indicates "The receive link status bit shall be implemented with latching low behavior."

SuggestedRemedy

Correct Table to indicate LL.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.130b.1** *P* **37** *L* **35** # 281
Zimmerman, George CME Consulting, Inc.

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

OAM could use more explanation here - perhaps a reference to where it is defined?

SuggestedRemedy

Add "See Clause 97.7 for further details on OAM." to the end of line 35.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add "(see 97.7)" at the end of line 35. Make the link live.

Cl **45** *SC* **45.2.1.130b.4** *P* **37** *L* **52** # 76
Remein, Duane Huawei

Comment Type **TR** *Comment Status* **A**

This statement
"If the 1000BASE-T1 PMA/PMD supports the low-power feature, then it is controlled using bit 1.2304.11."
directly contradicts cl 45.2.1.130a.3 Low power (1.2304.11) which clearly states: "Bit 1.2304.11 is a copy of 1.0.11. Setting either bit shall put the 1000BASE-T1 PMA/PMD in low power mode."

SuggestedRemedy

Change the statement to read:
"If the 1000BASE-T1 PMA/PMD supports the low-power feature, then it is controlled using either bit 1.2304.11 or bit 1.0.11."

Response *Response Status* **W**

ACCEPT.

Cl **45** *SC* **45.2.1.131** *P* **40** *L* **17** # 55

Anslow, Pete Ciena

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

As there is a change to the title of 45.2.1.131, the editing instruction is in the correct place (before the title).
The editing instruction:
"Change definition of Register 1.2100 (P802.3bw D1.4) as shown below"
should be changed to:
"Change the title and content of 45.2.1.131 (as added by IEEE Std 802.3bw-201x) as follows:"

SuggestedRemedy

Change the editing instruction:
"Change definition of Register 1.2100 (P802.3bw D1.4) as shown below"
to:
"Change the title and content of 45.2.1.131 (as added by IEEE Std 802.3bw-201x) as follows:"

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.131** *P* **40** *L* **19** # 277

Zimmerman, George CME Consulting, Inc.

Comment Type **ER** *Comment Status* **A** *EZ*

making the generic "BASE-T1" makes sense, but it is not a defined term, and it is not referenced to 100BASE-T1 and 1000BASE-T1 PHYs in this subclause.

Since the term is also used in connection with "BASE-T1 Auto-Neg" and the "BASE-T1 PMA/PMD Extended abilities register", a definition in clause 1.4 is the preferred solution.

SuggestedRemedy

Add the generic BASE-T1 to the definitions list:
BASE-T1 PHYs that belong to the set of specific Ethernet PCS/PMA/PMDs which operate on a single twisted-pair medium, including 100BASE-T1 and 1000BASE-T1. (See IEEE Std 802.3, Clause 96 and Clause 97).

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Clause 45 is not the right place to locate such definitions. Suggest to include this definition in subclause 1.4 (appropriately numbered).

Alignment for cable naming terminology might be needed, per separate comments.

Cl **45** *SC* **45.2.1.131** *P* **40** *L* **27** # 302

Scruton, Peter University of New Ham

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

Table 45–98a has two instances of "RW" instead of "R/W".

SuggestedRemedy

Change the two instances of "RW" to "R/W".

Response *Response Status* **C**

ACCEPT.

Confirm whether the issue is present in the latest draft of P802.3bw as well.

Cl **45** *SC* **45.2.1.14a** *P* **35** *L* **25** # 149

Grow, Robert RMG Consulting

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

Base text is consistent with P802.3bw/D3.3.

SuggestedRemedy

Update source of text to D3.3.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.14b** *P* **35** *L* **25** # 73
Remein, Duane Huawei

Comment Type **ER** *Comment Status* **R**

You cannot change an in-process draft (but I'm sympathetic with what your trying to do)

This same issue exists on pg 40 line 16 (before 45.2.1.131)

SuggestedRemedy

Add editors note just below the editing instruction at pg 35 ln 25 to read:
EDITORS NOTE (to be removed prior to publication) the editing instruction regarding register 1.18 is to be updated once P802.3bw work is complete.

Add editors note just below the editing instruction at pg 40 ln 16 to read:
EDITORS NOTE (to be removed prior to publication) the editing instruction regarding register 1.2100 is to be updated once P802.3bw work is complete.

Response *Response Status* **W**

REJECT.

By the time this project is done, P802.3bw becomes a published amendment and changes to its text are more than allowed. This project is just doing them ahead of time.

See also comment #311.

Cl **45** *SC* **45.2.1.14b** *P* **35** *L* **25** # 310
Law, David HP Ltd

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

Please place editing instructions after the subclause heading of the subclause to which they apply, here, and throughout the draft.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.14b** *P* **35** *L* **25** # 52
Anslow, Pete Ciena

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

The numbering of 45.2.1.14b and the associated table has changed in the latest P802.3bw draft (D3.2).

SuggestedRemedy

Change 45.2.1.14b to 45.2.1.14a and change Table 16a to Table 17a

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.14b** *P* **35** *L* **25** # 311
Law, David HP Ltd

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

Suggest the editing instructions should read "Change subclause 45.2.1.14b, inserted by IEEE Std 802.3bw-201X, as follows'.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.14b** *P* **35** *L* **26** # 51
Anslow, Pete Ciena

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

As there is no change to the title or text of 45.2.1.14b:
the title for 45.2.1.14b should come first, then the editing instruction.
"Change register 1.18 defined in P802.3bw D1.4 as shown below"
should be changed to:
"Change Table 45-16a (as added by IEEE Std 802.3bw-201x) as follows:"
remove the text and leave the changed table.
Note: another comment changes the numbering of these items.

SuggestedRemedy

As comment.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.6.3** *P* **35** *L* **24** # 156

Grow, Robert RMG Consulting

Comment Type **TR** *Comment Status* **A**

1000BASE-T should define a value in Register 1.7.5:0 in Table 45-7. P802.3bw is defining the value 111101; and P802.3bv is defining 110101; and P802.3bn is defining 110010 and 110011.

SuggestedRemedy

Together, the three amendments are creating a quite sparse matrix, which could challenge 802.3bs for contiguous values so I would recommend using one adjacent to one of the proposed definitions either P802.3bw or P802.3bv. Because of the number of parallel projects, I left fixing the reserved values to the publication editor with an instruction to do that in the editing instruction. Another approach would be to simply list the 16 values opened up by P802.3bw individually, then subsequent projects could simply reference the value to be changed in the change instruction.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Incorporate Table 45-7 from 802.3bw. Add editorial instruction to modify changes introduced in 802.3bw-201X.

Redefine name associated with 111101 from "100BASE-T1 PMA/PMD" to "BASE-T1 PMA/PMD".
Add a note to 111101 value: "If BASE-T1 is selected, look at register 1.2100.3:0 to differentiate which BASE-T1 PMA/PMD was selected."

Cl **45** *SC* **45.2.131.1** *P* **40** *L* **44** # 58

Lo, William Marvell Semiconducto

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

If Auto-Negotiation is implemented then bit 1.2100.15 has no meaning.
Need to add some text.

SuggestedRemedy

Note: 802.3bw removed the phrase in lines 44 and 45
"In that case, bit 1.2100.14 is used to determine if the PMA/PMD operates as MASTER or SLAVE."
It should be removed in 802.3bp as well.

Add the following sentence:
Bit 1.2100.15 is ignored if the Auto-Negotiation function is implemented.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

802.3bw removed the phrase in lines 44 and 45. Strike the phrase: "In that case, bit 1.2100.14 is used to determine if the PMA/PMD operates as MASTER or SLAVE."

Add the following sentence:
Bit 1.2100.15 is ignored if the Auto-Negotiation function is implemented.

Cl **45** *SC* **45.2.3.50a.1** *P* **42** *L* **6** # 78

Remein, Duane Huawei

Comment Type **TR** *Comment Status* **A**

If bit 3.2304.15 is indeed a copy of 3.0.15 then it should display identical functionality.

SuggestedRemedy

Change sentence at line 6 to read "During a reset, a PCS shall respond to reads from register bits 3.0.15, 3.8.15:14, and 3.2304.15."

Add change instruction to 45.2.3.1.1 Reset (3.0.15) as follows:
"Change the last 2 sentences of the first paragraph of 45.2.3.1.1 to read as follows:
During a reset, the 1000BASE-T1 PCS shall respond to reads from register bits 3.0.15, 3.8.15:14, and 3.2304.15. All other register bits should be ignored."
Use appropriate mark up text for changed sentence. Original wording (per 802.3bx D3.2) is: "During a reset, a PCS shall respond to reads from register bits 3.0.15 and 3.8.15:14."

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Change sentence at line 6 to read "During a reset, a PCS shall respond to reads from register bits 3.0.15, 3.8.15:14, and 3.2304.15."

Update PICS as needed.

No changes needed to 45.2.3.1.1 - this project does not change behavior of legacy devices.

Cl **45** *SC* **45.2.3.50b.6** *P* **43** *L* **35** # 77

Remein, Duane Huawei

Comment Type **TR** *Comment Status* **R**

Given that bit 3.2305.2 is a latching low bit you cannot say that "When read as a zero, bit 3.2305.2 indicates that the BASE-T1 PCS receive link is down." As it may currently be in the link up state. The instantaneous status, for which this discription would be correct, is bit 3.2306.10.

SuggestedRemedy

Change to read:
"When read as a zero, bit 3.2305.2 indicates that the BASE-T1 PCS receive link was down since the last time this register was read."

Response *Response Status* **W**

REJECT.

See response to #41 against D1.5:
http://www.ieee802.org/3/bp/comments/8023bp_D15_approved.pdf

Cl **45** *SC* **45.2.3.50c** *P* **44** *L* **12** # 301

Scruton, Peter University of New Ham

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

According to Table 45-163c Item "3.2306.7 (Latched high BER)" is LL. This appears to be a typo, as both the name and subclause 45.2.3.50c.4 Latched high BER (3.2306.7) indicate LH.

SuggestedRemedy

Correct table.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "RO/LL" to "RO/LH" for register 3.2306.7. Add definition of LH under the table

Cl **45** *SC* **45.2.3.50c.6** *P* **45** *L* **50** # 70

Remein, Duane Huawei

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

Typically in Cl 45 the bit(s) being described are referenced by number not name. In either case they should never be referred to solely as "This bit" (or some like phrase) before the explicit reference.

SuggestedRemedy

Change:
Cl 45.2.3.50d.2 Pg 45 line 50 from
"This bit should be read and recorded prior to setting 3.2308.15 to 1." to
"Bit 3.2308.14 should be read and recorded prior to setting 3.2308.15 to 1."

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.50d.7** *P* **46** *L* **25** # 57
Lo, William Marvell Semiconducto

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

Get rid of extra sentence to avoid mis-interpretation.
A similar loopback statement was deleted in 45.2.3.50d.6 in the previous round.

SuggestedRemedy

Delete
"The loopback value should be received after a small delay."

Response *Response Status* **C**

ACCEPT.

Update PICS as needed!

This is a technical comment!

Cl **45** *SC* **45.2.3.50f** *P* **45** *L* **29** # 14
Carlson, Steven HSD

Comment Type **ER** *Comment Status* **A** *EZ*

While the phrase "PHY link is dying" is certainly colorful and descriptive, it is used nowhere else in 802.3 (that I can find.) This phrase is used in six other places in the document.

SuggestedRemedy

Replace "PHY link is dying" with "PHY link is failing" for each occurance.

Response *Response Status* **W**

ACCEPT.

Cl **45** *SC* **45.2.7.14e** *P* **52** *L* **30** # 35
McClellan, Brett Marvell

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

Inconsistent name used for this register. "LD" is unnecessary and used in only one location.

SuggestedRemedy

change "AN LD Next Page" to "AN Next Page"

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.7.14f** *P* **53** *L* **11** # 32
McClellan, Brett Marvell

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

typo "Next age"

SuggestedRemedy

change "Next age" to "Next Page"

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.1.3.3.1** *P* **54** *L* **11** # 150
Grow, Robert RMG Consulting

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

Might be better to make the editing instruction an Insert rather than a Change as often the change instruction is implemented by simply replacing the Table when merging amendments for the next 802.3 revision, potentially losing other edits to the table.

SuggestedRemedy

Modify the editing instruction to be an Insert, and only show Table 78-1 row to be inserted. Similar for Table 78-2 and Table 78-4 "additions".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See changes per comment #228

Cl **78** *SC* **78.1.3.3.1** *P* **54** *L* **11** # 227
Hajduczenia, Marek Bright House Network

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

Unnecessary "." at the end of editorial instruction

SuggestedRemedy

Remove "." at the end of the editorial instruction. Scrub all editorial instructions in the draft.

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.1.3.3.1** *P* **54** *L* **11** # 228
Hajduczenia, Marek Bright House Network

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

No need to show the whole table when we're just inserting a new row.

SuggestedRemedy

Change "Change Table 78-1, adding references to 1000BASE-T1 PHY and Clause 97 after 1000BASE-T:" to "Change Table 78-1, adding the following new row between 1000BASE-T and XGXS (XAUI):"

Change Table 78-1 to contain just 4 rows:
row 1: header
row 2: row with "..."
row 3: new row for 1000BASE-T1
row 4: row with "..."

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.1.3.3.1** *P* **54** *L* **23** # 54
Anslow, Pete Ciena

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

In Table 78-1, cross-references to items that are not included in the draft should be coloured forest green by applying the character tag "External" to the text.
Cross-references to items that are in the draft should work as links.

The easiest thing to do here is to only show the added row by changing the editing instruction to:
Insert a new row for 1000BASE-T1 after the row for 1000BASE-T in Table 78-1 as follows (unchanged rows not shown):

SuggestedRemedy

In the right hand column of Table 78-1 apply the character tag "External" to all the clause numbers except for "97" which should be a cross-reference.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See also changes per comment #228. Once that is done, there will be no external refences.

Cl **78** *SC* **78.1.3.3.1** *P* **54** *L* **23** # 25
Laubach, Mark Broadcom Corporation

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

"97" needs to be a cross reference.

SuggestedRemedy

As per comment.

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.1.3.3.1** *P* **54** *L* **7** # 226
Hajduczenia, Marek Bright House Network

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

With the new insertion, "10GBASE-T" name gets broken across lines.

SuggestedRemedy

Insert forced line break before "10GBASE-T" or make sure that FrameMaker does not break lines on "-" character

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.1.3.3.1** *P* **54** *L* **9** # 122
Regev, Alon Ixia

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

"signalled" should be "signaled"

SuggestedRemedy

change
"signalled"
to
"signaled"

Response *Response Status* **C**

REJECT.

We are consistently incosnistent in the case 802.3 spec. Suggest to leave as is.

Cl **78** *SC* **78.1.3.3.1** *P* **55** *L* **54** # 284

Zimmerman, George CME Consulting, Inc.

Comment Type **TR** *Comment Status* **A**

Table 78-4
It is very unusual, if not suspect that T_phy_shrink_rx and T_w_sys_rx are both zero for 1000BASE-T1. It would be the ONLY phy that this is the case for, and, it is unlikely that at least in the case of T_w_sys_rx the minimum system wake time to be ready for data is zero.
At the very least, this difference from all other PHYs deserves a note.

SuggestedRemedy

Add a note to Table 78-4 explaining why 1000BASE-T1 is different from all other PHYs

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

The values in this table were examined and reviewed by TF several times and found to be technically correct.

Add a note attached to 0s in Tphy_shrink_rx and Tw_sys_rx columns with the following text: "All data transmission in 1000BASE-T1 PHY is synchronized to the RS frame boundary. As such, the EEE function in the 1000BASE-T1 PHY is expected to assert the wake signal only at specific moments of time, aligned to RS frame boundaries, and no shrinkage or delay at the RX side is expected."

Cl **78** *SC* **78.1.3.3.1** *P* **55** *L* **6** # 229

Hajduczenia, Marek Bright House Network

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

No need to show the whole table when we're just inserting a new row.

SuggestedRemedy

Change "Change Table 78-2, adding parameters specific to 1000BASE-T1 PHY:" to "Change Table 78-2, adding the following new row between 1000BASE-T and XGXS (XAUI):"

Change Table 78-2 to contain just 4 rows:
row 1: header
row 2: row with "..."
row 3: new row for 1000BASE-T1
row 4: row with "..."

Similar change to Table 78-4 and associated editorial instruction on page 55, line 39

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **1.2** *P* **57** *L* **41** # 47

Kolesar, Paul CommScope

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

This comment addresses a global terminology problem with the use of the word connectors. It is misused in several instances to describe connections consistent with the definition of connection in Webster's dictionary. Webster defines connection as the state of being connected. Webster Ninth New Collegiate Dictionary offers no similar definition for the word connector. Synonyms include continuity. Within the context of electrical engneering, a connector is a device that attaches to a conductor or group of conductors. Generally it takes two connectors, each attached to their own conductors, to facilitate a connection between the conductors. The point of this comment is that what is formed, and what is attempting to be conveyed in the sentence under comment, are connections not connectors. While this misuse of terminology seems prevalent in some circles, it is nonetheless incorrect and should not be perpetuated.

SuggestedRemedy

Change "connectors" to "connections" to read: "... up to four inline connections ...". Apply this change globally. Instances can be found on:
p 57, line 43; p 114, lines 38 and 40; p 115, line 8; p 118, line 24; p 193, lines 12, 28, 42, 49.

Response *Response Status* **C**

REJECT.

P802.3bw uses the term "connectors" without any issues.

This is really a technical comment!

Cl **97** *SC* **5** *P* **110** *L* # 114

Klempa, Michael UNH IOL

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

Figure 97-24 is in color. Also, Annex 97A has many figures that are in color.

SuggestedRemedy

Turn them into black and white.

Response *Response Status* **C**

REJECT.

The use of color is allowed, as long as we do not rely on color for identification of specific features (e.g., lines) and the use of color does not impede readability.

Cl **97** *SC* **5.5.1.4** *P* **116** *L* **23** # 363

Klaus, Andrew JASPAR

Comment Type **T** *Comment Status* **A** *late-non-voter; EZ*

Frequency is shown as "Frequency (GHz)". The correct text is "Frequency (MHz)".

SuggestedRemedy

Change "Frequency (GHz)" to "Frequency (MHz)".

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97..7** *P* **126** *L* **43** # 330

Geoff Thompson GraCaSI S.A.

Comment Type **ER** *Comment Status* **A**

The text: "The OAM information is exchanged in-band between
two PHYs without using any of the normal data bandwidth." is less than fully forthcoming.

SuggestedRemedy

Change the text to read: "The OAM information is exchanged in-band between two PHYs using a small fixed amount of the link bandwidth."

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

The point is that the use of OAM does not consume any of the link bandwidth, i.e., it is still 1000 Mb/s that is available to MAC. OAM is running in *spare* bandwidth.

Reword the text to read: "The OAM information is exchanged in-band between two PHYs using excess bandwidth available on the link."

Cl **97** *SC* **97.1** *P* *L* **17** # 287

Zimmerman, George CME Consulting, Inc.

Comment Type **TR** *Comment Status* **A**

It is unclear whether operation over BOTH link segment specifications is required. The term "additional link segment" is new, relative to the objectives of the project, which used the word "optional" to describe link segment B. If link segment B is optional, it should be identified as such. If operation over it is required, it should be clearly spelled out.

This appears throughout the clause.

SuggestedRemedy

Clarify whether operation over BOTH link segment types is a requirement for compliance, and, if so, add a statement in 97.1, "Operation over both types of link segments is required, according to the link segment parameters specified in 97.5.5." Add frame error rate tests for both link segment A and link segment B (to 97.5.4.2.1) to make this clear, changing (incorrect) reference to 97.5.4 on page 114 line 27 to "link segment A specified in 97.5.5.1 and 97.5.5.3, as well as link segment B specified at 97.5.5.2 and 97.5.5.4"

If link segment B is, indeed optional, change it's reference from "additional link segment" to "optional extended link segment" (the important thing is the word optional) and add the following statement to 97.1 "Operation over link segment A is required, whereas operation over the optional extended link segment is optional."
Make frame error tests specific to link segment A, (change reference in 97.5.4.2.1 on line 27 page 114 to reference 97.5.5.1 and 97.5.5.3), and add, "if optional support of operation on link segment B is specified, the frame error ratio shall also be met for link segments specified at 97.5.5.2 and 97.5.5.4."

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Implement change per comment #39

Change globally the word "additional" to "optional" when referring to link type B.

Make frame error tests specific to link segment A, (change reference in 97.5.4.2.1 on line 27 page 114 to reference 97.5.5.1 and 97.5.5.3), and add, "if optional support of operation on link segment B is specified, the frame error ratio shall also be met for link segments specified at 97.5.5.2 and 97.5.5.4."

Cl **97** *SC* **97.1** *P* **57** *L* **15** # 295

D'Ambrosia, John Dell

Comment Type **ER** *Comment Status* **R**

THe following is stated - "The 1000BASE-T1 PHY is one of the Gigabit Ethernet family of high-speed full-duplex network specifications,....", however it does not support a repeater. Yes it is true that this is clarified in 34.1.3, but it is not included in the respective clause 97. This will make the part clearer to the reader.

SuggestedRemedy

Add same statement from 34.1.3 in Clause 97 intro - No repeaters are allowed on 1000BASE-T1
links.

Response *Response Status* **W**

REJECT.

Per changes in P802.3bx, there is now global statement about the use of repeaters for full duplex links. Furthermore, 34.1.3 is removed from this draft per comment #312.

Cl **97** *SC* **97.1** *P* **57** *L* **16** # 92

Lusted, Kent Intel

Comment Type **TR** *Comment Status* **R**

The term "single balanced twisted-pair" is used throughout the Clause as the phrase to describe the medium. There are approximately 22 instances in the draft.

First, this is confusing to me because nowhere in this Clause does it denote that the medium is a copper cable.

Second, page 57 line 18 finally states "the cabling supporting the operation of the 1000BASE-T PHY is defined...."

Third, Clause 40 1000BASE-T and P802.3bq 40GBASE-T use "four pairs of balanced cabling" or "4-pair, twisted copper cabling", etc.

SuggestedRemedy

Consider changing the instances of "single balanced twisted-pair" to "1-pair, twisted copper cabling" or something else that includes "copper"

Response *Response Status* **W**

REJECT.

1000BASE-T1 PHY is designed to address applications operating over different types of a twisted pair conductive media, copper being only *one* of them.

Cl **97** *SC* **97.1** *P* **57** *L* **17** # 39

McClellan, Brett Marvell

Comment Type **TR** *Comment Status* **A**

link segment Type B was added as an optional objective, however it is not clear from the text whether Type B is optional or required.

SuggestedRemedy

change "additional" to "optional"

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.1** *P* **57** *L* **24** # 336

Geoff Thompson GraCaSI S.A.

Comment Type **ER** *Comment Status* **A** *EZ*

Change text of the last sentence in this sub-clause to reflect the optionality of EEE.

SuggestedRemedy

Change text to read: "Optionally, this allows the PHY to enter a low power mode..."

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Insert "optional" in line 23, in front of "Low Port Idle" - no changes to line 24/25.

Cl **97** *SC* **97.1** *P* **57** *L* **52** # 34

McClellan, Brett Marvell

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

grammer "adds a 396 bits"

SuggestedRemedy

change "adds a 396 bits" to "adds 396 bits"

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.1** *P* **58** *L* **21** # 90

Lusted, Kent Intel

Comment Type **TR** *Comment Status* **A** *AUTONEG; EZ*

Figure 97-1 uses the term "AUTONEG" in the Ethernet layer diagram. This is inconsistent with the base standard revision, Clause 55 (10GBASE-T) and P802.3bq.

The base standard has AN as an abbreviation in Clause 1.5. Clause 55 and P802.3bq use "AUTO-NEGOTIATION".

SuggestedRemedy

Change "AUTONEG" to "AUTO-NEGOTIATION" in the figure.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See changes per comment #294

Cl **97** *SC* **97.1.1** *P* **57** *L* **32** # 33

McClellan, Brett Marvell

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

typo "defined is"

SuggestedRemedy

change "defined is" to "defined in"

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.1.1.2** *P* **57** *L* **52** # 115

Amason, Dale Freescale

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

Inappropriate "a" in "1000BASE-T1 PHY adds a 396 bits of Reed Solomon Forward Error Correction (RS FEC) parity".

SuggestedRemedy

Remove "a" to read:
"1000BASE-T1 PHY adds 396 bits of Reed Solomon Forward Error Correction (RS FEC) parity"

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.1.2** *P* **57** *L* **41** # 292

Geoff Thompson GraCaSI S.A.

Comment Type **ER** *Comment Status* **A**

Comment:The term "automotive link segment" is too application specific here and in many places throughout the draft. This text needs to be broadened here and elsewhere. It is expected that this type of link will find broad use beyond the automotive application space (e.g. inside large complex machines such as large copiers).

SuggestedRemedy

See suggested wording in previous comment for a suggested solution.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Add sentence after "The 1000BASE-T1 PHY is one of the Gigabit Ethernet family of high-speed full-duplex network specifications, capable of operating at 1000 Mb/s and intended to be operated over a single balanced twisted-pair, referred to as an automotive link segment (Type A) or additional link segment (Type B), defined in 97.5.5. " as follows: "The automotive link segment specifications defined in 97.5.5 may also be used for other applications that have similar link segment requirements."

Cl **97** *SC* **97.1.2** *P* **57** *L* **49** # 91

Lusted, Kent Intel

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

The second sentence uses the term "EMC". EMC is not an abbreviation in the base standard.

SuggestedRemedy

Consider using EMI (which is defined in Clause 1.5) or add EMC to the abbreviation list.

If choosing to add EMC, please distinguish the difference between EMC and EMI.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See changes per comment #5.

Cl **97** *SC* **97.1.2** *P* **57** *L* **52** # 337
Geoff Thompson GraCaSI S.A.

Comment Type **ER** *Comment Status* **R** *Parity*

The use of the word "parity" in this line is unneeded and at odds with the dictionary definition of that word.

SuggestedRemedy

Remove the word "parity".

Response *Response Status* **C**

REJECT.

It is parity information for the RS-FEC

Cl **97** *SC* **97.1.2** *P* **57** *L* **52** # 297
Scruton, Peter University of New Ham

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

In the sentence: "To maintain a bit error ratio (BER) of less than or equal to 10-10, the 1000BASE-T1 PHY adds a 396 bits of Reed Solomon Forward Error Correction (RS FEC) parity to each group of forty-five 81B blocks (containing 450 octets of GMII data). " The article "a" immediately before 396 should not be there.

SuggestedRemedy

Delete "a".

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.1.2** *P* **57** *L* **52** # 268
Zimmerman, George CME Consulting, Inc.

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

The abbreviation in 802.3 for Reed Solomon FEC is RS-FEC, not RS FEC

SuggestedRemedy

Change RS FEC to RS-FEC. Editor to search for and replace other instances of same.

Response *Response Status* **C**

ACCEPT.

See also comment #96

Cl **97** *SC* **97.1.2** *P* **58** *L* **2** # 315
Law, David HP Ltd

Comment Type **ER** *Comment Status* **A** *EZ*

According to the IEEE-SA Standards Style Manual IEEE subclause 14.1 'Requirements for creating figures', 'Times New Roman and Arial fonts are preferred' yet Figure 97-1 'Relationship of 1000BASE-T1 PHY to the ISO/IEC OSI reference model and the IEEE 802.3 Ethernet Model', Figure 97-4 'PCS reference diagram', Figure 97-5 'PCS Transmit bit ordering', Figure 97-6 'PCS Receive bit ordering', Figure 97-7 'PCS detailed transmit bit ordering', Figure 97-10 'A realization of side-stream scramblers by linear feedback shift registers', Figure 97-16 'InfoField format', Figure 97-17 'InfoField TRAINING format', Figure 97-18 'InfoField COUNTDOWN format', Figure 97-25 'Transmitter test fixture 3 for MASTER and SLAVE clock jitter measurement', Figure 97-26 'Transmitter test fixture 4 for MDI jitter measurement', Figure 97-27 'Transmitter test fixture 5 for power spectral density measurement and transmit power level measurement' and Figure 98-2 'Location of Auto-Negotiation function within the ISO/IEC OSI reference model' seems to use Calibri font.

SuggestedRemedy

Replace Calibri using Arial.

Response *Response Status* **W**

ACCEPT.

Cl **97** *SC* **97.1.2** *P* **58** *L* **22** # 294
D'Ambrosia, John Dell

Comment Type **E** *Comment Status* **A** *AUTONEG; EZ*

In Layer diagram "AUTONEG" spelled out. TYpically done as AN.

See Figure 97-1 and Fig 98-2 (Page 159)

SuggestedRemedy

change AUTONEG to AN for both instances

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.1.2** *P* **58** *L* **26** # 352
Trowbridge, Steve Alcatel-Lucent

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

Wrong symbol used for Medium in Figure 97-1.

SuggestedRemedy

Use the shape used in Figure 36-1 and many other occurrences in the base standard rather than a rectangle for the medium. Same issue Figure 98-2 on page 159.

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.1.2** *P* **58** *L* **28** # 61
Booth, Brad Microsoft

Comment Type **E** *Comment Status* **A** *AUTONEG; EZ*

In Figure 97-1, the "* GMII is optional" and "** AUTONEG is optional" is overkill.

SuggestedRemedy

Change the AUTONEG** in the figure to be AUTONEG*.
Change "* GMII is optional" to be "* Optional".
Remove "** AUTONEG is optional"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #95 for changes

Cl **97** *SC* **97.1.2** *P* **58** *L* **28** # 101
Lusted, Kent Intel

Comment Type **E** *Comment Status* **A** *AUTONEG; EZ*

For Figure 98-2, The note for "GMII" and "AUTONEG" is consistent with IEEE SA Standards Style Manual section 14.3, which recommends the use of "NOTE-".

SuggestedRemedy

Modify figure text for GMII and AUTONEG entries to be consistent with the style guide.

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.1.2** *P* **58** *L* **28** # 95
Lusted, Kent Intel

Comment Type **E** *Comment Status* **A** *AUTONEG; EZ*

For Figure 97-1, The note for "GMII" and "AUTONEG" is consistent with IEEE SA Standards Style Manual section 14.3, which recommends the use of "NOTE-".

SuggestedRemedy

Modify figure text for GMII and AUTONEG entries to be consistent with the style guide.

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.1.2** *P* **58** *L* **42** # 339
Geoff Thompson GraCaSI S.A.

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

The use of the word "joint" in the context of "joint operation" is incorrect and unnecessary. The operation of the link is a whole, not joint.

SuggestedRemedy

Delete the word "joint". If you feel that an adjective is required here something like "data" or "normal" would be acceptable.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the word "joint" with "normal".

Cl **97** *SC* **97.1.2** *P* **58** *L* **48** # 171
Law, David HP Ltd

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

Suggest the term 'device' rather than 'station' should be used in relation to Auto-Negotiation (see subclause 98.1.1).

Note similar comment on subclause 97.4.2.5.

SuggestedRemedy

Suggest the text '... the MASTER-SLAVE relationship between two stations sharing a link ...' be changed to read '... the MASTER-SLAVE relationship between two devices sharing a link ...'.

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.1.2** *P* **58** *L* **49** # 340
Geoff Thompson GraCaSI S.A.

Comment Type **TR** *Comment Status* **A**

The last sentence on page 58 doesn't reflect the functional requirements of a link

SuggestedRemedy

Change text to read: "If Auto-Negotiation is not used, a MASTER-SLAVE relationship shall be established by management or hardware configuration of the PHYs. The MASTER and SLAVE are synchronized by a PHY Link Synchronization function in the PHY (see 97.6)."

Response *Response Status* **C**

ACCEPT.

Changes per comment + add new PICS

Cl **97** *SC* **97.1.2.1** *P* **59** *L* **22** # 342

Geoff Thompson GraCaSI S.A.

Comment Type **ER** *Comment Status* **A** *EZ*

The word "asynchronously" here is unnecessary and arguably incorrect since all 4 data functions (NE-Tx, NE-Rcv, FE-Tx, FE-Rcv) all operate from a single clock once loop timing is established.

SuggestedRemedy

Change sentence to read: "After completion of the Reset function, the Transmit and Receive functions start immediately and run simultaneously."

Response *Response Status* **W**

ACCEPT.

Cl **97** *SC* **97.1.2.1** *P* **59** *L* **30** # 343

Geoff Thompson GraCaSI S.A.

Comment Type **ER** *Comment Status* **R** *Parity*

Regarding the wording: "The RS encoder adds 396 RS FEC parity bits and..."
The term "parity" according to the dictionary is only used to indicate odd or even and, thus, is not an appropriate term for a larger correction term.

SuggestedRemedy

Change text to read: "The RS encoder adds a 396 RS FEC bit term and..."
(other candidates instead of "term" would be "word" or "polynomial")

Response *Response Status* **U**

REJECT.

The word "parity" is used in mutliple clauses in the meaning of FEC parity data

Cl **97** *SC* **97.1.2.4** *P* **60** *L* **21** # 327

Geoff Thompson GraCaSI S.A.

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

Poor grammar in the last sentence.

SuggestedRemedy

Change the text of the last sentence to read: "The transition to or from LPI mode shall not cause any data frames to be lost or corrupted."

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.1.2.4** *P* **60** *L* **21** # 298

Scruton, Peter University of New Ham

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

"The transition to or from LPI mode shall cause no data frames be lost or corrupted."
Appears to be missing a "to" after frames.

SuggestedRemedy

Re-write as: "The transition to or from LPI mode shall cause no data frames to be lost or corrupted."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #327 for changes

Cl **97** *SC* **97.1.2.4** *P* **60** *L* **32** # 328

Geoff Thompson GraCaSI S.A.

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

The phrase "link integrity" is not precisely correct. The (physical) integrity of the link is unchanged during sleep (Ref: 1.4.235

SuggestedRemedy

Change the text of the last sentence from: "... in order to maintain link integrity."

To read: "... in order to maintain the integrity of the transmission characteristics of the PMD to PMD signal path."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove the statement: "in order to maintain link integrity"

This is a technical comment!

Cl **97** *SC* **97.1.2.4** *P* **60** *L* **42** # 329

Geoff Thompson GraCaSI S.A.

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

The text: "The OAM SNR settings may temporarily force the PHY to exit LPI mode and send idles when LPI refresh is insufficient for maintain PHY SNR."
is not completely clear.

SuggestedRemedy

Change the text to read: "When the OAM SNR settings are insufficient for LPI to maintain PHY SNR, the PHY may temporarily be forced to exit LPI mode and send idles."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Use the following wording: "When the OAM SNR settings indicate that LPI is insufficient to maintain PHY SNR, the PHY may temporarily be forced to exit LPI mode and send idles."

Cl **97** *SC* **97.1.2.5** *P* **62** *L* **8** # 116

Amason, Dale Freescale

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

Awkward sentence: If the slave detects the sequence, it responds by responding with a synchronization sequence for 1 us (after the MASTER has stopped transmitting).

SuggestedRemedy

Simplified sentence:
If the slave detects the sequence, it responds with a synchronization sequence for 1 us (after the MASTER has stopped transmitting).

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.1.3** *P* **62** *L* **35** # 11

Carlson, Steven HSD

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

The phrase "the PCS is directed to generate" is used twice in this paragraph. "Is directed" seems to mean "is told to generate." This use of "is directed" is only found in Clause 40.1.4 (which was the source for 97.1.3) but nowehere else in 802.3. "Is directed" when used elsewhere in 802.3 has the more usual meaning of providing a pointer to something.

SuggestedRemedy

Replace "the PCS is directed to" with "the PCS will."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace "the PCS is directed to generate" with "the PCS generates."

Cl **97** *SC* **97.1.4** *P* **62** *L* **43** # 290

Bryan Moffitt CommScope

Comment Type **TR** *Comment Status* **A**

97.1.4 page 62 line 43 (and 97.5.5 page 114 line 33) both have:
All implementations of the balanced cabling link segment specification shall be compatible at the MDI.

I don't believe this is possible without an MDI mechanical spec which becomes dependent on the automotive industries input, and also not between a UTP and FTP/STP implementation without additional major effort.

SuggestedRemedy

I suggest deleting this or maybe working in text from another section:
Section 97.5.1.2 page 106 line 52 has what I thought dictated the MDI:
"agreed between customer and supplier".
This may be in question as well so better text might be "outside the scope of this standard".

Since only transmission parameters have been documented, it is possible that a more useful solution might be to change the text to:
All electrical implementations of the balanced cabling link segment specification shall be compatible.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change

All implementations of the balanced cabling link segment specification shall be compatible at the MDI.

To

All implementations of the balanced cabling link segment specification shall be electrically compatible at the MDI.

In both referenced locations.

Cl **97** *SC* **97.10.2** *P* **141** *L* **15** # 42

Dawe, Piers Mellanox

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

SAE J1292 isn't on the list of normative references.

SuggestedRemedy

Remove it here or add it there.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add the following reference to SAE standard:

SAE J1292, Automobile and Motor Coach Wiring

Cl **97** *SC* **97.10.2.1** *P* **141** *L* **19** # 44

Dawe, Piers Mellanox

Comment Type **TR** *Comment Status* **A**

5C Broad Market Potential says "Other applications include... Industrial automation solutions using Ethernet for factory automation and process automation... currently have about 100 million installed Ethernet nodes on the market, with a growth of about 43% per year... new applications in industrial automation are expected."
This says "The 1000BASE-T1 PHY is designed to operate in the automotive environment", and seeks to apply specifications specifically for road vehicles.

SuggestedRemedy

Change the draft to agree with the 5C responses or vice versa.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Change the wording: "Automotive environmental conditions are generally more severe than those found in many commercial environments." to read: "Automotive environmental conditions are generally more severe than those found in many commercial>> and industrial<< environments."

Cl **97** *SC* **97.10.2.1** *P* **141** *L* **20** # 45

Dawe, Piers Mellanox

Comment Type **TR** *Comment Status* **A**

802.3 is an interoperability spec, focusing on what happens at/across interfaces: it does not cover everything one must do to build a product. Most of these environmental requirements are out of scope. See e.g. 1000BASE-T 40.9.3.2 Temperature and humidity:
A system integrating the 1000BASE-T PHY is expected to operate over a reasonable range of environmental conditions related to temperature, humidity, and physical handling (such as shock and vibration). Specific requirements and values for these parameters are considered to be beyond the scope of this standard.
It is recommended that manufacturers indicate in the literature associated with the PHY the operating environmental conditions to facilitate selection, installation, and maintenance.

SuggestedRemedy

Remove all these out-of-scope requirements. Although you could use an informative NOTE or informative annex (like Annex 67A) to advise the reader of what is commonplace in the automotive industry.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Change "When used in an automotive environment, a 1000BASE-T1 PHY shall meet the following motor vehicle EMC requirements" to "When used in an automotive environment, a 1000BASE-T1 PHY is expected to meet the following motor vehicle EMC requirements", i.e., removing the normative language around these specifications.

Remove PICS ES3

Cl **97** *SC* **97.10.2.2** *P* **141** *L* **35** # 22
Carlson, Steven HSD

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

"A system integrating the 1000BASE-T1 PHY shall comply with all applicable local and national codes, or as agreed to between the customer and the supplier, for the limitation of electromagnetic interference."

This inmplies that a customer would be allowed to ignore local and national codes by agreement.

SuggestedRemedy

Change to:

"A system integrating the 1000BASE-T1 PHY shall comply with all applicable local and national codes. In addition, the system may need to comply with more stringent requirements as agreed upon between customer and supplier, for the limitation of electromagnetic interference."

This matches equivalent text in P802.3bw D3.3.

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.10.2.2** *P* **141** *L* **35** # 46
Dawe, Piers Mellanox

Comment Type **TR** *Comment Status* **A**

"shall comply with .., or as agreed to between the customer and the supplier": obviously unacceptable. We've been over this in P802.3bw.

SuggestedRemedy

Change
A system integrating the 1000BASE-T1 PHY shall comply with all applicable local and national codes, or as agreed to between the customer and the supplier, for the limitation of electromagnetic interference.
to:
A system integrating the 1000BASE-T1 PHY shall comply with all applicable local and national codes for the limitation of electromagnetic interference. In addition, the system may need to comply with more stringent requirements as agreed upon between customer and supplier.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See comment #22 for changes.

Cl **97** *SC* **97.10.2.2** *P* **141** *L* **38** # 4
Carlson, Steven HSD

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

The abbreviation "RF" is used for "radio frequency" here "in terms of RF immunity" but is not actually defined, and is not in the abbreviations list in 1.5. However, 802.3 has used "RF" for Remote Fault for many years, and therefore adding RF with a different meaning would be undesirable. While it might be considered that the abbreviation "RF" is obvious from the context, for the benefit of non-native speakers, adding an in-line definition immediately prior to first use would be appropriate.

SuggestedRemedy

Change to: "in terms of radio frequency (RF) immunity"

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.12** *P* **142** *L* **12** # 23
Laubach, Mark Broadcom Corporation

Comment Type **ER** *Comment Status* **A** *PICS start; EZ*

I understand that by convention, the PICS should always begin on a new page. Add a page break to the header.

SuggestedRemedy

As per comment.

Response *Response Status* **W**

ACCEPT.

Cl **97** *SC* **97.12** *P* **142** *L* **12** # 56
Anslow, Pete Ciena

Comment Type **E** *Comment Status* **A** *PICS start; EZ*

The PICS proforma should start at the top of a new page (as per the example in the 802.3 template). This is because of the copyright release which only applies to the PICS part o0f the draft.
Same issue for 98.6

SuggestedRemedy

Place the insertion point somewhere in the heading for 97.12 and in the Paragraph Designer pod, Pagination tab, set Start to "Top of Page".

Do the same for the 98.6 heading.

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.12.10** *P* **152** *L* **31** # 189

Law, David HP Ltd

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

In subclause 97.12.10 'PMD to MDI Electrical Requirements' it seems that all the subclause references are incorrect. For example item 'PMI1' which is 'Transmit differential signal' references 97.5.5.1.1 which is actually 'Insertion loss'. The correct reference should be to subclause 97.5.4.1.1 'Transmitter peak differential output'.

SuggestedRemedy

Suggest that:

[1] Item 'PMI1' subclause reference should be to '97.5.4.1.1'.

[2] Item 'PMI2' and 'PMI3' subclause reference should be to '97.5.4.1.2'.

[3] Item 'PMI4' subclause reference should be to '97.5.4.2.1'.

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.12.10** *P* **152** *L* **39** # 128

Regev, Alon Ixia

Comment Type **E** *Comment Status* **A** *PICS typo; EZ*

"than than" should be "than"

SuggestedRemedy

change "than than" to "than"

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.12.4** *P* **144** *L* **30** # 68

Booth, Brad Microsoft

Comment Type **TR** *Comment Status* **A**

The PICS are not easy to interpret. Appears that text was cut and paste or just cross-referenced into the tables.

I would have liked to provide exact editing instructions for all the PICS, unfortunately the list of entries exceeds the time I had available; therefore, my suggested remedy attempts to provide general guidance.

The same applies the PICS in Clause 98.

SuggestedRemedy

Feature should provide a simple description. For example G1 could read "Test circuit accuracy" and PCT1 could read "Transmit state diagram".

Value/Comment should not state "Yes" or "No" but should either be empty or provide guidance. For example, G1 and G2 are okay, but PCT1 should state "Conforms to Figure 97-13".

Response *Response Status* **W**

ACCEPT.

PICS will be updated per recommendation. Clause 55 PICS will be used for style guidance. The commenter will be involved in the process.

Cl **97** *SC* **97.12.5** *P* **146** *L* **8** # 125

Regev, Alon Ixia

Comment Type **E** *Comment Status* **A** *PICS typo; EZ*

in PCT19, PCT20, and PCT21, "sserts" should be "asserts"

SuggestedRemedy

in PCT19, PCT20, and PCT21, change "sserts" to "asserts"

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.12.6** *P* **147** *L* **12** # 138
Regev, Alon Ixia

Comment Type **T** *Comment Status* **A** *PICS typo; EZ*

"PMA_CONFIG.indicationassumes" should be "PMA_CONFIG.indication assumes" in 2 places (page 147, line 12 and page 147, line 15).

SuggestedRemedy

change "PMA_CONFIG.indicationassumes" to "PMA_CONFIG.indication assumes" in 2 places (page 147, line 12 and page 147, line 15).

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.12.8** *P* **148** *L* **37** # 126
Regev, Alon Ixia

Comment Type **E** *Comment Status* **A** *PICS typo; EZ*

"funciton" should be "function"

SuggestedRemedy

change "funciton" to "function"

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.12.8** *P* **148** *L* **46** # 139
Regev, Alon Ixia

Comment Type **T** *Comment Status* **A** *PICS typo; EZ*

"InfoFielf" should be "InfoField"

SuggestedRemedy

change "InfoFielf" to "InfoField"

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.12.8** *P* **148** *L* **52** # 140
Regev, Alon Ixia

Comment Type **T** *Comment Status* **A** *PICS typo; EZ*

"PMA_start" should be "PMA_state"

SuggestedRemedy

change "PMA_start" to "PMA_state"

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.12.9** *P* **152** *L* **6** # 127
Regev, Alon Ixia

Comment Type **E** *Comment Status* **A** *PICS typo; EZ*

"refrence" should be "reference" in PME21 & PME23

SuggestedRemedy

change "refrence" to "reference" in 2 places (PME21 & PME23)

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.2.1** *P* **63** *L* **22** # 158
Law, David HP Ltd

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

I don't believe that we normally have a space between the primitive name and the open brackets or the parameter, for example 'PMA_LINK.request (link_control)' should read 'PMA_LINK.request(link_control)'.

SuggestedRemedy

Delete the space between the primitive name and the open bracket of the parameter list here and throughout the draft.

Response *Response Status* **C**

ACCEPT.

No changes to figures needed.

Cl **97** *SC* **97.2.2.3** *P* **128** *L* **33** # 272
Zimmerman, George CME Consulting, Inc.

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

"LPI refresh insufficient to maintain PHY SNR." reads strange and different from other lines around it.

same text on pg 133 24

SuggestedRemedy

insert "is" to read like the other lines: "LPI refresh >>is<< insufficient to maintain PHY SNR." (P 128 L 33 and P 133 L 24)

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.2.2.9.2** *P* **69** *L* **45** # 129
Regev, Alon Ixia

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

"loc_rcvs_status" should be "loc_rcvr_status"

SuggestedRemedy

Change "loc_rcvs_status"
to "loc_rcvr_status"

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.3.2** *P* **72** *L* **14** # 130
Regev, Alon Ixia

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

PMA_UNITDATA mispelled as PMA_UNIDATA.
PMA_UNITDATA.indication(rx_symb) and PMA_UNITDATA.request(tx_symb) should be changed to just "rx_symb" and "tx_symb"

SuggestedRemedy

change "PMA_UNIDATA.indication(rx_symb)" to "rx_symb"
change "PMA_UNIDATA.request(tx_symb) to "tx_symb"

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.3.2.1** *P* **71** *L* **36** # 186
Law, David HP Ltd

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

Subclause 97.3.2.1 'PCS Reset function' states that 'PCS Reset sets pcs_reset = ON while any of the above reset conditions hold true (see 97.3.6.2.2).' however there doesn't seem to be anything about the reset conditions in subclause 97.3.6.2.2.

SuggestedRemedy

Remove the cross-reference to subclause 97.3.6.2.2.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove "(see 97.3.6.2.2)"

Cl **97** *SC* **97.3.2.1** *P* **72** *L* **2** # 93
Lusted, Kent Intel

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

Figure 97-4 has an "_" after the word "INDEPENDENT" in the GMII designation.

SuggestedRemedy

remove "_"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Move "PCS" with arrow further to the left, and properly indicate the dashed line under GMII

Cl **97** *SC* **97.3.2.2.12** *P* **79** *L* **31** # 26
Laubach, Mark Broadcom Corporation

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

Font size appearances? Seeing some oddities on this page in the PDF. For example:

Line 31 looks to be using a smaller font size than Eq 97-1.

Line 41. The ital characters appear to be in a smaller font and are harder to read.

Line 44 itself seems to be in a smaller font altogether.

SuggestedRemedy

Fix font/size, if needed.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

These are all equations - will work on scaling them up.

Cl **97** *SC* **97.3.2.2.13** *P* **79** *L* **53** # 27

Laubach, Mark Broadcom Corporation

Comment Type **E** *Comment Status* **A** *Split footnote; EZ*

Probably a framemaker quirk, but the footnote anchor is on this page, and the footnote text is on the following page.

SuggestedRemedy

Suggest that these be on the same page.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Move sentence "This implements the scrambler polynomial:" in such a way that it does not stay at the bottom of the page, forcing footnote to be moved to the following page.

Cl **97** *SC* **97.3.2.2.13** *P* **80** *L* **53** # 118

Amason, Dale Freescale

Comment Type **E** *Comment Status* **A** *Split footnote; EZ*

Footnote and resulting note are split on different pages.

SuggestedRemedy

Align footnote and note to appear on same page.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #27.

Cl **97** *SC* **97.3.2.2.16** *P* **81** *L* **18** # 37

McClellan, Brett Marvell

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

This description is inconsistent with the definition of tx_lpi_active.

SuggestedRemedy

change "If the LP_IDLE character occurs in the last 80B/81B block"
to "If the LP_IDLE character fills the entire last 80B/81B block"

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.3.2.2.4** *P* **74** *L* **8** # 94

Lusted, Kent Intel

Comment Type **TR** *Comment Status* **A** *EZ*

Figure 97-5 is missing a continuity indication (such as "..." between the D2 block and the D9 block. There is such an indication between "3rd transfer" and "10th transfer".

The figure as it stands suggests that D3 to D8 are disgarded.

SuggestedRemedy

Add appropriate continuity indicator

Response *Response Status* **W**

ACCEPT.

Cl **97** *SC* **97.3.2.2.5** *P* **74** *L* **40** # 353

Trowbridge, Steve Alcatel-Lucent

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

The text in the 2nd paragraph of this clause should have an accompanying figure to be better understood.

SuggestedRemedy

Add a figure such as Figure 82-4 in the base standard showing the various combinations of data and control characters illustrating how they are encoded. If the number of permutations is too large to produce an exhaustive figure, at least provide a few key examples of the encoding. I found myself having to read through the text a couple of times, using paper and pencil to try to trace through what it meant, and better not to force the readers to draw these figures for themselves.

Response *Response Status* **C**

REJECT.

A suggested draft figure would be welcome to illustrate what the intended illustration should include.

This is a technical comment !

Cl **97** *SC* **97.3.2.2.5** *P* **76** *L* **10** # 3

Tu, Mike Broadcom

Comment Type **TR** *Comment Status* **A** *EZ*

In Figure 97-7, the OAM symbol is shown with incorrect bit indices.

SuggestedRemedy

Change OAM bit # from "3565:3653" to "3645:3653".

Response *Response Status* **W**

ACCEPT.

Cl **97** *SC* **97.3.4** *P* **83** *L* **24** # 175

Law, David HP Ltd

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

There are 11 instances of 'master' yet 106 instances of 'MASTER', similarly, there are 26 instances of 'slave' and 93 instances of 'SLAVE'. In this particular subclause line 24 refers to '... implementation of master and slave PHY side-stream scramblers ...' yet 33 refers to 'Side-stream scrambler employed by the MASTER PHY Transmit' and line 42 to 'Side-stream scrambler employed by the SLAVE PHY Transmit'. Based on all this it would seem the text should on line 24 should read '... implementation of MASTER and SLAVE PHY side-stream scramblers ...'.

SuggestedRemedy

Suggest that:

[1] The text '... implementation of master and slave PHY side-stream scramblers ...' be changed to read '... implementation of MASTER and SLAVE PHY side-stream scramblers ...'.

[2] Check all other instances of 'master' to see if it should read 'MASTER', and of 'slave' to see if it should read 'SLAVE'.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The text '... implementation of master and slave PHY side-stream scramblers ...' be changed to read '... implementation of MASTER and SLAVE PHY side-stream scramblers ...'.

Change all instances of "master" to "MASTER" and "slave" to "SLAVE" where these are used as stand-alone words.

Cl **97** *SC* **97.3.4.1** *P* **84** *L* **4** # 59

Lo, William Marvell Semiconducto

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

Lines 4 to 7 uses the term "partial frame" where as in other places in the text it is called "partial RS frame".
Also need to define the term.

SuggestedRemedy

Change all instances of "partial frame" to "partial RS frame".

Add a sentence at the end of line 7.
Each partial RS frame is 180 symbols long, beginning at Sn where (n mod 180) = 0.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change all instances of "partial frame" to "partial RS frame".

Add a sentence at the end of line 7. "Each partial RS frame is 180 bits long, beginning at Sn where (n mod 180) = 0."

Cl **97** *SC* **97.3.4.1** *P* **84** *L* **7** # 123

Regev, Alon Ixia

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

"XOR'd" should be "XORed" for two reasons:
1. every other instance in the document is XORed
2. this is not a proper use of an apostrophe.

SuggestedRemedy

Change "XOR'd" to "XORed"

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.3.5.1** *P* **85** *L* **22** # 349

Gardner, Andrew Linear Technology

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

There are multiple instances of "must" in the draft after the front-matter, the first instance being at line 22 page 85. The IEEE convention is to use "shall" when a specification is mandatory.

SuggestedRemedy

Consider replacing all instances of "must" with "shall" after the front-matter.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the following instances of "must" to "shall": page 86, page 99, page 109, page 126, page 130, page 164, page 191. Remaining instances to be converted into Present Simple tense. DO NOT TOUCH Front Matter.

Add PICS for each new shall statement.

This is a technical comment!

Cl **97** *SC* **97.3.5.1** *P* **85** *L* **41** # 131

Regev, Alon Ixia

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

inconsistent signal naming between:
1. "refresh_active" in the paragraph on page 85, line 41, and "tx_refresh_active" in table 97-3 and table 97-4.
2. "wake_start" in the paragraph on page 85, line 41, and "tx_wake_start" in table 97-3 and 97-4.

Also note that these signals are not used anywhere outside of this paragraph.

SuggestedRemedy

change "refresh_active" to "tx_refresh_active"
change "wake_start" to "tx_wake_start"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Also update PICS EEE4/EEE5

Cl **97** *SC* **97.3.6.1** *P* **86** *L* **31** # 162

Law, David HP Ltd

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

Subclause 97.3.6.1 'State diagram conventions' states that 'The body of this subclause is comprised of state diagrams, including the associated definitions of variables, constants, and functions.' however there are also counters and messages defined.

SuggestedRemedy

Change '... the associated definitions of variables, constants, and functions.' to read '... the associated definitions of constants, variables, constants, functions, counters and messages.'.

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.3.6.2.2** *P* **87** *L* **37** # 185

Law, David HP Ltd

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

Subclause 97.3.6.2.2 'Variables' defines 'pcs_reset' as a 'Boolean variable ...' and that 'It is true ...' yet subclause 97.3.2.1 'PCS Reset function' states 'PCS Reset sets pcs_reset = ON while any of the above reset conditions hold true (see 97.3.6.2.2).' and Figures 97-12 to 97-14 use 'pcs_reset = ON' as a reset condition.

SuggestedRemedy

Suggest that the pcs_reset variable definition be replaced by:

pcs_reset
Allows reset of all PCS functions. It is set by PCS Reset function.
Values:
ON
OFF

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Suggest that the pcs_reset variable definition be replaced by:

pcs_reset
When this variable is set to ON, all PCS functions are reset. Otherwise, this variable holds the value of OFF. This variable is set by the PCS Reset function.

Cl **97** *SC* **97.3.6.2.2** *P* **88** *L* **10** # 190

Law, David HP Ltd

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

A mixture of 'true' and 'false' and 'TRUE' and 'FALSE' in used in this draft. For example in subclause 97.3.6.2.2 'Variables' the definition for 'rx_wake_frame_complete' (page 88, line 10) states 'This variable is set TRUE at end of WAKE RS frame, otherwise FALSE.' yet a few lines later the definition for 'tx_data_mode' (page 88, line 17) states 'Set true when tx_mode = SEND_N, otherwise false.'.

SuggestedRemedy

Use either 'true' and 'false' or 'TRUE' and 'FALSE' consistently.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

We have more "true" than "TRUE".
Change "TRUE" > "true"
Change "FALSE" > "false"

Cl **97** *SC* **97.3.6.2.2** *P* **88** *L* **35** # 2

Tu, Mike Broadcom

Comment Type **TR** *Comment Status* **A**

Each transfer consists of 10 bits. The formula needs to be correctetd.

SuggestedRemedy

Change line 35 to 36 from:

"For n =0 to 9, tx_raw<8n> = TX_EN[n], tx_raw<8n+1> = TX_ER[n], tx_raw<8n+9:8n+2> = TXD[n][7:0]"

to

"For n =0 to 9, tx_raw<10n> = TX_EN[n], tx_raw<10n+1> = TX_ER[n], tx_raw<10n+9:10n+2> = TXD[n][7:0]"

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.3.6.2.2** *P* **88** *L* **6** # 1

Tu, Mike Broadcom

Comment Type **TR** *Comment Status* **A**

Each transfer consists of 10 bits. The formula needs to be correctetd.

SuggestedRemedy

Change line 6 to 7 from:

"For n = 0 to 9, rx_raw<8n> = RX_DV[n], rx_raw<8n+1> = RX_ER[n], rx_raw<8n+9:8n+2> = RXD[n][7:0]"

to

"For n = 0 to 9, rx_raw<10n> = RX_DV[n], rx_raw<10n+1> = RX_ER[n], rx_raw<10n+9:10n+2> = RXD[n][7:0]"

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.4.2.1** *P* **95** *L* **1** # 187

Law, David HP Ltd

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

Suggest that subclause 97.4.2.1 'PMA Reset function' should state when pma_reset is set to 'ON'.

SuggestedRemedy

Add the text 'PMA Reset sets pma_reset = ON while any of the above reset conditions hold true.' to the start of the final paragraph.

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.4.2.2** *P* **95** *L* **5** # 326

Law, David HP Ltd

Comment Type **TR** *Comment Status* **A**

Subclause 97.4.2.2 'PMA Transmit function' states that 'The PMA Transmit function comprises a transmitter to generate a 3 level modulated signal on the single twisted pair.' and that 'PMA Transmit shall continuously transmit onto the MDI pulses modulated by the symbols given by tx_symb after processing with optional transmit filtering, digital to analog conversion (DAC) and subsequent analog filtering.'. Subclause 97.6 'PHY Link Synchronization' however states ' When operating, the Link Synchronization unit is the source of symbols to the PMD ...'. The statement in subclause 97.6 seems to be in conflict with the shall statement in 97.4.2.2.

The penultimate paragraph of subclause 97.6 'PHY Link Synchronization' (page 124, line 47) states that 'The bit Sn [0] is mapped to the transmit symbol Tn as follows: if Sn[0] = 0 then Tn = +1, if Sn[0] = 1 then
Tn = -1.' Subclause 97.2.2.3.1 'Semantics of the primitive' for PMA_UNITDATA.request states that ' The tx_symb may take on one of the values in the set { -1, 0, 1 }'. Based on this both the output of PHY Link Synchronization, and tx_symb, are the same, a value from the set {-1, 0, 1}. Current written however the PHY Link Synchronization output connected directly to the PMD, yet tx_symb has to pass through the PMA transmit function which provides optional transmit filtering, digital to analog conversion (DAC) and analog filtering. It would seem the output of PHY Link Synchronization should also go through these processes.

It seems odd to state in subclaue 97.2.1 'Technology Dependent Interface' that '1000BASE-T1 uses the following service primitives ... as specified in 97.6 or Clause 98', it should only be specified in one place, and then to state in subclause 97.2.1.1 'PMA_LINK.request' that 'This primitive allows the Auto-Negotiation or the PHY Link Synchronization algorithm to enable and disable operation of the PMA', a primitive has to be source from one function. Furthermore the PHY Link Synchronization function is not a separate sublayer and so does not require an abstract service interface to communicate to it. From what I can see PHY Link Synchronization is part of the PMA and therefore has access directly to the variable link_status generated by the PMA Link Monitor state diagram, therefore does not need to use the PMA_LINK.indication (link_status) primitive.

Rather than trying to describe all this in words and exceptions, suggest it would seem much clearer to describe this in the state diagrams. To do this (a) add a variable to indicate if Auto-Negotiation is implemented, (b) use the existing mr_autoneg_enable variable to indicate if Auto-Negotiation is enabled (if implemented), (c) rename link_control output by PHY Link Synchronization to be sync_link_contol to make it a distinct variable and (d) update the PMA Transmit function to use sync_link_contol to select if tx_symb or the output of the PHY Link Synchronization is transmitted on the MDI.

SuggestedRemedy

[1] Delete the text '(Clause 97.6 and 98)' from 'Technology Dependent Interface' in figure 97-2 'Functional block diagram' (page 61, line 2).

[2] In the first sentence of the last paragraph of subclause 97.2 '1000BASE-T1 Service Primitives and Interfaces' (page 63, line 14) change the text '... is specified in 97.6 and Clause 98.' to read '... is specified in Clause 98.'.

[3] In subclauee 97.2.1 'Technology Dependent Interface' change the text '... as specified in 97.6 or Clause 98:' to read '... as specified in Clause 98:'.

[4] In subclause 97.2.1.1 'PMA_LINK.request' change the text '... as specified in 98.4.2 or 97.6, respectively.' to read ... as specified in 98.4.2.'

[5] In subclause 97.2.1.1.1 'Semantics of the primitive' changed the description for 'DISABLE' to read 'Used by the Auto-Negotiation function to
disable the PHY' and the description for 'ENABLE' to read 'Used by the Auto-Negotiation function to enable the PHY'.

[6] In subclause 97.2.1.1.2 'When generated' change the text '... as described in 97.6 or Clause 98.' to read '... as described Clause 98.'.

[7] In subclause 97.2.1.2 'PMA_LINK.indication' change the text '... PMA PHY Control function, and the Auto-Negotiation or PHY Link Synchronization process about ...' to read '... PMA PHY Control function, and the Auto-Negotiation functions about ...'.

[8] Delete the text '(Clause 97.6 and 98)' from 'Technology Dependent Interface' in figure 97-15 'PMA reference diagram' (page 94, line 20).

[9] In the last sentence of the second paragraph of subclause 97.4.2.4.10 'Startup sequence' (page 99, line 30) change the text ... and the transmitters are controlled by the PHY Link Synchronization state diagram (see Figure 97-37).' to read '... and the Link Synchronization function (see 97.6) is the data source for the PMA Transmit function'.

[10] Change the first sentence of the third paragraph of subclause 97.4.2.4.10 Startup sequence (page 99, line 33) to read 'When the Auto-Negotiation asserts link_control = ENABLE, or PHY Link Synchronization process asserts sync_link_control = ENABLE, PHY Control enters the INIT_MAXWAIT_TIMER state.'.

[11] Change the first sentence of the third paragraph of subclause 97.4.2.5 'Link Monitor function' (page 101, line 10) to read 'Upon power on, reset, or release from power down, the Auto-Negotiation function set link_control = DISABLE, or PHY Link Synchronization algorithms set sync_link_control = DISABLE.

[12] Change the forth sentence of the third paragraph of subclause 97.4.2.5 'Link Monitor function' (page 101, line 13) to read 'When the Auto-Negotiation function establishes the presence of a remote 1000BASE-T1 PHY, link_control is set to ENABLE, or when the PHY Link Synchronization finishes the synchronization function, sync_link_control is set to ENABLE, and the Link Monitor state machines begins monitoring the PCS and receiver lock status.'.

[13] Change the definition for the 'link_control' variable in subclause 97.4.4.1 'State diagram variables' to read:

link_control
This variable is defined in 97.2.1.1.1.

[14] Add new variables 'sync_link_control' and 'auto_neg_imp' to subclause 97.4.4.1 'State diagram variables' that read:

sync_link_control
This variable is defined in 97.6.1.1.

auto_neg_imp
This variable indicates if an optional Auto-Negotiation sublayer is associated with the PMA.
Values:
true: An optional Auto-Negotiation sublayer is associated with the PMA
false: An optional Auto-Negotiation sublayer is not associated with the PMA

[15] In Figure 97-20 PHY Control state diagram, change the equation associated with the open arrow transition to the DISABLE_TRANSMITTER state (page 105, line 4) to read:

(link_control = DISABLE * auto_neg_imp = true * mr_autoneg_enable = true) + (sync_link_control = DISABLE * (auto_neg_imp = false * mr_autoneg_enable = false)) + pma_reset = ON

[16] In Figure 97-20 PHY Control state diagram, change the equation associated with transition from DISABLE_TRANSMITTER to the INIT_MAXWAIT_TIMER state (page 105, line 10) to read:

(link_control = ENABLE * auto_neg_imp = true * mr_autoneg_enable = true) + (sync_link_control = ENABLE * (auto_neg_imp = false * mr_autoneg_enable = false))

[17] In Figure 97-21 Link Monitor state diagram, change the equation associated with the open arrow transition to the LINK_DOWN state (page 106, line 2) to read:

(link_control = DISABLE * auto_neg_imp = true * mr_autoneg_enable = true) + (sync_link_control = DISABLE * (auto_neg_imp = false * mr_autoneg_enable = false)) + pma_reset = ON

[18] Delete the second sentence of the first paragraph of subcaluse 97.6 'PHY Link Synchronization' (page 123, line 45) that reads 'The PHY Link ... Link Synchronization.'.

[19] Change the second paragraph of subclause 97.6 'PHY Link Synchronization' to read 'When operating, the Link Synchronization function is the data source for the PMA Transmit function (see 97.4.2.2), and generates a signal, SEND_S, used by the master and slave to discover the link partner and synchronize the start of PMA training.'.

[20] Delete the third paragraph of subcaluse 97.6 'PHY Link Synchronization' (page 123, line 51) that reads 'PMA_LINK.request(link_control) disables the ... indicates the PHY link status.

[21] In subclause 97.6.1.1 'State diagram variables' rename the link_control variable (page 125, 10) to be sync_link_control and change the variable definition to read:

sync_link_control

This variable indicates the data source for the PMA Transmit function.
Values:
DISABLE: The data source is the PHY Link Synchronization function
ENABLE: The data source is PMA_UNITDATA.request (tx_symb)

[22] In subclause 97.6.2 'State diagrams' change the two instances of 'link_control' to 'sync_link_control' (state 'TRANSMIT DISABLE' and 'LINK GOOD CHECK').

[23] In the second sentence of the first paragraph of subclause 97.4.2.2 'PMA Transmit function' change the text ' PMA Transmit shall continuously transmit onto the MDI pulses modulated by the symbols given by tx_symb after processing ...' with 'PMA Transmit shall continuously transmit onto the MDI pulses modulated by the symbols given by tx_symb when sync_link_control = false, or the symbols output by the PHY Link Synchronisation function when sync_link_control = true, after processing ...'.

[24] In subclause 97.2.1.1.3 'Effect of receipt' change the text '... as defined in 97.4.2.5 and the PMA PHY Control function as defined in 97.4.2.4.' to read '... as defined in 97.4.2.5, the PMA PHY Control function as defined in 97.4.2.4, and the PMA Receive function defined in 97.4.2.3.'.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Implementaion order per Lo_3bp_01_0915.pdf.

[1] Delete the text '(Clause 97.6 and 98)' from 'Technology Dependent Interface' in figure 97-2 'Functional block diagram' (page 61, line 2).

[2] In the first sentence of the last paragraph of subclause 97.2 '1000BASE-T1 Service Primitives and Interfaces' (page 63, line 14) change the text '... is specified in 97.6 and Clause 98.' to read '... is specified in Clause 98.'.

[3] In subclauee 97.2.1 'Technology Dependent Interface' change the text '... as specified in 97.6 or Clause 98:' to read '... as specified in Clause 98:'.

[4] In subclause 97.2.1.1 'PMA_LINK.request' change the text '... as specified in 98.4.2 or 97.6, respectively.' to read ... as specified in 98.4.2.'

[5] In subclause 97.2.1.1.1 'Semantics of the primitive' changed the description for 'DISABLE' to read 'Used by the Auto-Negotiation function to
disable the PHY' and the description for 'ENABLE' to read 'Used by the Auto-Negotiation function to enable the PHY'.

[6] In subclause 97.2.1.1.2 'When generated' change the text '... as described in 97.6 or Clause 98.' to read '... as described Clause 98.'.

[7] In subclause 97.2.1.2 'PMA_LINK.indication' change the text '... PMA PHY Control function, and the Auto-Negotiation or PHY Link Synchronization process about ...' to read '... PMA PHY Control function, and the Auto-Negotiation functions about ...'.

[8] Delete the text '(Clause 97.6 and 98)' from 'Technology Dependent Interface' in figure 97-15 'PMA reference diagram' (page 94, line 20).

[9] In the last sentence of the second paragraph of subclause 97.4.2.4.10 'Startup sequence' (page 99, line 30) change the text ... and the transmitters are controlled by the PHY Link Synchronization state diagram (see Figure 97-37).' to read '... and the Link Synchronization function (see 97.6) is the data source for the PMA Transmit function'.

[10] Change the first sentence of the third paragraph of subclause 97.4.2.4.10 Startup sequence (page 99, line 33) to read 'When the Auto-Negotiation asserts link_control = ENABLE, or PHY Link Synchronization process asserts sync_link_control = ENABLE, PHY Control enters the INIT_MAXWAIT_TIMER state.'.

[11] Change the first sentence of the third paragraph of subclause 97.4.2.5 'Link Monitor function' (page 101, line 10) to read 'Upon power on, reset, or release from power down, the Auto-Negotiation function set link_control = DISABLE, or PHY Link Synchronization algorithms set sync_link_control = DISABLE.

[12] Change the forth sentence of the third paragraph of subclause 97.4.2.5 'Link Monitor function' (page 101, line 13) to read 'When the Auto-Negotiation function establishes the presence of a remote 1000BASE-T1 PHY, link_control is set to ENABLE, or when the PHY Link Synchronization finishes the synchronization function, sync_link_control is set to ENABLE, and the Link Monitor state machines begins monitoring the PCS and receiver lock status.'.

[13] Change the definition for the 'link_control' variable in subclause 97.4.4.1 'State diagram variables' to read:

link_control
This variable is defined in 97.2.1.1.1.

[14] Add new variables 'sync_link_control' and 'auto_neg_imp' to subclause 97.4.4.1 'State diagram variables' that read:

sync_link_control
This variable is defined in 97.6.1.1.

auto_neg_imp
This variable indicates if an optional Auto-Negotiation sublayer is associated with the PMA.
Values:
true: An optional Auto-Negotiation sublayer is associated with the PMA
false: An optional Auto-Negotiation sublayer is not associated with the PMA

[15] In Figure 97-20 PHY Control state diagram, change the equation associated with the open arrow transition to the DISABLE_TRANSMITTER state (page 105, line 4) to read:

(link_control = DISABLE * auto_neg_imp = true * mr_autoneg_enable = true) + (sync_link_control = DISABLE * (auto_neg_imp = false + mr_autoneg_enable = false)) + pma_reset = ON

[16] In Figure 97-20 PHY Control state diagram, change the equation associated with transition from DISABLE_TRANSMITTER to the INIT_MAXWAIT_TIMER state (page 105, line 10) to read:

(link_control = ENABLE * auto_neg_imp = true * mr_autoneg_enable = true) + (sync_link_control = ENABLE * (auto_neg_imp = false + mr_autoneg_enable = false))

[17] In Figure 97-21 Link Monitor state diagram, change the equation associated with the open arrow transition to the LINK_DOWN state (page 106, line 2) to read:

(link_control = DISABLE * auto_neg_imp = true * mr_autoneg_enable = true) + (sync_link_control = DISABLE * (auto_neg_imp = false + mr_autoneg_enable = false)) + pma_reset = ON

[18] Delete the second sentence of the first paragraph of subcaluse 97.6 'PHY Link Synchronization' (page 123, line 45) that reads 'The PHY Link ... Link Synchronization.'.

[19] Change the second paragraph of subclause 97.6 'PHY Link Synchronization' to read 'When operating, the Link Synchronization function is the data source for the PMA Transmit function (see 97.4.2.2), and generates a signal, SEND_S, used by the master and slave to discover the link partner and synchronize the start of PMA training.'.

[20] Delete the third paragraph of subcaluse 97.6 'PHY Link Synchronization' (page 123, line 51) that reads 'PMA_LINK.request(link_control) disables the ... indicates the PHY link status.

[21] In subclause 97.6.1.1 'State diagram variables' rename the link_control variable (page 125, 10) to be sync_link_control and change the variable definition to read:

sync_link_control

This variable indicates the data source for the PMA Transmit function.
Values:
DISABLE: The data source is the PHY Link Synchronization function
ENABLE: The data source is PMA_UNITDATA.request (tx_symb)

[22] In subclause 97.6.2 'State diagrams' change the two instances of 'link_control' to 'sync_link_control' (state 'TRANSMIT DISABLE' and 'LINK GOOD CHECK').

[23] In the second sentence of the first paragraph of subclause 97.4.2.2 'PMA Transmit function' change the text ' PMA Transmit shall continuously transmit onto the MDI pulses modulated by the symbols given by tx_symb after processing ...' with 'PMA Transmit shall

continuously transmit onto the MDI pulses modulated by the symbols given by tx_symb when sync_link_control = false, or the symbols output by the PHY Link Synchronisation function when sync_link_control = true, after processing ...'.

[24] In subclause 97.2.1.1.3 'Effect of receipt' change the text '... as defined in 97.4.2.5 and the PMA PHY Control function as defined in 97.4.2.4.' to read '... as defined in 97.4.2.5, the PMA PHY Control function as defined in 97.4.2.4, and the PMA Receive function defined in 97.4.2.3.'.

Cl **97** *SC* **97.4.2.4.10** *P* **100** *L* **10** # 133

Regev, Alon Ixia

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

"rem_rcvr status" should be "rem_rcvr_status"

SuggestedRemedy

change "rem_rcvr status" to "rem_rcvr_status"

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.4.2.4.10** *P* **99** *L* **23** # 318

Law, David HP Ltd

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

Subclause 97.4.2.4.10 'Startup sequence' states that 'If mr_autoneg_en = FALSE, PMA_CONFIG is pre-determined to be MASTER or SLAVE via management control during initialization or via default hardware set-up.' However what about the case where the Auto-Negotiation function is not implemented, assume it I the same as if mr_autoneg_en = FALSE.

SuggestedRemedy

Suggest the second sentence of the first paragraph of Subclause 97.4.2.4.10 'Startup sequence' be changed to read 'If the Auto-Negotiation function is not implemented, or mr_autoneg_en = FALSE, PMA_CONFIG is pre-determined to be MASTER or SLAVE via management control during initialization or via default hardware set-up.'.

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.4.2.4.3** *P* **96** *L* **52** # 132

Regev, Alon Ixia

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

"InfoFieldInfoField" should be "InfoField"

SuggestedRemedy

Change "InfoFieldInfoField" to "InfoField"

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.4.2.5** *P* **101** *L* **11** # 170

Law, David HP Ltd

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

Suggest the term 'device' rather than 'station' should be used in relation to Auto-Negotiation (see subclause 98.1.1).

Note similar comment on subclause 97.1.2.

SuggestedRemedy

Suggest the text '... presence of a remote station is sensed through reception of DME data ... exchanges Auto-Negotiation information with the remote station ...' be changed to read '... presence of a remote device is sensed through reception of DME data ... exchanges Auto-Negotiation information with the remote device ...'

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.4.4.1** *P* **102** *L* **14** # 323

Law, David HP Ltd

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

Not sure why there is a shall statement in the variable definition since there is a shall statement on the whole state diagram. Based on this, suggest it be removed here.

SuggestedRemedy

Suggest the text 'The PMA shall generate this variable continuously and pass it ...' be changed to read 'The PMA generates this variable continuously and passes it ...'.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change per comment + remove PMF35

Cl **97** *SC* **97.4.4.1** *P* **102** *L* **27** # 364
Chen, Steven Broadcom

Comment Type **ER** *Comment Status* **A** *POST-DEADLINE*

It referes to sub-clause 97.4.2.5. But that sub-clause is related to the Link Monitor function. The correct reference should be 97.4.2.4.

SuggestedRemedy

Change
"… a complete set of InfoField messages has been sent (see 97.4.2.5)."

To
"… a complete set of InfoField messages has been sent (see 97.4.2.4)."

Response *Response Status* **W**

ACCEPT.

Cl **97** *SC* **97.4.4.1** *P* **103** *L* **1** # 365
Chen, Steven Broadcom

Comment Type **ER** *Comment Status* **A** *POST-DEADLINE*

The statement within parenthesis is redundant and may cause confusion, as it is not clear what it means for the loc_countdown_done to be TRUE "before" the first bit of the DataSwPFC24 partial frame is transmitted.

SuggestedRemedy

Modify the paragraph between page 102 line 53 to page 103 line 2 to as follows:

1. Remove the statement within the parenthesis.
2. Add a word "immediately" in the original sentence.

The modified paragraph is shown in below:

"This variable is set to FALSE when the PHY Control state diagram is in the DISABLE_TRANSMITTER state and is set to TRUE immediately after transmitting the last bit of the DataSwPFC24-1 partial frame."

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Remove the statement within the parenthesis.

Change

and is set to TRUE after transmitting the last bit of the

to

and is set to TRUE >>immediately<< after transmitting the last bit of the

---

Cl **97** *SC* **97.4.4.1** *P* **104** *L* **19** # 322
Law, David HP Ltd

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

Suggest the variable definition should indicate that this variable is the source of the tx_mode parameter of the PMA_TXMODE.indication primitive. For existing example see the definition for the 'config' variable (page 102, line 12).

SuggestedRemedy

Suggest the text 'PCS Transmit sends symbols according to the value assumed by this variable.' be changed to read 'The PMA generates this variable continuously and passes it to the PCS via the PMA_TXMODE.indication primitive.'.

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.4.4.1** *P* **104** *L* **22** # 124
Regev, Alon Ixia

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

A couple of grammar errors in the definition of tx_mode:
1. "a idle" should be "an idle"
2. "take place" (4 instances) should be "takes place" as this refers back to the verb "transmission" which is singular"

SuggestedRemedy

change "a idle" to "an idle"
change "take place" to "takes place"

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.4.4.1** *P* **68** *L* **26** # 36
McClellan, Brett Marvell

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

pcs_status does not appear in the subclauses listed.

SuggestedRemedy

change "97.4.2.4.10 and 97.4.5." to "97.4.4.1."

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.4.5** *P* **105** *L* **3** # 181

Law, David HP Ltd

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

Since link_control only has two states, 'ENABLE' and 'DISABLE' (see 97.2.1.1.1) suggest that 'link_control != ENABLE' be changed to read 'link_control = DISABLE'.

SuggestedRemedy

Suggest that:

[1] In Figure 97-20 'PHY Control state diagram' (page 105, line 4) 'link_control != ENABLE + ...' be changed to read 'link_control = DISABLE + ...'.

[2] In Figure 97-21 'Link Monitor state diagram' (page 106, line 4) '... + link_control != ENABLE' be changed to read '... + link_control = DISABLE'

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.4.5** *P* **106** *L* **2** # 191

Law, David HP Ltd

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

Since the Link Monitor function is part of the PMA (subclause 97.1.2.2 'Physical Medium Attachment (PMA) sublayer' states 'The 1000BASE-T1 PMA ... provides the... link monitor ... function') the reset to the Link Monitor function should be pma_reset and not pcs_reset.

SuggestedRemedy

Suggest that 'pcs_reset = ON + ...' should read 'pma_reset = ON + ...'.

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.42.8** *P* **150** *L* **15** # 30

Laubach, Mark Broadcom Corporation

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

Font size problem with "975 us", looks too large.

SuggestedRemedy

Fix.

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.5** *P* **106** *L* **28** # 188

Law, David HP Ltd

Comment Type **TR** *Comment Status* **A**

A PMD sublayer is provided in IEEE Std 802.3 where multiple media, for example single mode fibre, multimode fibre, and twin-axial copper, can all be supported under the same PCS and PMA. The only example of this for twisted-Pair in IEEE 802.3 is 100BASE-TX where the same PCS and PMA is used for Fibre and Twisted-Pair (see IEEE 802.3 Figure 24-2).

For all other twisted twisted-pair PHYs the PCS and PMA is twisted-pair specific and therefore a PMD sublayer is not provided for 10BASE-T (see IEEE 802.3 Figure 14-1), 100BASE-T4 (see IEEE 802.3 Figure 23-1), 100BASE-T2 (see IEEE 802.3 Figure 32-1), 1000BASE-T (see IEEE 802.3 Figure 40-1), 40GBASE-T (see IEEE P802.3bq Figure 113-1) or 100BASE-T1 (see IEEE P802.3bw Figure 96-1). In all these cases the PMA drives the MDI directly and the MDI electrical specification is contained in the PMA sublayer.

Further, the PMA sublayer in IEEE P802.3bp is written using this approach. Figure 97-15 'PMA reference diagram' shows the PMA transmit and receive functions connected directly to the MDI +/-. Subclause 97.1.2.2 'Physical Medium Attachment (PMA) sublayer' states that 'The 1000BASE-T1 PMA transmits/receives symbol streams to/from the PCS onto the single balanced twisted pair ...' Subclause 97.4.2.2 'PMA Transmit function' states 'PMA Transmit shall continuously transmit onto the MDI pulses modulated by the symbols given by tx_symb after processing with optional transmit filtering, digital to analog conversion (DAC) and subsequent analog filtering.'. Subclause 97.4.2.3 'PMA Receive function' states 'The PMA Receive function comprises a receiver for PAM3 signals on the twisted pair.'.

If the approach of a PMD sublayer were to be used in IEEE P802.3bp a PMD service interface would have to be defined (see IEEE 802.3 89.2 for an example). A vector would then have to be passed across that abstract service interface that represented the 3-level signal to be transmitted. The PMD sublayer would then convert that vector into a an electrical signal. In addition all the items in the previous paragraph, as well as a number of others, will need to be re-written to support the PMD driving the MDI rather than the PMA.

There however doesn't seem to be any reason to do all this, and to add this extra level of complexity to the specification.

SuggestedRemedy

Suggest that the PMD sublayer be removed, and the PMD subclause become the PMA electrical specification. Based on this:

[1] Change the Clause 97 heading (page 57, line 1) to read 'Physical Coding Sublayer (PCS), Physical Medium Attachment (PMA) sublayer, and baseband medium, type 1000BASE-T1'. Update PICS title (page 142, line 12) to match.

[2] Change the first two sentence of subclause 97.1 'Overview' (page 57, line 8) to read 'This clause defines the type 1000BASE-T1 Physical Coding Sublayer (PCS) and type 1000BASE-T1 Physical Medium Attachment (PMA) sublayer. Together, the PCS, and PMA sublayers comprise a 1000BASE-T1 Physical Layer (PHY). Provided in this clause are fully

functional and electrical specifications for the type 1000BASE-T1 PCS and PMA.' Update PICS introduction (page 142, line 20) and Protocol summary (page 143, line 23) to match.

[3] Delete the PMD sublayer from Figure 97-1 (page 58, line 20 and 33) 'Relationship of 1000BASE-T1 PHY to the ISO/IEC OSI reference model and the IEEE 802.3 Ethernet Model'.

[4] Delete the penultimate sentence of the last paragraph of subclause 97.1.2 (page 59, line 12) 'Operation of 1000BASE-T1',

[5] Since subclause 97.1.2.2 'Physical Medium Attachment (PMA) sublayer' already states that 'The 1000BASE-T1 PMA transmits/receives symbol streams to/from the PCS onto the single balanced twisted pair ...' delete the heading '97.1.2.3 Physical Medium Dependent (PMD) sublayer' (page 60, line 9) as well as the first sentence of the subclause which reads 'The1000BASE-T1 PMD (see 97.5) defines the transmit and receive electrical characteristics.' so that the final sentence that reads 'The minimum link segment characteristics, EMC requirements, and test modes are specified in 97.5.' becomes the final sentence of subclause 97.1.2.2.

[6] Subclause 97.5 'Physical Medium Dependent (PMD) sublayer' should be renamed 'PMA electrical specifications' and a new sentence inserted after the heading that reads 'This subclause specifies the electrical characteristics of the PMA for a 1000BASE-T1 Ethernet PHY.'. Delete PICS entry item 'PMD' (page 144, line 12) in subclause 97.12.3 'Major capabilities/options'. Rename subclause 97.12.10 (page 152, line 26) 'PMD to MDI Electrical Requirements' to be 'MDI Electrical Requirements'.

[7] Delete subclause heading 97.5.4 (page 114, line 1) 'PMD to MDI electrical specifications'. Renumber subclause 97.5.4.1 'Transmitter electrical specifications' to be subclause 97.5.4, renumber its subclause as required. Renumber subclause 97.5.4.2 'Receiver electrical specifications' to be subclause 97.5.5, renumber its subclause as required. Renumber subclause 97.5.5 'Link segment characteristics' to be 97.5.6, renumber its subclause as required.

Response *Response Status* **W**

ACCEPT.

Cl **97** *SC* **97.5.1** *P* **106** *L* **31** # 12

Carlson, Steven HSD

Comment Type **TR** *Comment Status* **A** *Changes to 97.5.1*

Align the text in 97.5.1 through 97.5.1.2 with the text in 96.5.1 through 96.5.1.2 as this text should be the same for both Clause 96 and Clause 97.

SuggestedRemedy

Replace exising text in 97.5.1 through 97.5.1.2 with the following:

97.5.1 EMC tests
Direct Power Injection (DPI) and 150 ƒÇƒnemission tests for noise immunity and emission as per 96.5.1.1 and 96.5.1.2 may be used to establish a baseline for PHY EMC performance. These tests provide a high degree of repeatability and a good correlation to immunity and emission measurements. Additional tests may be
needed to verify EMC performance in various configurations, applications, and conditions.

97.5.1.1 Immunity - DPI test
In a real application radio frequency (RF) common mode (CM) noise at the PHY is the result of electromagnetic interference coupling to the cabling system. Additional differential mode (DM) noise at the PHY is generated from the CM noise by mode conversion of all parts of the cabling system and the MDI. The sensitivity of the PMA's receiver to RF CM noise may be tested according to the Direct Power Injection (DPI)method of IEC 62132-4, and may need to comply with more stringent requirements as agreed upon between customer and supplier.

97.5.1.2 Emission - Conducted emission test
The emission of the PMA transmitter to its electrical environment may be tested according to the 150 Ohm direct coupling method of IEC 61967-4, and may need to comply with more stringent requirements as agreed upon between customer and supplier.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace exising text in 97.5.1 through 97.5.1.2 with the following:

97.5.1 EMC tests
See 96.5.1.

97.5.1.1 Immunity - DPI test
See 96.5.1.1.

97.5.1.2 Emission - Conducted emission test
See 96.5.1.2.

Cl **97** *SC* **97.5.1** *P* **106** *L* **34** # 282

Zimmerman, George CME Consulting, Inc.

Comment Type **T** *Comment Status* **A** *Changes to 97.5.1*

compliance with codes should take precedence over agreements between customer and supplier. As it is, one could make a system noncompliant just by agreeing to it. I think what was meant was that customer and supplier might make a more stringent agreement. If that is the case, then the statement about customer and supplier is redundant. People can always agree to make or buy "standards plus" parts; however, I will try to put that intent in there...

SuggestedRemedy

Change: "A system integrating the 1000BASE-T1 PHY shall comply with applicable local and national codes, or as agreed between customer and supplier, for the limitation of electromagnetic interference."
to: "A system integrating the 1000BASE-T1 PHY shall comply with applicable local and national codes, or, if more stringent, as agreed between customer and supplier, for the limitation of electromagnetic interference.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See changes per comment #12.

Cl **97** *SC* **97.5.1** *P* **106** *L* **34** # 303

Dwelley, David Linear Technology

Comment Type **T** *Comment Status* **A** *Changes to 97.5.1*

This is comment Dwelley_1

The phrasing "shall comply ... as agreed between customer and supplier" is unusual in a standard - it is difficult to quantify for compliance testing and don't help to ensure interoperability. If the customer and supplier agree to tighter specs than the standard allows, that's great - the standard is not just met, it's exceeded. If the customer and supplier agree to looser specs, the equipment delivered under that agreement isn't compliant.

SuggestedRemedy

Strike "or as agreed...and supplier."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See changes per comment #12.

Cl **97** *SC* **97.5.1** *P* **106** *L* **36** # 278

Zimmerman, George CME Consulting, Inc.

Comment Type **ER** *Comment Status* **A** *Changes to 97.5.1*

Requirement unclear - "shall be used to establish a baseline for PHY performance" - Shall indicates a requirement. It's not clear what the requirement is other than to run the test. No result is required.... if no result, why run the tests?

repeats on lines 44 & 51 - if the circuit and limits are vendor/supplier discretionary, what is the requirement in the standard? There is definitely a recommendation that the procedure specified be used, but that isn't a requirement.

SuggestedRemedy

Change the shall to should. (3 instances, line 36, 44 and 51)

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See changes per comment #12.

Cl **97** *SC* **97.5.1.1** *P* **106** *L* **45** # 304

Dwelley, David Linear Technology

Comment Type **T** *Comment Status* **A** *Changes to 97.5.1*

See comment Dwelley_1.

SuggestedRemedy

Strike "with the test circuit...and supplier" at lines 45 and 52.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See changes per comment #12.

Cl **97** *SC* **97.5.2.1** *P* **109** *L* # 350

Gardner, Andrew Linear Technology

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

All of the test fixtures shown in subclause 97.5.2.1 use DC coupled terminations or baluns. This precludes using these fixture as is when testing PoDL PSE or PD transmitters and suggests that PoDL compatible transmitter test fixtures must be included in Clause 104.

SuggestedRemedy

Add low loss AC coupling capacitors in series with the termination resistors and baluns in order to make the transmitter test fixtures depicted in subclause 97.5.2.1 relevant for PoDL PSE and PD transmitters.

Response *Response Status* **C**

REJECT.

See text first paragraph 97.5.2.1
The test fixtures shall be used for measuring the transmitter specifications for data communication only, without PoDL PSE/PD in data path.

Cl **97** *SC* **97.5.3.3** *P* **113** *L* **7** # 270

Zimmerman, George CME Consulting, Inc.

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

"Un-jittered reference is..." missing "The"

SuggestedRemedy

Change to read "The un-jittered reference is"

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.5.4.2.1** *P* **114** *L* **24** # 285

Zimmerman, George CME Consulting, Inc.

Comment Type **TR** *Comment Status* **A** *EZ*

"through a link specified in 97.5.4" - the link segments are specified in 97.5.5, and there are two of them. Not only is the reference wrong, but it is impossible to determine whether the intent was to have both link segments mandatory, or the "additional" one (seg B) optional.

SuggestedRemedy

Change 97.5.4 to 97.5.5, and clarify whether only segment A or both segments A&B are required.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Change "through a link specified in 97.5.4" to "through a link type A specified in 97.5.5"

Cl **97** *SC* **97.5.4.2.1** *P* **114** *L* **28** # 288

Zimmerman, George CME Consulting, Inc.

Comment Type **TR** *Comment Status* **A**

I don't see any noise environment specified for this bit error rate test. a noiseless test is meaningless. The referenced link segments only specify what the transfer function is, not the noise.

SuggestedRemedy

define the specified noise environment for the FER test, or state it is without added noise.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See changes per mcclellan_3bp_1_0915.pdf.

Cl **97** *SC* **97.5.5** *P* **114** *L* **28** # 286

Zimmerman, George CME Consulting, Inc.

Comment Type **TR** *Comment Status* **A**

Both link segment A & B lack delay specifications. These would be essential in determining far end echo considerations. Without a delay specification, the designer is left to assume a round trip delay (and hence has to assume the twist pitch, the type of link segment (A or B) and it's length, or it is impossible to design a canceller for the far end echo.

Also, since this is one of the main difference between link segments A & B, the lack of a specification makes it harder to determine their differences.

SuggestedRemedy

Add maximum propagation delay specifications for link segment A & B

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Insert:

97.5.5.1.5 Maximum link delay
The propagation delay of a type A link segment shall not exceed 94 ns at all frequencies between 2 MHz and 600 MHz

Insert after 97.5.5.2.3 Return loss

97.5.5.2.4 Maximum link delay
The propagation delay of a type B link segment shall not exceed 234 ns at all frequencies between 2 MHz and 600 MHz.

Add new PICs entries for these new requirements.

Cl **97** *SC* **97.5.5** *P* **114** *L* **38** # 291

Geoff Thompson GraCaSI S.A.

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

I believe that the following text:
"An automotive link segment supporting up to four inline connectors using a single balanced twisted-pair for at least 15 m. This link segment is referred to as link segment type A" could be stated more accurately and effectively.

SuggestedRemedy

Please change to read:
"A link segment optimized for use in automotive applications has been configured for this PHY supporting up to four inline connectors using a single balanced twisted-pair for at least 15 m. This link segment is referred to as link segment type A

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change to read: "A link segment optimized for use in automotive applications supports up to four inline connectors using a single balanced twisted-pair for at least 15 m. This link segment is referred to as link segment type A."

This is a technical comment!

Cl **97** *SC* **97.5.5.1** *P* **114** *L* **14** # 279

Zimmerman, George CME Consulting, Inc.

Comment Type **ER** *Comment Status* **A** *EZ*

Figure 97-29 appears to show a wiggly insertion loss, when the equation itself is smooth - needs more frequency points in plot. Same for figures 97-30 through 97-35. Having these figures and having them not be smooth functions (when they should be) is misleading and can be more harm than it is worth.

SuggestedRemedy

Either - replot informative figures with calculations done at sufficient resolution to make the plots smooth, OR, remove informative figures.

Response *Response Status* **W**

ACCEPT.

Figures will be replotted in higher resolution.

Cl **97** *SC* **97.5.5.1.3** *P* **115** *L* **46** # 305

Dwelley, David Linear Technology

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

"log" nomenclature is inconsistent in section 97.5.5 (first instance at line 46): log is shown with no base, or with base not subscripted (so it looks like "multiply by 10").

SuggestedRemedy

Make consistent: log <subscript> 10 </subscript> in 19 places (and possibly others):
p115 L46, 49
p116 L34
p118 L39, 42
p119 L37 (3 places)
p120 L22, 33, 36
p121 L37, 47 (3 places), 48
p122 L49
p123 L24, 34

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.5.5.2** *P* **117** *L* **41** # 106

Chini, Ahmad Broadcom

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

Modify the text to allow both UTP and STP cables for industrial applications. See kish_3bp_01_0513.pdf page 14 where a CAT6A UTP cable passes E1 limit line specified in 97-12

SuggestedRemedy

Change

Type B link segment is assumed to be shielded or screened, consistent with the specification in 97.5.5.2.4 and 97.5.5.4.

To

Type B link segment may be shielded or screened, consistent with the specification in 97.5.5.2.4 and 97.5.5.4

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.5.5.2.4** *P* **119** *L* **26** # 107

Chini, Ahmad Broadcom

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

There is no study to directly relate requirements of table 97-13 to that of 97-12 for 1000BASE-T1 signaling method. Also, many listed applications for type B have tougher requirements than those mentioned in table 97-13.

SuggestedRemedy

change

The requirements in Table 97-12 shall be met based on the local environment as described by the electromagnetic classifications given in Table 97-13, E1, E2 or E3.

To

Class E1, E2 or E3 requirements in Table 97-12 shall be met based on the local environment and application and as agreed between supplier and costumer.

And remove Table 97-13

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add Editorial Note with the following text: "Table 97-13 is based on baseline data from ISO-IEC 11801."

Cl **97** *SC* **97.5.5.4.4** *P* **123** *L* **39** # 345

Bryan Moffitt CommScope

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

The PSAACRF equation (97-26) should include a plot illustration for consistent representation/presentation with the other link parameters.

SuggestedRemedy

As stated

Response *Response Status* **C**

REJECT.

Commenter is invited to submit the missing plot.

Cl **97** *SC* **97.6** *P* **123** *L* **40** # 184

Law, David HP Ltd

Comment Type **TR** *Comment Status* **A**

It would appear, particularly from the text in subclause 97.4.2.4.10, that the PHY Link Synchronization function is part of the PMA sublayer. The PHY Link Synchronization function however is missing from Figure 97-2 'Functional block diagram'.

SuggestedRemedy

Suggest that:

[1] Subclause 97.6, and it subclauses, become a subclause of 97.4 'Physical Medium Attachment (PMA) sublayer'.

{2] Add the PHY Link Synchronization function to Figure 97-2 'Functional block diagram'.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Implement changes per: Lo_3bp_01_0915.pdf.

Cl **97** *SC* **97.6** *P* **123** *L* **44** # 174

Law, David HP Ltd

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

Suggest IEEE 802.3 normally refers to 'functions' rather than 'units'.

SuggestedRemedy

Suggest that:

[1] The text '... then the Link Synchronization unit is responsible ...' in the first paragraph of subclause 97.6 (page 123, line 44) be changed to read '... then the Link Synchronization function is responsible ...'.

[2] The text '... the Link Synchronization unit ...' in the second paragraph of subclause 97.6 (page 123, line 48) be changed to read '... the Link Synchronization function ...'.

[3] The text '... or the PHY Link Synchronization unit' in the 'link_control' variable definition in subclause 97.6.1.1 (page 125, line 13) be changed to read '... or the PHY Link Synchronization function'.

[4] The text '... Link Synchronization unit sources symbols ...' in the 'link_control' variable definition in subclause 97.6.1.1 (page 125, line 15) be changed to read '... Link Synchronization unit sources symbols ...'.

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.6** *P* **123** *L* **53** # 134

Regev, Alon Ixia

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

"AN_LINK.indication(link_status)" should be "PMA_LINK.indication(link_status)"

SuggestedRemedy

Change "AN_LINK.indication(link_status)"
to "PMA_LINK.indication(link_status)"

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.6** *P* **123** *L* **53** # 172

Law, David HP Ltd

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

Think there is a typo here.

SuggestedRemedy

Suggest that 'AN_LINK.indication(link_status)' should read
'PMA_LINK.indication(link_status)'.

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.6.1.1** *P* **125** *L* **18** # 173

Law, David HP Ltd

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

The definition for the variable 'link_status' is simply see 97.2.1, however 97.2.1 states that the PMA_LINK.indication (link_status) primitive is part of the technology dependent interface. Based on this suggest that the variable definition found in subclause 97.4.4.1 'State diagram variables' should be used here too.

See similar comment on subclause 98.5.1.

SuggestedRemedy

Suggest that the definition of the link_status be replaced with the following:

link_status
The link_status parameter set by PMA Link Monitor and passed to the PCS via the PMA_LINK.indication primitive.
Values:
OK
FAIL

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the definition of the link_status as follows:

link_status
The link_status parameter set by PMA Link Monitor and passed to the PCS via the PMA_LINK.indication primitive. This variable takes the values of OK or FAIL.

Cl **97** *SC* **97.6.1.2** *P* **126** *L* **2** # 135

Regev, Alon Ixia

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

"signal_wait_timer" should be "sigdet_wait_timer" (to match the state diagram)

SuggestedRemedy

change "signal_wait_timer" to "sigdet_wait_timer"

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.7** *P* **126** *L* **38** # 183

Law, David HP Ltd

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

IEEE Std 802.3 Clause 57 already defined an OAM sublayer, and since it is packet based and operates above the MAC sublayer (see IEEE Std 802.3 Figure 57-1) would operate over a 1000BASE-T1 PHY. This however is unlikely since Clause 57 OAM is targeted at Ethernet in the First Mile (EFM) applications. There is also a set of attributes defined in the 'oOAM managed object class' (see IEEE Std 802.3 Subclause 30.3.6) to support the management of Clause 57 OAM. Based on all this, to avoid confusion, suggest that the OAM defined here should be differentiated from Clause 57 OAM.

SuggestedRemedy

To differentiate the OAM defined here from Clause 57 OAM, suggest that:

[1] The subclause 97.7 heading be changed to '1000BASE-T Operations, Administration, and Maintenance (OAM)'.

[2] All instances of 'OAM' be changed to '1000BASE-T OAM'.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

To differentiate the OAM defined here from Clause 57 OAM, suggest that:

[1] The subclause 97.7 heading be changed to '1000BASE-T1 Operations, Administration, and Maintenance (OAM)'.

[2] All instances of 'OAM' be changed to '1000BASE-T1 OAM'.

The only change is the use of "1000BASE-T1" and not "1000BASE-T", which would be reference to incorrect PHY type.

Cl **97** *SC* **97.7** *P* **126** *L* **38** # 182

Law, David HP Ltd

Comment Type **TR** *Comment Status* **A**

It would appear, particularly based on Figure 97-5 'PCS Transmit bit ordering' showing the OAM being inserted (page 74, line 15) and Figure 97-6 'PCS Receive bit ordering' showing OAM being extracted (page 12, line 15) that OAM is part of the PCS sublayer. In addition the last paragraph of 97.7 references '... 1000BASE-T1 PCS level OAM.'. The OAM function however is missing from Figure 97-2 'Functional block diagram'.

SuggestedRemedy

Suggest that:

[1] Subclause 97.7, and it subclauses, become a subclause of 97.3 'Physical Coding Sublayer (PCS)'.

{2] Add the OAM function to Figure 97-2 'Functional block diagram'.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Implement changes per: Lo_3bp_01_0915.pdf.

Cl **97** *SC* **97.7** *P* **126** *L* **40** # 97

Lusted, Kent Intel

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

Typo. "...provides an optional mechanisms..." Is it one mechansim or several mechanisms.

SuggestedRemedy

Fix as appropriate.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change
provides an optional mechanisms
to
provides an optional mechanism

Cl **97** *SC* **97.7** *P* **126** *L* **41** # 271
Zimmerman, George CME Consulting, Inc.

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

"an optional mechanisms"

SuggestedRemedy

delete "an"

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.7** *P* **126** *L* **41** # 98
Lusted, Kent Intel

Comment Type **TR** *Comment Status* **R**

The opening paragraph of 97.7 says that the OAM is an optional mechanism for message exchange.

It is unclear to me what the option is. The second-to-last paragraph of Cl 97.1.2 (starts with "The 1000BASE-T1 PHY may optionally suppor the PCS-based Operations....") further confuses it for me.

Is the OAM optional to include in the PCS transmit and receive bit ordering sequence as shown in Figure 97-5?

Or is the OAM always included in the PCS transmit and receive bit ordering but the contents of the OAM is optional?

I presume the latter, not the former, then it is not clear what the content of the OAM Frame Structure in the transmit path should be for an PHY that does not have the optional implementation of OAM.

SuggestedRemedy

Clarify as necessary.

Response *Response Status* **W**

REJECT.

All necessary information is already stated in the draft. Note that:
97.1.2.1 already specifies that 9-bit OAM data is embedded in the RS-frame and also figure 97-5.
Page 126 line 51 states: The implementation of OAM frame exchange function is optional.
Page 128 line 4 states: If OAM is not implemented then the 9-bit OAM field shall be set to all 0s.

Cl **97** *SC* **97.7** *P* **126** *L* **44** # 331
Geoff Thompson GraCaSI S.A.

Comment Type **ER** *Comment Status* **A** *EZ*

The text: "The OAM is strictly between two 1000BASE-T1 PHYs on the physical layer. Passing OAM information to other layers is outside the scope of this standard." is incorrect.

SuggestedRemedy

Change the text to read: "The OAM is strictly between two 1000BASE-T1 PHYs on the physical layer and their associated management entities if present.
Passing OAM information to other layers is outside the scope of this standard."

Response *Response Status* **W**

ACCEPT.

Cl **97** *SC* **97.7** *P* **126** *L* **53** # 332
Geoff Thompson GraCaSI S.A.

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

The text: "...frame exchange function must be implemented to exchange at minimum the link partner health status." is missing punctuation and needs improved grammar.

SuggestedRemedy

Change the text to read: "...frame exchange function must be implemented to exchange, at a minimum, the link partner health status."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the text to read: "...frame exchange function is implemented to exchange, at a minimum, the link partner health status."

Cl **97** *SC* **97.7.2.2.3** *P* **128** *L* **31** # 99
Lusted, Kent Intel

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

The PHY Health of "00" indicates that the "PHY link is dying...." How sad!

SuggestedRemedy

Change to "...PHY link is failing...." or "...PHY link is terminating...."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See also comment #14: change to "...PHY link is failing...."

Cl **97** *SC* **97.7.2.5** *P* **130** *L* **40** # 136

Regev, Alon Ixia

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

"rm_rx_ping" should be "mr_rx_ping"

SuggestedRemedy

"rm_rx_ping" should be "mr_rx_ping"

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.7.3** *P* **132** *L* **5** # 164

Law, David HP Ltd

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

Suggest that subclause 97.7.3 would be better described as state diagram variable to OAM register mapping.

Note similar comment on subclause 98.3.

SuggestedRemedy

Suggest that '97.7.3 OAM Register Requirements' be changed to read '97.7.3 State diagram variable to OAM register mapping'.

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.7.3** *P* **132** *L* **7** # 165

Law, David HP Ltd

Comment Type **T** *Comment Status* **A** *Changes to 97.7.3*

Subclause 97.7.3 'OAM Register Requirements' states that 'MMD3 ... shall be provided as the logical interface to access the device registers for OAM and other management purposes.' yet then states that 'The Clause 45 MDIO electrical interface is optional.' and that '... provision of an equivalent mechanism to access the registers is recommended.'. These seem somewhat incompatible statements, a shall stamen followed by a statement it is option. I suggest the text similar to subclause 28.2.4.1.8 be used here instead.

Note similar comment on subclause 98.3.

SuggestedRemedy

Suggest the subclause text be replaced with:

The state diagrams of Figures 98-10 to 98-13 generate and accept variables of the form "mr_x," where x is an individual signal name. These variables comprise a management interface to communicate Auto-Negotiation information to and from the management entity. Clause 45 MDIO registers are defined in MMD7 to support Auto-Negotiation. The Clause 45 MDIO electrical interface is optional. Where no physical embodiment of the MDIO exists, provision of an equivalent mechanism to access the information is recommended. Table 98-4 describes the MDIO register to the state diagrams variable mapping.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the subclause text to:

The state diagrams of Figures 97-40 and Figure 97-41 generate and accept variables of the form "mr_x," where x is an individual signal name. These variables comprise a management interface to communicate the 1000BASE-T1 PCS OAM information to and from the management entity. Clause 45 MDIO registers are defined in MMD3 to support the 1000BASE-T1 PCS OAM. The Clause 45 MDIO electrical interface is optional. Where no physical embodiment of the MDIO exists, provision of an equivalent mechanism to access the information is recommended. Table 97-15 describes the MDIO register to the state diagrams variable mapping.

Cl **97** *SC* **97.7.3** *P* **132** *L* **8** # 74

Remein, Duane Huawei

Comment Type **ER** *Comment Status* **R**

The content of Table 97-15 is very similar to various tables in Section 6 such as Tables 82–10, 82–11, 84-2, ,84-3, 85-2, 85-3, 86-3, 86-4, 84-2, 84-3, 87-2, 87-3, 88-2, 88-3, 89-2, 89-3, 95-2, and 95-3. The structure and style should match as well to help maintain consistency in the standard.

SuggestedRemedy

Change table format (header & columns) to align with the tables listed in the comment.
Change headings for Table 97-15 to:
MDIO control variable | PCS register name | Register/ bit number | PCS control variable

Response *Response Status* **W**

REJECT.

See comment #27 on D1.5 (http://www.ieee802.org/3/bp/comments/8023bp_D15_approved.pdf) - nothing has changed since then.

Cl **97** *SC* **97.7.3** *P* **132** *L* **8** # 79

Remein, Duane Huawei

Comment Type **TR** *Comment Status* **A** *Changes to 97.7.3*

Cl 45 is optional and cannot be made mandatory, in whole or in part, for any PHY as indicated in the following statement.
"MMD3 of the Clause 45 Management Data Input/Output (MDIO) interface shall be provided as the logical interface to access the device registers for OAM and other management purposes."
There is nothing sacred about the register structure in Cl 45. What is important is that an equivalent management function to the variables be provided.

SuggestedRemedy

Remove the shall. I recommend adopting the wording in other Section 6 clauses such as is found in 82.3.1
"The optional MDIO capability described in Clause 45 defines several variables that may provide control and status information for and about the PCS. Mapping of MDIO control variables to PCS control variables is shown in Table 82–10. Mapping of MDIO status variables to PMD status variables is shown in Table 82–11."

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See comment #165.

Cl **97** *SC* **97.7.4** *P* **133** *L* # 160

Law, David HP Ltd

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

There are no state diagram conventions defined for Figure 97-40 'Transmit state diagram' or Figure 97-41 'Receive state diagram', nor is there a statement that in case of conflict the state diagram takes precedence over text. In addition suggest that the subclause structure should follow the same structure as subclause 97.3.6.

SuggestedRemedy

[1] Insert a new subclause 97.7.4.1 that reads as follows:

97.3.6.1 State diagram conventions

The body of this subclause is comprised of state diagrams, including the associated definitions of variables, counters, and functions. Should there be a discrepancy between a state diagram and descriptive text, the state diagram prevails.

The notation used in the state diagrams follows the conventions of 21.5.

[2] Insert a new subclause 97.7.4.2 State diagram parameters

[3] Change subclause 97.7.4.1 'State Diagram Variables' to be 97.7.4.2.1 ' Variables'

[4] Change subclause 97.7.4.2 'State Diagram Counters' to be 97.7.4.2.2 'Counters'

[5] Change subclause 97.7.4.3 'State Diagram Functions' to be 97.7.4.2.3 'Functions'

[6] Renumber subclause 97.7.4.4 'State Diagrams' to be 97.7.4.2.4

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.7.4.1** *P* **133** *L* **5** # 163

Law, David HP Ltd

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

I assume this 'link_status' is the parameter supplied by the PMA Link Monitor to the PCS via the PMA_LINK.indication primitive. Based on this suggest that the variable definition found in subclause 97.4.4.1 'State diagram variables' should be used here too.

SuggestedRemedy

Suggest that the definition of the link_status be replaced with the following:

link_status
The link_status parameter set by PMA Link Monitor and passed to the PCS via the PMA_LINK.indication primitive.
Values:
OK
FAIL

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Suggest that the definition of the link_status be replaced with the following:

link_status
The link_status parameter set by PMA Link Monitor and passed to the PCS via the PMA_LINK.indication primitive. This variable takes the values of OK or FAIL.

Cl **97** *SC* **97.7.4.1** *P* **133** *L* **51** # 273

Zimmerman, George CME Consulting, Inc.

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

"message transmit by the PHY" several occurences - bad English
(also: P134 L 2, P134 L 6)

Further, I suppose this is the local PHY, not the link partner. Needs to be clear.

SuggestedRemedy

Change "transmit by the PHY" to "transmitted by the local PHY" (3 occurences noted). Editor to search for and make similar replacements.

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.7.4.4** *P* **138** *L* **4** # 179

Law, David HP Ltd

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

Subclause 97.7.4.1 defines two values for link_status, 'FAIL' and 'OK' yet Figure 97-40 'Transmit state diagram' and Figure 97-41 'Receive state diagram' use the condition 'link_status = NOT_OK'.

SuggestedRemedy

In both cases change 'link_status = NOT_OK' to read 'link_status = FAIL'.

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.7.4.4** *P* **138** *L* **4** # 176

Law, David HP Ltd

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

Subcaluse 97.1.5 Conventions in this clause' states that 'The notation used in the state diagrams follows the conventions of 21.5.'. Based on this Table 21-1 'State diagram operators' defines the character '+' as 'Boolean OR' and '|' as 'Catenate'. Based on this there are three instances where the character '|' is used where it would seem that a Boolean OR is intended.

SuggestedRemedy

[1] On page 138, line 4, change 'reset | (link_status = NOT_OK)' to read 'reset + (link_status = NOT_OK)'.

[2] On page 139, line 2, change 'reset | (link_status = NOT_OK)' to read 'reset + (link_status = NOT_OK)'.

[3] On page 139, line 20, change 'if ((rx_lp_valid = 0) | (rx_lp_ack = 0))' to read 'if ((rx_lp_valid = 0) + (rx_lp_ack = 0))'.

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.7.4.4** *P* **139** *L* **8** # 137

Regev, Alon Ixia

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

"rx_lp_ack_toggle" is not defined, but it is cleared in the RECEIVE_INIT state and is not used elsewhere in the state machine.

SuggestedRemedy

Remove teh line "rx_lp_ack_toggle <= 0" from the RECEIVE_INIT state

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.8.2.1** *P* **140** *L* # 351

Gardner, Andrew Linear Technology

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

The droop specification implies that a droop less than 2.5% will occur at the receiver within the 1.5ns symbol period. While this specification is easily met for data only applications, PoDL applications are constrained by the >3uH OCL requirement of the coupling inductors. For 100BASE-T1 PoDL applications, the low frequency corner return loss specification was relaxed from 20dB at 1MHz to 20dB at 2MHz in Clause 104. Is there any reason a similar amendment can't be made to the return loss for 1000BASE-T1 PoDL applications in Clase 104 as well? The subsequent increase in droop seems minor, and the OCL requirement on the PoDL inductors will be halved.

SuggestedRemedy

Amend the MDI return loss specification for 1000BASE-T1 PoDL applications in Clause 104 as follows:

greater than 18-18*log10(20/f) for 1MHz < f < 20MHz

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #356 for changes.

Cl **97** *SC* **97.8.2.1** *P* **140** *L* **10** # 87

Lusted, Kent Intel

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

The return loss equation is hard to visualize for the average reader. It would be nice to have a Figure that shows the relevant curves.

SuggestedRemedy

Add a Figure with the MDI return loss.

Response *Response Status* **C**

ACCEPT.

Figure will be generated and inserted in the next version of the draft.

Cl **97** *SC* **97.8.2.2** *P* **140** *L* **17** # 269

Zimmerman, George CME Consulting, Inc.

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

empty subclauses 97.8.2.2

SuggestedRemedy

delete empty subclause

Response *Response Status* **C**

ACCEPT.

Cl **97** *SC* **97.8.2.2** *P* **140** *L* **17** # 348

Gardner, Andrew Linear Technology

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

Subclause 97.8.2.2 has no content.

SuggestedRemedy

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove Subclause 97.8.2.2

Cl **97** SC **97.8.2.3** P **140** L **19** # 10

Carlson, Steven HSD

Comment Type **ER** *Comment Status* **A**

An new Table, 96-6 Fault Tolerance, was added to clarify the fault tolerance requirements in 96.8.3. As the requirements are identical for 1000BASE-T1, Clause 97.8.2.3 should point to Clause 96.8.3

SuggestedRemedy

Change "The wire pair of the MDI shall, under all operating conditions, withstand without damage the application of short circuits of any wire to the other wire of the same pair or ground potential or voltages with the absolute value of up to 50 V for an indefinite period of tune and shall resume normal operation after the short circuit(s) are removed. The magnitude of the current through such a short circuit shall not exceed 150 mA.

The wire pair of the MDI shall also withstand without damage high voltage transient noises and ESD per application requirements."

Replacement text:

97.8.2.3 MDI Fault Tolerance

The MDI fault tolerance requirements for 1000BASE-T1 are contained in 96.8.3.

This also fixes the typo (tunes instead of time.)

Response *Response Status* **C**

ACCEPT.

This is really a technical comment!

Update PICS.

Cl **97** SC **97-1** P **58** L **29** # 296

D'Ambrosia, John Dell

Comment Type **TR** *Comment Status* **A**

AUTONEG is noted as optional in Fig 97-1. It also states on Line 40 same page that AN may optionally be used by 1000BASE-T1 device

So, it appears that AN is actually mandatory to implement but optional to use. This is not clear to me at all.

SuggestedRemedy

Add clarification text taht states whether AN is mandatory to implement.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Add the following statement on Page 58 line 43: "The implementation of the Auto-Negotiation function is optional."

Cl **97** SC **97A.2** P **193** L **3** # 362

Klaus, Andrew JASPAR

Comment Type **T** *Comment Status* **A** *late-non-voter; EZ*

The explanation states "(4-port)". For this figure it should be "(3-port)".

SuggestedRemedy

Change "(4-port)" to "(3-port)".

Response *Response Status* **C**

ACCEPT.

Comment is against page 192 line 3!

Cl **97** SC **Figure 97-1** P **58** L **2** # 15

Carlson, Steven HSD

Comment Type **ER** *Comment Status* **A** *EZ*

The typefaces (incorrectly called "fonts," thanks to Microsoft) in Figure 97-1 are not correct both in the diagram and the legend.

SuggestedRemedy

Correct typefaces.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See comment #315 for details.

Cl **97** SC **Figure 97-17 and 97-18** P **96** L # 18
Carlson, Steven HSD

Comment Type **ER** *Comment Status* **A** *EZ*

Incorrect typeface in figures.

SuggestedRemedy

Fix typeface.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See comment #315 for details.

Cl **97** SC **Figure 97-23** P **109** L # 20
Carlson, Steven HSD

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

Graphic is "fuzzy."

SuggestedRemedy

Re-draw figure.

Response *Response Status* **C**

ACCEPT.

Cl **97** SC **Figure 97-24** P **110** L # 21
Carlson, Steven HSD

Comment Type **ER** *Comment Status* **A** *EZ*

Figure is in color, and has incorrect typeface and is generally a sad panda.

SuggestedRemedy

Replace with grpahic from P802.3bw D3.3 Figure 96-21.

Response *Response Status* **W**

ACCEPT.

Source will be welcome !

Cl **97** SC **Figure 97-24** P **110** L **20** # 120
Amason, Dale Freescale

Comment Type **ER** *Comment Status* **A** *EZ*

Figure pasted into FrameMaker and not compliant with IEEE style guide (color).

SuggestedRemedy

Re-draw figure within FrameMaker per style guide.

Response *Response Status* **W**

ACCEPT.

Cl **97** SC **Figure 97-4** P **72** L **2** # 16
Carlson, Steven HSD

Comment Type **ER** *Comment Status* **A** *EZ*

Incorrect typeface in Figure 97-4.

SuggestedRemedy

Fix typeface.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See comment #315 for details.

Cl **97** SC **Figure 97-4** P **72** L **22** # 117
Amason, Dale Freescale

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

Dashed rectangle around rx_lpi_active signal text provides no value -- no refernce to dashed rectangle in this figure found in text.

SuggestedRemedy

Remove dashed rectangle around rx_lpi_active signal text add reference to it in text.

Response *Response Status* **C**

REJECT.

By convention, such markup indicated optional function / signal pertaining to EEE.

Cl **97** *SC* **Figure 97-5 and more** *P* **74** *L* # 17
Carlson, Steven HSD

Comment Type **ER** *Comment Status* **A** *EZ*

Incorrect typeface in Figure 97-5, 97-6, 97-7, 97-10

SuggestedRemedy

Fix typeface.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See comment #315 for details.

Cl **97** *SC* **Table 97-7** *P* **99** *L* # 19
Carlson, Steven HSD

Comment Type **ER** *Comment Status* **A** *EZ*

Bottom table border should be heavy line.

SuggestedRemedy

Fix bottom table border.

Response *Response Status* **W**

ACCEPT.

Cl **97.5.** *SC* *P* **118** *L* **31** # 109
Rossbach, Martin Nexans Cabling Soluti

Comment Type **T** *Comment Status* **R** *Class F*

Formula 97-18 Align RL Requirements with CLass F requirements from ISO 11801

SuggestedRemedy

Use ISO Class F Channel requirements RL
19 1 < f < 10
24 - 5log10(f) 10 < f < 40
32 - 10log(f) 40 < f < 251.2
8 251.2 <f < 600

Response *Response Status* **C**

REJECT.

Class F channels are not specified for 15 m with 4-inline connectors. Class F is supported if a link segment consisting of Class F components meets the requirements of 97.5.5.1.

See herman_3bp_01_1113.pdf for basis of accepted RL i.e., for very short link segments with multiple connectors in close proximity.

Cl **97.5.** *SC* *P* **123** *L* **34** # 111
Rossbach, Martin Nexans Cabling Soluti

Comment Type **T** *Comment Status* **R** *Class F*

Formula 97-26 Adjust PSAACRF to Class F, there is 2db positive margin at 600MHz and maintains the requirements defined for Type A link segment

SuggestedRemedy

Use ISO Class F Channel PSACRF formula

Response *Response Status* **C**

REJECT.

See comment #109 for rationale

Cl **97.5.** *SC* *P* **123** *L* **4** # 110
Rossbach, Martin Nexans Cabling Soluti

Comment Type **T** *Comment Status* **R** *Class F*

Formula 97-24 Adjust PSANEXT to Class F, there is still >25 positive margin at 600MHz

SuggestedRemedy

Use ISO Class F Channel NEXT formula

Response *Response Status* **C**

REJECT.

See comment #109 for rationale

Cl **97.5.** *SC* **00** *P* **117** *L* **37** # 112
Rossbach, Martin Nexans Cabling Soluti

Comment Type **TR** *Comment Status* **R** *Class F*

General : Type B Link describes a 40m shielded channel up to 600MHz. There is already an existing cabling spec for 600MHz shielded cabling, defined by ISO/IEC 11801 / Class F. These requirements shall be used.

SuggestedRemedy

Response *Response Status* **W**

REJECT.

See comment #109 for rationale

Cl **97.5.** *SC* **97.5.5.1** *P* **114** *L* **50** # 355

Horrmeyer, Bernd Phoenix Contact

Comment Type **ER** *Comment Status* **R**

The link type A insertion loss includes 4 connections. It does not say anythinc about cords at either end so it is assumed they are included.
formula 97-14
Type B uses a different formula

SuggestedRemedy

Use the same format for both types.
Type B preferred

Response *Response Status* **W**

REJECT.

Unclear what the expected change is. In addition, automotive cabling is not structured cabling and the use of patch cable is not part of required cabling topology.

This is really a technical comment!

Cl **97.5.** *SC* **97.5.5.1.3** *P* **115** *L* **38** # 357

Horrmeyer, Bernd Phoenix Contact

Comment Type **TR** *Comment Status* **R**

The retun loss Formula 97-15 does not match the general 4 connetcor formulas used elsewhere. It resembles more a 2 connector channel.

SuggestedRemedy

Replace from 40 MHz onwards
40 to 250 with 32-10logf
250 to 600 MHz with 8 dB

Response *Response Status* **W**

REJECT.

See herman_3bp_01_1113.pdf for basis of accepted RL i.e., for very short link segments with multiple connectors in close proximity. Both type A and type B can be applied to automotive configurations.

Cl **97.5.** *SC* **97.5.5.1.4** *P* *L* # 359

Horrmeyer, Bernd Phoenix Contact

Comment Type **TR** *Comment Status* **R**

For return loss type B link the same reasoning as for type A applies

The retun loss Formula 97-18 does not match the general 4 connector formulas used elsewhere. It resembles more a 2 connector channel

SuggestedRemedy

Replace from 40 MHz onwards
40 to 250 with 32-10logf
250 to 600 MHz with 8 dB

Response *Response Status* **W**

REJECT.

See herman_3bp_01_1113.pdf for basis of accepted RL i.e., for very short link segments with multiple connectors in close proximity. Both type A and type B can be applied to automotive configurations.

Cl **97.5.** *SC* **97.5.5.1.4** *P* **116** *L* **27** # 358

Horrmeyer, Bernd Phoenix Contact

Comment Type **TR** *Comment Status* **R**

The differential to common mode conversion limits are extremly high.
In an installed link near ground in a car they will not be reachable.
Why not using the 3 Mice levels from ISO/IEC , the customer could then choose.
This would allow a much broader usage of this standard.

SuggestedRemedy

If the values are kept a note should be added that the limits are for laboratory measurements only.

or introduce the mice concept (as allready done in class B links)
Class E1:30-20logf
Class E2:40-20logf
Class E3:50-20logf 40 max

E3 limit is a little lower than the proposed values in D2.0

Response *Response Status* **W**

REJECT.

The balance requirements are supported by system EMC Testing. See tazebay_3bp_01a_0913.pdf

Cl **97.5.** *SC* **97.5.5.3.2** *P* **120** *L* **33** # 361

Horrmeyer, Bernd Phoenix Contact

Comment Type **TR** *Comment Status* **R**

Coupling parameters between link segments.

The limits for type A are rather low compared to type B. As the Protocol is the same this is not understandable.

As the unbalance limits are rather high the coupling parameters should be increased to at least the Ea values used for 10G. For PSAACRF they should be upgraded to the shorter lengh.

SuggestedRemedy

For type A use the formula withouth the get out clause for shorter lengh. It was introduced for four pair systems.

PSANEXT 54-15log(f/100) for f> 100 MHz 4 dB more than Ea

Response *Response Status* **W**

REJECT.

The Type B link segment is assumed to be shielded or screened consistent with the specifications. The Type A link segment is assumed unshielded consistent with the specifications.

Cl **97.5.** *SC* **97.5.5.4.2** *P* **123** *L* **4** # 360

Horrmeyer, Bernd Phoenix Contact

Comment Type **TR** *Comment Status* **R**

The limits of > 65 dB for PSANEXT for type B are much higher than type A. The same limit should be used .

As coupling attenuation is specified it takes care of alien noise.

SuggestedRemedy

Use the same limit as type A without get out.

PSANEXT 54-15log(f/100) for f> 100 MHz 4 dB more than Ea

Response *Response Status* **W**

REJECT.

The Type B link segment is assumed to be shielded or screened consistent with the specifications. Measurement data confirming alien crosstalk performance in diminico_3bp_01b_0714.pdf

Cl **97.5.** *SC* **97.5.5.4.4** *P* **123** *L* **38** # 354

Horrmeyer, Bernd Phoenix Contact

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

The PSAACRF limits are the cat8 or ISO/IEC class I,II limits.

SuggestedRemedy

Use th same limits as Type A but calculated for 40m

PSAACRF= 25-20*log(f/100)

Response *Response Status* **C**

REJECT.

The Type B link segment is assumed to be shielded or screened consistent with the specifications. Measurement data confirming alien crosstalk performance in diminico_3bp_01b_0714.pdf

Cl **97.8** *SC* **97.8.2.1** *P* **140** *L* **1** # 356

Horrmeyer, Bernd Phoenix Contact

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

MDI return loss formula shows an error at 1MHz (0 dB)

As the link values are specified very high the MDi values look very low.

SuggestedRemedy

up to 10 MHz probably log(f/100) is meant

increase values to Ea limits for 10G

Response *Response Status* **C**

REJECT.

The equation is fine as it is: 0dB at 1MHz, 18dB at 10MHz.

Cl **97A** *SC* **97A** *P* **191** *L* **3** # 69

Booth, Brad Microsoft

Comment Type **TR** *Comment Status* **A**

Annex 97A is listed as normative, but there is no normative statements in it nor no normative reference from 97.5.5 to this annex.

I'm not really sure of the intent in determining if this should be normative, but that is the assumption I used in the suggested remedy.

SuggestedRemedy

In 97A.2, remove the sentence "The link segment parameters..."

In 97.5.5, at the end of the first paragraph, add:
The link segment characteristics shall be measured using the methodology in Annex 97A.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See comment #236 for changes.

Cl **97A** *SC* **97A** *P* **191** *L* **3** # 236

Hajduczenia, Marek Bright House Network

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

Annex 97A is marked as normative, but it contains no normative requirements. There are also no normative references to Annex 97A from any existing clauses
This comment also applies to Annex 97B

SuggestedRemedy

Change "(normative)" to "(informative)"
OR
Add normative requirements to Annex 97A

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In 97A.2 Add shall
Change:
This annex describes the test methodologies used to measure the 1000BASE-T1 link segment differential to common mode conversion loss specified in 97.5.5.1.4.
To:
This annex describes the test methodologies that shall be used to measure the 1000BASE-T1 link segment differential to common mode conversion loss specified in 97.5.5.1.4.

In 97.5.5.1.4. After sentence
For compliance to the specification measurements of LCL and LCTL are sufficient as LCL and TCL are considered reciprocal and LCTL and TCTL are considered reciprocal.
Add sentence.
The differential to common mode conversion loss test methodologies are specified in Annex 97A.

Add new PICS as needed.

Cl **97A** *SC* **97A.1** *P* **191** *L* **11** # 230

Hajduczenia, Marek Bright House Network

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

"This annex describes the test methodologies used to measure" - no need for "the"

SuggestedRemedy

Change to "This annex describes test methodologies used to measure"

Response *Response Status* **C**

ACCEPT.

Cl **97A** *SC* **97A.2** *P* **191** *L* **18** # 231
Hajduczenia, Marek Bright House Network

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

Sentence does not read right: "The common mode conversion loss is measured in a specified test environment to ensure repeatability; illustrated in Figure 97A–1 and Figure 97A–2" - seems that reference to figures has nothing to do with the sentence itself.

SuggestedRemedy

Change to read: "The common mode conversion loss is measured in a specified test environment to ensure repeatability. Individual test fixtures are illustrated in Figure 97A–1 and Figure 97A–2"

Response *Response Status* **C**

ACCEPT.

Cl **97A** *SC* **97A.2** *P* **191** *L* **22** # 232
Hajduczenia, Marek Bright House Network

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

No need to use "must" in "To avoid ground-plane edge effects the 1000BASE-T1 link segment must be 30 cm from the edge of the
ground plane" - "shall" would be more appropriate if this is really intended to be testable.

SuggestedRemedy

Suggest to modify to "To avoid ground-plane edge effects the 1000BASE-T1 link segment is placed 30 cm from the edge of the ground plane" - this describes the set-up, without making it a testable requirement.

Response *Response Status* **C**

ACCEPT.

Cl **97A** *SC* **97A.2** *P* **191** *L* **24** # 233
Hajduczenia, Marek Bright House Network

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

"The link segment parameters specified in 97.5.5 are to be measured using Annex 97A methodology." - but there is no "methodology" described in Annex 97A

SuggestedRemedy

Suggest to reword to "The link segment parameters specified in 97.5.5 are to be measured using test fixtures illustrated in Annex 97A."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #69 for details.

Cl **97A** *SC* **97A.2** *P* **191** *L* **42** # 235
Hajduczenia, Marek Bright House Network

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

"METAL BRACKETS CONNECT GND PLANE AND TEST FIXTURES!!" - exclamation marks in text are not really needed - they do not add any meaning to text

SuggestedRemedy

Remove "!!" in Figure 97A–1 and Figure 97A–2

Response *Response Status* **C**

ACCEPT.

Cl **97A** *SC* **97A.2** *P* **191** *L* **43** # 344
Bryan Moffitt CommScope

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

There is no need for double exclamation marks on the note "METAL BRACKETS CONNECT GND PLANE AND TEST FIXTURES!!"

SuggestedRemedy

Remove, and also in similar figure that follows and the one in 97B

Response *Response Status* **C**

ACCEPT.

Cl **97A** *SC* **97A.2** *P* **191** *L* **51** # 234
Hajduczenia, Marek Bright House Network

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

"Figure 97A–1—4-port test setup" - "4" looks like extention of figure number :) Same for Figure 97A–2

SuggestedRemedy

Change to "Figure 97A–1—Four-port test setup" and Figure 97A–2—Three-port common mode conversion loss measurement

Response *Response Status* **C**

ACCEPT.

Cl **97A** *SC* **Figure 97A-1** *P* **194** *L* # 9

Carlson, Steven HSD

Comment Type **ER** *Comment Status* **D**

The comment applies to all figures in color in Annex 97A and 97B.

SuggestedRemedy

Remove the color---printing in gray scale (B&W) works fine.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **97B** *SC* **97B** *P* **193** *L* **1** # 81

Remein, Duane Huawei

Comment Type **TR** *Comment Status* **A** *EZ*

Most normative Annex with requirement statements (i.e., "shall" statements include a PICS. This Annex has 8 shall statements and should therefore include a PICS

SuggestedRemedy

Add PICS tables.

Response *Response Status* **W**

ACCEPT.

Cl **97B** *SC* **97B.1.1** *P* **193** *L* **21** # 237

Hajduczenia, Marek Bright House Network

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

"The limits for PSANEXT and PSAACRF are based on the alien crosstalk test configurations in Figure 97B–
2, Figure 97B–3, and Figure 97B–4." - Figure numbering broken across lines

SuggestedRemedy

Coax FrameMaker NOT to break figure numbers across lines.

Response *Response Status* **C**

ACCEPT.

Cl **97B** *SC* **97B.1.1** *P* **193** *L* **27** # 238

Hajduczenia, Marek Bright House Network

Comment Type **T** *Comment Status* **A** *97B shall*

Meaningless "shall" statements, that are typically untestable:
"Multiport test fixtures shall be used for multiport link segments. "
"Significant connectors may be located in the same or other mounting systems in close proximity and shall be assessed as follows."
"If at any frequency point the ANEXT measurement is less than 90 dB,
then the entire ANEXT loss and PSAACRF response of that connector combination shall be included in the overall power sum result."
"The cables should be fixed in their position by means of cable straps or adhesive tape to keep the cables attached together with a maximum distance between the fixation devices of 30 cm." - likely unintended optional "should"

SuggestedRemedy

Change individual sentences to

"Multiport test fixtures are used for multiport link segments. "
"Significant connectors may be located in the same or other mounting systems in close proximity and are assessed as follows."
"If at any frequency point the ANEXT measurement is less than 90 dB,
then the entire ANEXT loss and PSAACRF response of that connector combination is included in the overall power sum result."
"The cables are fixed in their position by means of cable straps or adhesive tape to keep the cables attached together with a maximum distance between the fixation devices of 30 cm."

To make Annex 97B normative, we need at least a normative requirement within Clause 97 in 97.5.5, after the lettered list: "Alien crosstalk for type A link segments shall be tested following the test procedure in Annex 97B." make link live + add new PICS entry for this requirement.

Response *Response Status* **C**

ACCEPT.

Cl **97B** *SC* **97B.2** *P* **193** *L* **42** # 80

Remein, Duane Huawei

Comment Type **TR** *Comment Status* **A** *97B shall*

This statement
"The power sum ANEXT loss between a disturbed type A link segment and the disturbing type A link segments shall meet the values determined using Equation (97–20)."
duplicates the requirement noted in PICS LKS8 (pg 153 ln 26). Duplication of requirements should be avoided due to synchronization issues.

Note that changing the wording to remove the "shall" in 97B.2 would be an acceptable solution also.

This same issue exists at:
Scl 97B.2 pg 193 ln 44 with PICS LKS9
Scl 97B.2 pg 193 ln 49 with PICS LKS8
Scl 97B.2 pg 193 ln 52 with PICS LKS9

SuggestedRemedy

Strike the statement in 7B.2

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See comment #238 and #239 for details.

Cl **97B** *SC* **97B.2** *P* **193** *L* **44** # 239

Hajduczenia, Marek Bright House Network

Comment Type **TR** *Comment Status* **A** *97B shall*

Requirements out of place. They are also already included in Clause 97 (e.g., page 121, line 44)
"The power sum AACRF between any disturbed type A link segment and the disturbing type A link segments shall meet the values determined using Equation (97–22)"
"The power sum ANEXT loss between any disturbed type A link segment and the disturbing type A link segments shall meet the values determined using Equation (97–20).
The power sum AACRF between any disturbed type A link segment and the disturbing type A link segments shall meet the values determined using Equation (97–22)."

SuggestedRemedy

Remove the said requirements from Annex 97B

Response *Response Status* **C**

ACCEPT.

Cl **97B** *SC* **97B.3** *P* **194** *L* **41** # 346

Bryan Moffitt CommScope

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

Mode should be non-capitalized

SuggestedRemedy

As stated

Response *Response Status* **C**

ACCEPT.

Cl **97B** *SC* **97B.3** *P* **195** *L* **5** # 347

Bryan Moffitt CommScope

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

Figures 97B-2 and 97B-3 should show the bundling rings over each section of bundled cable to more accurately illustrate the descriptions and support the standards work that led to this.

SuggestedRemedy

As stated

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Put a ring (ellipse) around individual cable bundles in Figure 97B-2 and Figure 97B-3.

Add a new Figure before existing Figure 97B-4, showing 3 cable bundle for 3 cables (1-2-3). Add new text on page 194, line 45: "An example of cable bundling for the 2-around-1 alien crosstalk test configuration is illustrated in
Figure 97B–4."

This is a technical comment!

Cl **98** *SC* *P* **183** *L* **2** # 29

Laubach, Mark Broadcom Corporation

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

Text is a bit small to read. Any chance of arranging similar to Figure 73-11 to permit larger text to be used? Yes, I understand it is a busy SD and takes editor time to change and this comment may therefore be rejected. Note that several of the SDs have very small text. This one stood out more than the others.

SuggestedRemedy

As per comment.

Response *Response Status* **C**

ACCEPT.

Editor will attempt a redraw figures. Note that comment is on Figure 98-11 :)

Cl **98** *SC* **98** *P* **157** *L* **1** # 66

Booth, Brad Microsoft

Comment Type **ER** *Comment Status* **A** *EZ*

Over the last decade (or more), 802.3 has moved to just using the term "Auto-Negotiation" or "Auto-Negotiation function" in the title. The term "Single Twisted Pair" would also seem to imply a very defined application set. Could this not be used with other single pair transmission media (coax, backplane, etc.)?

SuggestedRemedy

Change the title of Clause 98 to be:
Auto-Negotiation for single differential-pair media

Response *Response Status* **W**

ACCEPT.

Cl **98** *SC* **98.1.1** *P* **157** *L* **13** # 289

Zimmerman, George CME Consulting, Inc.

Comment Type **TR** *Comment Status* **A**

"The normative definitions for all extensions to single twisted pair Auto-Negotiation and all related register assignments for this standard are documented in Annex 98A."

Annex 98A contains only the Selector field definitions. there are no register assignments or other definitions. Not sure what was intended or what is missing, but the description here is more than Annex 98A contains.

SuggestedRemedy

Replace sentence with "Annex 98A describes the Selector Field which is used by Auto-Negotiation to identify the type of message being sent."

Response *Response Status* **W**

ACCEPT.

Cl **98** *SC* **98.1.1** *P* **157** *L* **30** # 293

Geoff Thompson GraCaSI S.A.

Comment Type **TR** *Comment Status* **A**

The last sentence of this sub-clause seems to presume that the implementation has multiple modes of operation. This is an implementation issue and is beyond the scope of this standard. The PRIMARY function of auto-negotiation is to define WHEN link partners have a common operating mode and IF they do, to bring up the link. Deciding how to do anything to resolve mismatching modes is a management functionality issue that is beyond the scope of 802.3.

SuggestedRemedy

Change text to read" The single twisted pair Auto-Negotiation function allows the identification of the operational mode of the link partner. Should multiple modes be present, management may select between the various offered modes. How such selection is done is beyond the scope of this standard.

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.1.2** *P* **159** *L* **27** # 62

Booth, Brad Microsoft

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

A couple of minor editorial things to consider. The "*MII" and "* MII is optional" appear to be carry-overs from Clause 28. As this clause is written for 1000BASE-T1, it might seem strange for a reader to see the use of MII instead of GMII.

SuggestedRemedy

Change *MII to *GMII in the figure. Change "* MII is optional" to be "* Optional"

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.2** *P* **157** *L* **48** # 63

Booth, Brad Microsoft

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

The use of Auto-Negotiation multiple times doesn't read well.

SuggestedRemedy

Change to read:
Auto-Negotiation shall provide the following functions:
a) Transmit
b) Receive
c) Half duplex
d) Arbitration

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.2.1.1.1** *P* **159** *L* **46** # 85

Lusted, Kent Intel

Comment Type **TR** *Comment Status* **A**

The DME page encoding rules are incomplete for the payload and CRC16 sections. Table 98-1 entry "T4a" suggest that the transitions are full swing PAM3 values.

This clause does not specify the PAM3 value that the clock and data transitions should swing from.

Nor does it specify what the receiver should do if there is a coding violation detected.

SuggestedRemedy

Add to the list immediately after the 4th paragraph, something like "a clock or data transition shall transition from a +1 PAM3 value to a -1 PAM3 value, or vice versa"

Also, consider adding something like "If a coding violation is detected within the bounds of the DME page, the contents of that DME page shall be ignored"

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Add the following at the end of the paragraph on page 159 line 51: "When the DME page is active, the PHY shall transmit either +1 or -1 level with the voltage levels as specified in 98.2.1.1.4.".

Note that if there is a coding violation, then CRC errors will occur and the DME page will be ignored. No need to make explicit requirements for it.

Make links live. Add PICS entry for the new "shall" statement.

Cl **98** *SC* **98.2.1.1.1** *P* **159** *L* **47** # 102
Lusted, Kent Intel

Comment Type **TR** *Comment Status* **A**

Inconsistent use of the term "starting sync header" and "start delimiter".

The text in 98.2.1.1.1 users "starting sync header". However, Figure 98-6 uses "Start Delimiter". Are these intended to be the same thing?

SuggestedRemedy

Replace "starting sync header" with "Start Delimiter" in 9 locations in Clause 98.

Also add a cross reference to Figure 98-6 to the end of the 3rd sentence in the first paragraph of 98.2.1.1.1.

Response *Response Status* **W**

ACCEPT.

Cl **98** *SC* **98.2.1.1.1** *P* **160** *L* **39** # 103
Lusted, Kent Intel

Comment Type **TR** *Comment Status* **R**

Leaving the polarity randomization at position 0 to be determined in an implementation specific manner is abiguous. The ambiguity makes it difficult, if not impossible, to determine if a PHY is compliant to the desired spec behavior for "randomness" and tends to cause interoperability issues.

For example, a random value could be to always send positive polarity. (This would be undesired behavior and would potentially violate the spirit of the specification.)

SuggestedRemedy

Consider specifying the random polarity behavior of position 0 by a PRBS polynomial, such as Figure 73-2 in the base standard.

Update note with Figure 98-6, if appropriate.

Response *Response Status* **W**

REJECT.

The DME page information content is edge based and not level based. Hence the actual starting polarity whether randomized or not will not cause interoperability issues. It is to the implementer's advantage to randomize to lower emissions in order to meet the emissions requirement. Some pseudo random sequence works better than others and it is up to each implementer to determine what is best for their implementation.

Cl **98** *SC* **98.2.1.1.1** *P* **161** *L* **5** # 177
Law, David HP Ltd

Comment Type **ER** *Comment Status* **A** *EZ*

It appears a number of figures have not be drawn in Frammaker. In particular in Figure 98-4 there appears to be a cursor near the start of the word 'clock', and therefore potentially a screen capture. For future maintainability it is a much better idea to have the figures embed as native Framemaker figures.

SuggestedRemedy

Please ensure that figures have been drawn in Framemaker, happy to help with this if required.

Response *Response Status* **W**

ACCEPT.

Cl **98** *SC* **98.2.1.1.2** *P* **162** *L* **11** # 84
Lusted, Kent Intel

Comment Type **TR** *Comment Status* **R**

DME page width duration of 4680 nsec is not correct.

The DME page should be:
26xT1 (Start delimiter) + 64xT2 (Payload and the CRC16) + 1xT1 (End delimiter)

T1 = 30 nsec. T2 = 60 nsec

26x30ns + 64x60ns + 1x30ns = 4650nsec

SuggestedRemedy

change Table 98-1 value T5 to 4650 nsec.

Response *Response Status* **W**

REJECT.

The value in the spec is correct. The end delimiter is 60ns and not 30ns. See also comment #83 for changes that make this value more explicit.

Cl **98** *SC* **98.2.1.1.2** *P* **162** *L* **6** # 104

Lusted, Kent Intel

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

Table 98-1 specifies the DME page timing requirements. However, T5 is not defined in a figure and is ambiguous if it includes the "start delimiter" and "end delimiter" or not.

SuggestedRemedy

Consider adding the T5 measurement to Figure 98-6, that spans "Start delimiter" to "end delimiter" inclusive.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add T5 label to Fig 98-6 as follows.
Extend the vertical bar touching the left end of the Start Delimiter arrow
Extend the vertical bar touching the left end of the End Delimiter arrow
Draw a double arrowed horizontal line touching the 2 bars above at each end. Label this line T5

Cl **98** *SC* **98.2.1.1.3** *P* **162** *L* **16** # 105

Lusted, Kent Intel

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

No specific polynomial is associated with the PRBS sequence used in the sync header.

SuggestedRemedy

If there is no polynomial for the PRBS, consider removing "PRBS" from the first sentence of the first paragraph in the section.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove the word "PRBS" from the sentence.

This is a technical comment!

Cl **98** *SC* **98.2.1.1.3** *P* **162** *L* **18** # 100

Lusted, Kent Intel

Comment Type **TR** *Comment Status* **R**

The current start delimiter for the DME page is not DC balanced. The pattern consists of 10 +1 symbols and 15 -1 symbols. This introduces a negative DC offset on the line.

SuggestedRemedy

Consider using a DC balanced signal for the DME page delimiter.

Response *Response Status* **W**

REJECT.

Header sequence is used for good detection capabilities. Polarity randomization at the start of each page helps with the DC balance. Note also that Clause 28 auto-negotiation link pulses is completely not DC balanced.

Cl **98** *SC* **98.2.1.1.3** *P* **162** *L* **20** # 83

Lusted, Kent Intel

Comment Type **TR** *Comment Status* **A**

It is unclear what is meant by "the page end is followed by a dummy zero".

What is the 'page end'? Perhaps the text should reference 'end delimiter' instead.

What is a 'dummy zero'? Is this the PAM3 value of '0' or is it a DME bit value of '0'? Figure 98-6 suggests that it is a DME bit value of 0.

Furthermore, the duration of the end delimiter is unspecified.

SuggestedRemedy

Revise the sentence to remove ambiguity, as appropriate.

Add a requirement for the end delimiter to be of T1 in duration, or T2, as appropriate.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Change
The page end is followed by a dummy zero
to
The DME page ends with an end delimiter which consists of a logical 0 bit.

Cl **98** *SC* **98.2.2.1** *P* **166** *L* **18** # 86

Lusted, Kent Intel

Comment Type **TR** *Comment Status* **A**

The receive sensitivity for the DME page is not specified. It is reasonable to expect that an untrained receiver will need an open eye DME page. There is a pointer to 98.5, which is the state diagrams and variable definitions.

The closest relevant section is 98.2.1.1.4. However, this clause only specifies the transmitter peak differential output voltage for the AN signal.

Clause 97.5.4.2.1 does not specify a minimum receiver sensitivity, either.

SuggestedRemedy

Specify the minimum receive sentivity to detect when a DME page is on the link segment.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See changes per comment #38.

Cl **98** *SC* **98.2.2.1** *P* **166** *L* **19** # 38

McClellan, Brett Marvell

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

reference to 98.5 is wrong, the signal level is specified in 98.2.1.1.4. and the receive sensitivity is not specified.

SuggestedRemedy

Change "The DME transmit signal level and receive sensitivity are specified in 98.5."
to "The DME transmit signal level is specified in 98.2.1.1.4."

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.2.3** *P* **166** *L* **35** # 65

Booth, Brad Microsoft

Comment Type **ER** *Comment Status* **R**

I really dislike the term "Half Duplex" as used in the clause. Half duplex is a defined term in 1.4.216 and is associated with the MAC. I believe it would be worthwhile for the task force to consider terminology that doesn't create confusion with existing terminology.

SuggestedRemedy

Change the use of half duplex in the draft to be handshake.

Response *Response Status* **W**

REJECT.

The term "half-duplex" is associated with the general concept of telecommunication links operating in a specific manner, and not tied to MAC only. The use of this term is correct in the current draft and as intended by TF.

This is a technical comment!

Cl **98** *SC* **98.2.3** *P* **166** *L* **42** # 325

Law, David HP Ltd

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

IEEE Std 802.3 has a specific definition for 'collision' in subclause 1.4.154 that reads 'A condition that results from concurrent transmissions from multiple data terminal equipment (DTE) sources within a single collision domain.' where 'collision domain' is defined in subclause 1.4.155 as 'A single, half duplex mode CSMA/CD network.'.

SuggestedRemedy

Since the use of 'collision' here does not meet this definition, this is the only use of the word in the draft, and suggest that it be better not to start to use this word again for a new purpose the text '... the half duplex collisions by using a random wait time ...' be changed to read '... concurrent transmissions by using a random wait time ...'

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.2.4.3** *P* **167** *L* **39** # 324

Law, David HP Ltd

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

Subclause 98.2.4.3 'Next Page function' states that 'The Toggle bit is used to ensure proper synchronization between the local device and the link partner', however while subclause 98.2.4.3.1 'Next page encodings' The Next Page shall use the encoding shown in Figure 98-8 and Figure 98-9 for the NP, Ack, MP, Ack2, and T bits.' and Figure 98-8 and Figure 98-9 show a 'T' bit in D11, there is no explicit statement that this is the Toggle bit. Further in Figure 98-13 'Arbitration state diagram' it seems that the toggle bit is sourced from bit 12 from the management register, toggle_tx ? mr_adv_ability[12] in state 'ABILITY DETECT', and transmitted in bit 12 of the link codeword, 'tx_link_code_word[12] ? toggle_tx' in state 'NEXT PAGE WAIT' which doesn't seem correct.

SuggestedRemedy

Add text to subclause 98.2.4.3.1 'Next page encodings' to state that the 'T' bit is the toggle bit, correct the source and destination bit for toggle_tx in Figure 98-13 if required.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change text on page 167 line 39
The Toggle bit
to
The Toggle (T) bit

Figure 98-13 is correct as is. tx_link_code_word and rx_link_code_word indexing are offset by 1, so bit 12 corresponds to D11.

Cl **98** *SC* **98.3** *P* **169** *L* **5** # 167

Law, David HP Ltd

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

Suggest that subclause 98.3 would be better described as state diagram variable to Auto-Negotiation register mapping.

Note similar comment on subclause 97.7.3.

SuggestedRemedy

Suggest that '98.3 Management register requirements' ' be changed to read '98.3 State diagram variable to Auto-Negotiation register mapping'.

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.3** *P* **169** *L* **6** # 166

Law, David HP Ltd

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

Subclause 98.3 'Management register requirements' states that 'MMD7 ... shall be provided as the logical interface to access the device registers for Auto-Negotiation and other management purposes.' yet then states that 'The Clause 45 MDIO electrical interface is optional.' and that '... provision of an equivalent mechanism to access the registers is recommended.'. These seem somewhat incompatible statements, a shall stamen followed by a statement it is option. I suggest the text similar to subclause 28.2.4.1.8 be used here instead.

Note similar comment on subclause 97.7.3.

SuggestedRemedy

Suggest the subclause text be replaced with:

The state diagrams of Figures 98-10 to 98-13 generate and accept variables of the form "mr_x," where x is an individual signal name. These variables comprise a management interface to communicate Auto-Negotiation information to and from the management entity. Clause 45 MDIO registers are defined in MMD7 to support Auto-Negotiation. The Clause 45 MDIO electrical interface is optional. Where no physical embodiment of the MDIO exists, provision of an equivalent mechanism to access the information is recommended. Table 98-4 describes the MDIO register to the state diagrams variable mapping.

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.5** *P* **170** *L* **50** # 159

Law, David HP Ltd

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

The heading for subclause 98.5 reads 'State diagrams and variable definitions' yet timers, counters and functions area also defined.

SuggestedRemedy

Suggest the heading for subclause 98.5 be changed to simply read 'Detailed functions and state diagrams' similar to subclause 97.3.6.

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.5.1** *P* **172** *L* **47** # 262

Slavick, Jeff Avago Technologies

Comment Type **TR** *Comment Status* **A** *EZ*

Boolean variables take on TRUE or FALSE, not numerical values.

SuggestedRemedy

Removed the word "Boolean" from the definition of code_sel

Response *Response Status* **W**

ACCEPT.

Cl **98** *SC* **98.5.1** *P* **174** *L* **1** # 168

Law, David HP Ltd

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

It is stated that 'link_status' is defined in 98.4.1, however it is the 'PMA_LINK.indication' primitive and the 'link_status' parameter that are defined in 98.4.1. Based on this suggest that the variable definition found in subclause 97.4.4.1 'State diagram variables' should be used here too.

See similar comment on subclause 97.6.1.1.

SuggestedRemedy

Suggest that the definition of the link_status be replaced with the following:

link_status
The link_status parameter set by PMA Link Monitor and passed to the PCS via the PMA_LINK.indication primitive.
Values:
OK
FAIL

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Suggest that the definition of the link_status be replaced with the following:

link_status
The link_status parameter set by PMA Link Monitor and passed to the PCS via the PMA_LINK.indication primitive. This variable takes on two values: OK or FAIL.

Cl **98** *SC* **98.5.2** *P* **177** *L* **44** # 161

Law, David HP Ltd

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

98.5.2 'State diagram timers' states that 'All timers operate in the manner described in 14.2.3.2' however subclause 14.2.3.2 doesn't describe the effect of the 'Stop' operation applied to a timer such as 'Stop receive_DME_timer' found in the 'SILENT' state of Figure 98-12 'Half Duplex state diagram'. A reference to subclause 40.4.5.2 instead, which IEEE P802.3bw used, would be better, as 40.4.5.2 adds a definition for the 'Stop' operation.

SuggestedRemedy

Suggest that '... manner described in 14.2.3.2.' be changed to read '... manner described in 40.4.5.2.'.

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.5.4** *P* **179** *L* **40** # 263

Slavick, Jeff Avago Technologies

Comment Type **TR** *Comment Status* **A** *EZ*

In Figure 98-10 the CRC16 function produces a 16b CRC that is assigned to part of the tx_link_code_word. Currently the definition of CRC16 implies the tx_link_code_word would become a CRC16 generator.

SuggestedRemedy

Change the definition for CRC16 to read:

Returns the output of the CRC16 generator described in 98.2.1.1.1 after processing the 48-bit input x.

Response *Response Status* **W**

ACCEPT.

Cl **98** *SC* **98.5.5** *P* **180** *L* **30** # 261

Slavick, Jeff Avago Technologies

Comment Type **TR** *Comment Status* **A**

In Figure 98-10 when you transition from WAIT2 to TRANSMIT_COUNT_ACK there is no change the page_polarity bit. If this path is taken several times in a row you start to defeat the purpose of the page_polarity bit to cause the you to randonly start with +1 or -1 on each frame sent

SuggestedRemedy

Add page_polarity <= code_sel into the TRANSMIT_COUNT_ACK state before TD_AUTONEG <= mv_start_delimiter

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Add "page_polarity <= code_sel" after "transmit_DME_done <= false" in the WAIT2 state instead of TRANSMIT COUNT ACK state to avoid ambiguity of sequencing on when page_polarity <= code_sel occurs.

Cl **98** *SC* **98.5.5** *P* **180** *L* **5** # 316

Law, David HP Ltd

Comment Type **ER** *Comment Status* **A** *EZ*

According to the IEEE-SA Standards Style Manual IEEE subclause 4.4 'Figures' (page 51) the smallest acceptable font size of 6 point font, yet according to Adobe Acrobat the font used in Figure 98-10 'Transmit state diagram' is 5.5 point font, in Figure 98-13 'Arbitration state diagram' is 5.2 point font.

SuggestedRemedy

Please redraw this figure using 6 point font or greater, be happy to help with this.

Response *Response Status* **W**

ACCEPT.

Cl **98** *SC* **98.5.5** *P* **183** *L* **22** # 169

Law, David HP Ltd

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

The transition from 'AN GOOD CHECK' to 'TRANSMIT DISABLE' is conditioned on '((link_status_[HCD]=FAIL + link_status_[HCD]=READY) ? ...' however link_status=READY is not a defined value for link_status. I think link_status=READY was previously used to support parallel detection.

SuggestedRemedy

Suggest ((link_status_[HCD]=FAIL + link_status_[HCD]=READY) ? ...' should be changed to read '(link_status_[HCD]=FAIL ? ...'

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the transition path to be
(link_status_[HCD] = FAIL *
link_fail_inhibit_timer_done) +
incompatible_link = true

Cl **98** *SC* **98.6** *P* **183** *L* **29** # 31

Laubach, Mark Broadcom Corporation

Comment Type **ER** *Comment Status* **A** *EZ*

I understand that by convention, the PICS should always begin on a new page. Add a page break to the header.

SuggestedRemedy

As per comment.

Response *Response Status* **W**

ACCEPT.

Cl **98** *SC* **Figure 98-5** *P* **161** *L* # 8

Carlson, Steven HSD

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

Figure is "fuzzy."

SuggestedRemedy

Re-draw or re-import figure.

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **Figure 98-1** *P* **158** *L* **25** # 119

Amason, Dale Freescale

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

figure 98-1 is not referenced in the text

SuggestedRemedy

Add reference to Figure 98-1 from within text to increase readability of specification and justify figure.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the following in page 157, line 48
The single twisted pair Auto-Negotiation function shall provide the following (as shown in Figure 98-1):" - make link live.

Cl **98** *SC* **Figure 98-2** *P* **159** *L* # 6

Carlson, Steven HSD

Comment Type **ER** *Comment Status* **A** *EZ*

Incorrect typefaces in figure.

SuggestedRemedy

Fix typefaces.

Response *Response Status* **W**

ACCEPT.

Cl **98** *SC* **Figure 98-4** *P* **160** *L* # 7

Carlson, Steven HSD

Comment Type **ER** *Comment Status* **A** *EZ*

Figure is "fuzzy."

SuggestedRemedy

Repdraw figure, or re-import.

Response *Response Status* **W**

ACCEPT.

Cl **98** *SC* **Figure 98-4** *P* **161** *L* **15** # 121

Amason, Dale Freescale

Comment Type **ER** *Comment Status* **A** *EZ*

Figure has been pasted from another application. Needs to be redrawn in FrameMaker. Other figures may have also been pasted from another application -- but this figure was obvious with the inclusion of the cursor in the capture.

SuggestedRemedy

Re-draw figure in FrameMaker.

Response *Response Status* **W**

ACCEPT.

Cl **98A** *SC* **98A.1** *P* **197** *L* **11** # 240

Hajduczenia, Marek Bright House Network

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

Annex 98A is marked as normative, yet there are no normative references to it from 802.3bp text.

SuggestedRemedy

in 45.2.7.14c, change "The Selector field (7.514.4:0) is set to the IEEE 802.3 code as specified in Annex 98A" to "The Selector field (7.514.4:0) shall be set to the IEEE 802.3 code, as specified in Annex 98A" + add necessary PICS entry.

Response *Response Status* **C**

ACCEPT.

Cl **98A** *SC* **98A.1** *P* **197** *L* **12** # 241

Hajduczenia, Marek Bright House Network

Comment Type **T** *Comment Status* **D**

Multiple "shall" statements that are not really needed:
"The Selector Field, S[4:0] in the link codeword, shall be used to identify the type of message being sent by Auto-Negotiation."
"Reserved combinations shall not be transmitted." - 802.3 usually specifies what happens on receive side (ignored on receive)

SuggestedRemedy

Change selected lines to:

"The Selector Field, S[4:0] in the link codeword, is used to identify the type of message being sent by Auto-Negotiation."
"The reserved combinations shall be ignored on receipt."

Add PICS for "The reserved combinations shall be ignored on receipt."

Remove "As new messages are developed, this table will be updated accordingly." - this is implicit by open status of the standard.

For clarity, change "The following table identifies the types of messages that may be sent. " to "Table 98A-1 identifies the types of messages that may be sent. " + make link live

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **98B** *SC* **98B.1** *P* **199** *L* **15** # 245

Hajduczenia, Marek Bright House Network

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

Prunning unnecessary wordiness
"As new IEEE 802.3 LAN technologies are developed, a reserved bit in the Technology Ability field may be assigned to each technology by the standards body." - this is implicit, given that any new project may add to existing material.

SuggestedRemedy

Remove

Similarly, statement on page 201, line 15: "As new messages
are developed, this table will be updated accordingly." needs to be removed.

Response *Response Status* **C**

ACCEPT.

Cl **98B** *SC* **98B.1** *P* **199** *L* **18** # 246

Hajduczenia, Marek Bright House Network

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

"The new technology will then be inserted into the Priority Resolution hierarchy and made a part of the AutoNegotiation standard. The relative hierarchy of the existing technologies will not change, thus providing
backward compatibility with existing Auto-Negotiation implementations."
The first sentence should be generalized a bit. The second sentence is technically incorrect - there is no way to guarantee it

SuggestedRemedy

Change text to read: "The Technology Ability Field for is inserted into the Priority Resolution hierarchy and made a part of the AutoNegotiation process. The relative hierarchy of the existing technologies is designed in such a way that backward compatibility with existing Auto-Negotiation implementations is maintained."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change text to read: "The Technology Ability Field is inserted into the Priority Resolution hierarchy and made a part of the AutoNegotiation process. The relative hierarchy of the existing technologies is designed in such a way that backward compatibility with existing Auto-Negotiation implementations is maintained."

Cl **98B** *SC* **98B.1** *P* **199** *L* **22** # 247

Hajduczenia, Marek Bright House Network

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

"It is important to note that the reserved bits are required to be transmitted as logic zeros. " - what are "logic zeros" ??? this term seems to exist in Clause 22, 28, and 32 only. "one/zero" is used in newer amendments

SuggestedRemedy

Change

It is important to note that the reserved bits are required to be transmitted as logic zeros. This guarantees that
devices implemented using the current priority table will be forward compatible with future devices using an
updated priority table.

To

Reserved bits are transmitted as zeros. This guarantees that devices implemented using the current priority table forward updated priority tables.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change

It is important to note that the reserved bits are required to be transmitted as logic zeros. This guarantees that
devices implemented using the current priority table will be forward compatible with future devices using an
updated priority table.

To

Reserved bits shall be transmitted as zeros. This is to ensure that devices implemented using the current priority table forward updated priority tables.

Cl **98B** *SC* **98B.1** *P* **199** *L* **23** # 180

Law, David HP Ltd

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

Mandatory requirements such as 'reserved bits are required to be transmitted as logic zeros' need to have a shall statement associated with them, but in this case I can't find one. I however don't suggest adding a shall here as that would then require a PICS to be added to Annex 98B, instead I suggest a shall statement related to this be added to subclause 98.2.1.2.4 'Technology Ability Field'.

In addition I prefer we don't say that we guarantee that something will always work in the future, instead we should state that setting these bits to zero is to ensure compatibility with future devices.

SuggestedRemedy

Suggest that:

[1] The text 'Bits defined as reserved in 98B.3 shall be transmitted as logic zero to ensure devices implemented using the current priority table will be forward compatible with future devices using an updated priority table.' be added to the end of the first paragraph of subclause 98.2.1.2.4 'Technology Ability Field' (page 164, line 20).

[2] The text 'This guarantees that devices implemented using the ...' be changed to read 'This is to ensure that devices implemented using the ...'.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #247 for changes

Cl **98B** *SC* **98B.2** *P* **199** *L* **50** # 88

Lusted, Kent Intel

Comment Type **TR** *Comment Status* **A** *EZ*

Table 98B-1 does not specify the values of the remaining Technology Ability Field bits [A3:A26]

SuggestedRemedy

Add row to the end of the Table with bits "[A3:A26]" in the bit column, having the selector description column value of "RESERVED"

Response *Response Status* **W**

ACCEPT.

Cl **98B** *SC* **98B.3** *P* **199** *L* **35** # 248
Hajduczenia, Marek Bright House Network

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

"The Technology bit field consists" - likely, "The Technology Ability Field consists"

SuggestedRemedy

per comment

Response *Response Status* **C**

ACCEPT.

Cl **98B** *SC* **98B.3** *P* **199** *L* **36** # 249
Hajduczenia, Marek Bright House Network

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

More precise wording could be used: "Table 98B–1 summarizes the bit assignments"

SuggestedRemedy

Change to "Table 98B–1 summarizes bit assgments in the Technology Ability Field"

Response *Response Status* **C**

ACCEPT.

Cl **98B** *SC* **98B.3** *P* **199** *L* **49** # 178
Law, David HP Ltd

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

The remaining unused bits (A4 through A26) should also be marked as reserved.

SuggestedRemedy

Change 'A3' to read 'A3 through A26' in the last row of table 98B1.

Response *Response Status* **C**

ACCEPT.

Cl **98B** *SC* **98B.4** *P* **200** *L* **1** # 157
Law, David HP Ltd

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

Since bit A0 is marked as reserved (even though we have stated it is for 100BASE-T) it has to be transmitted as zero therefore it is not possible for local and link partner to have multiple abilities. Further, subclause 98.5.1 'State diagram variables' does not define a value for '_[x]' to represents that the 100BASE-T1 PMA. Based on this the priority resolution should be removed until the updates are made to support 100BASE-T1 auto-negotiation.

SuggestedRemedy

Delete subclaue 98B.4 'Priority Resolution'.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In Table 98B–1, remove "RESERVED for" for bit A0.

Cl **98B** *SC* **98B.4** *P* **200** *L* **4** # 250
Hajduczenia, Marek Bright House Network

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

PICS missing in Annex 98B for:
The following list shall represent the relative priorities of the technologies supported by the IEEE 802.3 Selector Field value, where priorities are listed from highest to lowest
Each series of Unformatted Pages shall be preceded by a Message Page containing a message code that defines how the following Unformatted Pages will be used

SuggestedRemedy

Per comment
Also, change "will be used" to "is used" in the second statement

Response *Response Status* **C**

ACCEPT.

Cl **98B** *SC* **98B.4** *P* **200** *L* **7** # 89

Lusted, Kent Intel

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

The list of priorities is clear if highest is the top list entry or the bottom.

SuggestedRemedy

Consider replacing the list with a Table similar to Table 73-5.

Response *Response Status* **C**

REJECT.

There are only TWO entries in the list, with the clear statement: "where priorities are listed from highest to lowest".

TF believes the current list is correct and clear.

Cl **98B** *SC* **98B.5** *P* **200** *L* **17** # 251

Hajduczenia, Marek Bright House Network

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

Meanignless statement: "Next Page message codes should be allocated globally across Selector Field values so that meaningful communication is possible between technologies using different Selector Field values."

SuggestedRemedy

Either remove it (my preference) or convert into something that describes really how Next Page message codes are allocated actoss Selector Field values

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove

Cl **98C** *SC* **98C** *P* **201** *L* **1** # 259

Hajduczenia, Marek Bright House Network

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

Normative Annex with no normative requirements in the draft

SuggestedRemedy

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert the following text on page 52, line 34 (in 45.2.7.14e): "The BASE-T1 AN shall use Next Page message codes as defined in Annex 98C.". Update PICS as needed.

Change all instances of "Next Page message code", "Next Page Message code" to "Next Page Message Code"

Cl **98C** *SC* **98C** *P* **201** *L* **1** # 82

Remein, Duane Huawei

Comment Type **TR** *Comment Status* **A** *Shalls in 98C*

Most normative Annex with requirement statements (i.e., "shall" statements include a PICS. This Annex has 4 shall statements and should therefore include a PICS

SuggestedRemedy

Add PICS tables.

Response *Response Status* **W**

ACCEPT.

Cl **98C** *SC* **98C** *P* **201** *L* **6** # 274

Zimmerman, George CME Consulting, Inc.

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

This section must be REALLY important, because it is twice normative!

SuggestedRemedy

delete second instance of (normative)

Response *Response Status* **C**

ACCEPT.

Cl **98C** *SC* **98C** *P* **201** *L* **9** # 275
Zimmerman, George CME Consulting, Inc.

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

capitalization inconsistent - elsewhere it is Message Code Field (field capitalized - it is lower case in the title).

also on line 22, Table 98C-1 title

SuggestedRemedy

capitalize Message Code Field (all instances)

Response *Response Status* **C**

ACCEPT.

Cl **98C** *SC* **98C.1** *P* **201** *L* # 254
Hajduczenia, Marek Bright House Network

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

"The following table identifies the types of messages that may be sent." - explicit reference to table is preferred

SuggestedRemedy

Change
The following table identifies the types of messages that may be sent.
to
Table 98C-1 identifies the types of Message Code Field messages that may be sent.

Response *Response Status* **C**

ACCEPT.

Cl **98C** *SC* **98C.1** *P* **201** *L* **14** # 253
Hajduczenia, Marek Bright House Network

Comment Type **T** *Comment Status* **A** *Shalls in 98C*

Unnecessary requirements: "The Message Code Field of a message page used in Next Page exchange shall be used to identify the meaning of a message." and "All message codes not specified shall be reserved."

SuggestedRemedy

Change the first statement to "The Message Code Field of a message page used in Next Page exchange is used to identify the meaning of a message."
Remove the second statement

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #82.

Cl **98C** *SC* **98C.1** *P* **201** *L* **22** # 113
Marris, Arthur Cadence Design Syst

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

Should there be more message codes defined than just the null message?

SuggestedRemedy

Consider adding message codes for EEE (1010), Identifier Tag Code (0110) and OUI (0101).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add message codes Identifier Tag Code (0110) and OUI (0101). The message code for EEE (1010) is not needed - we exchange information about the EEE capabilities during the initial PHY training.

Cl **98C** *SC* **98C.1** *P* **20122** *L* # 255
Hajduczenia, Marek Bright House Network

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

name consolidation: "Message code field values"

SuggestedRemedy

Change "Message code field values" to "Message Code Field values"

Response *Response Status* **C**

ACCEPT.

Cl **98C** *SC* **98C.2** *P* **201** *L* **34** # 256
Hajduczenia, Marek Bright House Network

Comment Type **T** *Comment Status* **A** *Shalls in 98C*

Given that message code 0 is reserved, there is no need to define it

SuggestedRemedy

Remove 98C.2

Response *Response Status* **C**

ACCEPT.

Cl **98C** *SC* **98C.3** *P* **201** *L* **41** # 258
Hajduczenia, Marek Bright House Network

Comment Type **T** *Comment Status* **D** *Shalls in 98C*

Repeated normative requirement
"The Null Message code shall be transmitted during Next Page exchange when the Local Device has no further messages to transmit and the Link Partner is still transmitting valid Next Pages."
already exists in 98.2.1.2.9: "If a device has no Next Pages to send and its link partner has set the NP bit to logical one, it shall transmit Next Pages with Null message codes and the NP bit set to logical zero while its link partner transmits valid Next Pages."

SuggestedRemedy

Change
"The Null Message code shall be transmitted during Next Page exchange when the Local Device has no further messages to transmit and the Link Partner is still transmitting valid Next Pages."
to
"The Null Message code is transmitted during Next Page exchange when the Local Device has no further messages to transmit and the Link Partner is still transmitting valid Next Pages."

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **98C** *SC* **98C.3** *P* **201** *L* **42** # 257
Hajduczenia, Marek Bright House Network

Comment Type **T** *Comment Status* **A** *Shalls in 98C*

Requirement without PICS:

The Null Message code shall be transmitted during Next Page exchange when the Local Device has no further messages to transmit and the Link Partner is still transmitting valid Next Pages.

SuggestedRemedy

Insert PICS for the missing requirement

Response *Response Status* **C**

ACCEPT.

Cl **98V** *SC* **98C.1** *P* **201** *L* **6** # 252
Hajduczenia, Marek Bright House Network

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

Very normative Annex 98C

SuggestedRemedy

Remove "(normative)" in line 6

Response *Response Status* **C**

ACCEPT.

Cl **99** *SC* *P* **1** *L* **17** # 41
Maguire, Valerie Siemon

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

Both "twisted-pair" and "twisted pair" appear to be used interchangeably throughout the document. See line 17 and line 27 for an example.

SuggestedRemedy

Consider standardizing on one hyphenation format ("twisted-pair" is recommended).

Response *Response Status* **C**

ACCEPT.

Cl **99** *SC* *P* **1** *L* **17** # 40
Maguire, Valerie Siemon

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

Incorrect capitalization of "A"?

SuggestedRemedy

Consider replacing "over A Single Twisted Pair" with "over a Single Twisted Pair"

Response *Response Status* **C**

ACCEPT.

Cl **99** *SC* *P* **1** *L* **18** # 264
Zimmerman, George CME Consulting, Inc.

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

Title has "A" capitalized in the middle of sentence - inconsistent with title on page 23.

SuggestedRemedy

replace "A" with "a"

Response *Response Status* **C**

ACCEPT.

Cl **99** *SC* *P* **1** *L* **26** # 265

Zimmerman, George CME Consulting, Inc.

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

article-noun agreement - "a point-to-point 1 Gb/s Physical Layer (PHY) specifications and management parameters" specifications and management parameters are plural. should just be "point-to-point 1 Gb/s"... no "a"

Also,P2 L1, same text

SuggestedRemedy

change "a point-to-point" to "point-to-point" on P1 L26 and P2 L1

Response *Response Status* **C**

ACCEPT.

Cl **99** *SC* *P* **1** *L* **28** # 48

Anslow, Pete Ciena

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

"Task Force for the Working Group review." should have been:
"Task Force for Working Group ballot." in D2.0 and should be:
"Task Force for Working Group ballot recirculation." in D2.1

SuggestedRemedy

Change to:
"Task Force for Working Group ballot recirculation."

Response *Response Status* **C**

ACCEPT.