Cl **FM** *SC* **FM** *P* **1** *L* **1** # i-156

Law, David Hewlett Packard Enter

Comment Type **E** *Comment Status* **D** *EZ*

Based on IEEE P802.3by entering sponsor ballot in November 2015, IEEE P802.3bq and IEEE P802.3bp entering sponsor ballot in December 2015, the published timeline for IEEE P802.3bq showing approval in June 2016, and the published timeline for IEEE P802.3bp showing approval in August 2016, it seems likely that that IEEE P802.3by will be the second amendment, IEEE P802.3bq will be the third amendment, and IEEE P802.3bp will be the fourth amendment to IEEE Std 802.3-2015.

SuggestedRemedy

Please change '(Amendment of IEEE Std 802.3(TM)-2015)' to read 'Amendment of IEEE Std 802.3(TM)-2015 as amended by IEEE Std 802.3bw(TM)-2015), IEEE Std 802.3by(TM)-201X and IEEE Std 802.3bq(TM)-201X'

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **FM** *SC* **FM** *P* **1** *L* **25** # i-54

Grow, Robert RMG Consulting

Comment Type **E** *Comment Status* **D** *EZ*

It is not uncommon to recognize the flip of the calendar to a new year in draft date but to forget to update copyright year. Just a friendly reminder to do that on the next draft.

SuggestedRemedy

Hopefully the FrameMaker variable will update IEEE copyright statement and footers.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **FM** *SC* **FM** *P* **12** *L* **12** # i-55

Grow, Robert RMG Consulting

Comment Type **T** *Comment Status* **D** *EZ*

There are other approved or likely to be approved amendments to IEEE Std 802.3 that should be concurent or before P802.3bp approval.

SuggestedRemedy

P802.3bw is approved, br failed to meet conditions for RevCom submittal, by and bq also in Sponsor ballot. Either add an editor's note that other amendment descriptions will be added during publication preparation, or gather the amendment information (I think they are all in P802.3bv).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See comment i-157

Cl **FM** *SC* **FM** *P* **12** *L* **12** # i-47

RAN, ADEE Intel Corporation

Comment Type **E** *Comment Status* **D** *EZ*

This draft refers to clause 96, which is part of 802.3bw, in several places. Since 802.3bw has completed sponsor ballot it should be made part of the 802.3 documents listed here.

SuggestedRemedy

Add 802.3bw to the list with editorial license.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See comment i-157

Cl **FM** *SC* **FM** *P* **12** *L* **13** # i-157

Law, David Hewlett Packard Enter

Comment Type **E** *Comment Status* **D** *EZ*

Suggest that this text be updated based on: (a) the approval of IEEE Std 802.3bw-2015, the likelihood that IEEE P802.3by will be the second amendment, IEEE P802.3bq will be the third amendment, and IEEE P802.3bp will be the fourth amendment to IEEE Std 802.3-2015; (b) use of the (TM) symbol only on the first instance; and (c) alignment of IEEE P802.3bp description with other amendment descriptions.

SuggestedRemedy

Suggest that:

[1] The following text should be inserted prior to the existing text 'IEEE Std 802.3bp(TM)-201x':

IEEE Std 802.3bw-2015

Amendment 1--This amendment includes changes to IEEE Std 802.3-2015 and adds Clause 96. This amendment adds 100 Mb/s Physical Layer (PHY) specifications and management parameters for operation on a single balanced twisted-pair copper cable.

IEEE Std 802.3by-201x

Amendment 2--This amendment includes changes to IEEE Std 802.3-2015 and adds Clause 105 through Clause 112, Annex 109A, Annex 109B, Annex 110A, Annex 110B, and Annex 110C. This amendment adds MAC parameters, Physical Layers, and management parameters for the transfer of IEEE 802.3 format frames at 25 Gb/s.

IEEE Std 802.3bq-201x

Amendment 3--This amendment includes changes to IEEE Std 802.3-2015 and adds Clause 113 and Annex 113A. This amendment adds new Physical Layers for 25 Gb/s and 40 Gb/s operation over balanced twisted-pair structured cabling systems.

[2] The text 'IEEE Std 802.3bp(TM)-201x' should be changed to read 'IEEE Std 802.3bp-201x'.

[3] The text 'This amendment to IEEE Std 802.3-2015 adds point-to-point 1 Gb/s Physical Layer (PHY) specifications
And ..' be changed to read 'Amendment 4--This amendment includes changes to IEEE Std 802.3-2015 and adds Clause 97 and 98. This amendment adds point-to-point 1 Gb/s Physical Layer (PHY) specifications and management parameters for operation on a single balanced twisted-pair copper cable in automotive and other applications not utilizing the structured wiring plant.'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **0** *SC* **0** *P* *L* # i-169

Maytum, Michael RETIRED/unemployed

Comment Type **GR** *Comment Status* **D** *EZ*

The IEEE Standards dictionary term entry is in-line connection. There are many instances where inline is not hyphenated for the term inline connectors.

SuggestedRemedy

Globally search and replace inline connectors with in-line connectors

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Global change

Cl **0** *SC* **0** *P* *L* # i-172

Maytum, Michael RETIRED/unemployed

Comment Type **GR** *Comment Status* **D**

Spelling differences: behavior (found 16 times) and behaviour (found 13 times)

SuggestedRemedy

Globally search and replace the International English behaviour with the American behavior.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Subclause 30.1.4 'Management model' describes how managed objects in Clause 30 are defined in terms of four types of elements. It then states in the penultimate paragraph that 'The above items are defined in 30.3 through 30.3.7 of this clause in terms of the template requirements of ISO/IEC 10165-4:1991.'.

Based on the above, the managed objects defined in Clause 30 use a template from an ISO/IEC standard, ISO/IEC 10165-4:1991 Information Technology - Open Systems Interconnection - Structure of Management Information - Part 4: Guidelines for the Definition of Management Objects. Since this is an ISO/IEC standard it uses the spelling 'behaviour' as part of the template, and to follow this template we use the same spelling.

Cl **0** *SC* **0** *P* *L* # i-171
Maytum, Michael RETIRED/unemployed

Comment Type **GR** *Comment Status* **D** *EZ*

The IEEE Standards dictionary term hyphenates set-up. There are many instances (11 times) where setup is not hyphenated.

SuggestedRemedy

Globally search and replace setup with set-up.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Global change

Cl **0** *SC* **0** *P* *L* # i-170
Maytum, Michael RETIRED/unemployed

Comment Type **GR** *Comment Status* **D** *EZ*

Predetermined is not hyphenated to pre-determined

SuggestedRemedy

Replace pre-determined on line 19, page 68 and line 48, page 116 with predetermined.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **0** *SC* **0** *P* *L* # i-168
Maytum, Michael RETIRED/unemployed

Comment Type **GR** *Comment Status* **D** *EZ*

The text has two spellings it is either auto-negotiation (found 256 times) or autonegotiation (found twice).

SuggestedRemedy

Globally search and replace autonegotiation with auto-negotiation

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **0** *SC* **0** *P* *L* # i-4
Fritsche, Matthias HARTING Electronics

Comment Type **T** *Comment Status* **D** *cabling*

see comments from Mr. Schicketanz
and presentation Dallas "Fritsche_3bp_01_1115.pdf"

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED REJECT.

See comments i-7 and i-8.

Cl **0** *SC* **0** *P* **0** *L* **0** # i-9
Turner, Michelle

Comment Type **E** *Comment Status* **D** *EZ*

This draft meets all editorial requirements.

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **0** *SC* **0** *P* **56** *L* **16** # i-173
Maytum, Michael RETIRED/unemployed

Comment Type **ER** *Comment Status* **D** *EZ*

signalled is the International English spelling, signaled is the American spelling.

SuggestedRemedy

Change sigalled to signaled

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Global change

Cl **0** *SC* **0** *P* **60** *L* **45** # i-166

Maytum, Michael RETIRED/unemployed

Comment Type **ER** *Comment Status* **D** *EZ*

Energy Efficient Ethernet

SuggestedRemedy

Change Energy Efficient Ethernet to Energy-Efficient Ethernet to agree with the other 4 uses of the phrase

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **0** *SC* **0** *P* **61** *L* **19** # i-15

RAN, ADEE Intel Corporation

Comment Type **ER** *Comment Status* **D**

"RS" is an abbreviation of "Reconciliation sublayer" used in many clauses.When referring to components of the Reed-Solomon FEC function, please use the abbreviation RS-FEC instead.

Also, indefinite article before abbreviations takes the form matching the abbreviation. Therefore use "an RS-FEC" (e.g. frame/codeword) rather than "a RS-FEC".

SuggestedRemedy

Go over this clause and change "RS" to "RS-FEC" everywhere, unless it refers to the reconciliation sublayer.

Then change all "a RS-FEC" to "an RS-FEC".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change all instances of "RS frame" to "PHY frame"
Change all instances of "RS block" to "PHY frame"
Change all instances of "FEC encoder" to "RS-FEC encoder"
Change all instances of "RS symbol" to "RS-FEC symbol"
Leave "81B-RS" as is, with no changes.
Change all "a RS-FEC" to "an RS-FEC"

Cl **0** *SC* **0** *P* **61** *L* **26** # i-16

RAN, ADEE Intel Corporation

Comment Type **TR** *Comment Status* **D** *See i-15*

"Frame" is used in several places in this draft when referring to an RS-FEC codeword (e.g. 97.1.2.1 "RS frame"). In 802.3 "frame" is usually used in the context of MAC frames.

Previous clauses (such as 91) use the term "codeword" which is established in error-correction codes. Consistency is preferable.

SuggestedRemedy

Go over this clause and change "frame" to "codeword" whenever it refers to RS-FEC codeword.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Resolved per comment i-15

Cl **0** *SC* **0** *P* **147** *L* **9** # i-167

Maytum, Michael RETIRED/unemployed

Comment Type **ER** *Comment Status* **D** *EZ*

The IEEE Standards dictionary term is twisted-pair cable exactly as appears in this line. There are many other instances where twisted pair appears without the hyphen

SuggestedRemedy

Globally search and replace the separating space with a hyphen in the terms: twisted pair copper cable and twisted pair cabling,

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Exclude front matter, TF name (would require a PAR change)

Cl **0** *SC* **0** *P* **147** *L* **51** # i-50

Bergner, Bert

Comment Type **E** *Comment Status* **D** *EZ*

caption of figure 97-43 calls the parameter "PSANEXT" (wrong) but shows the MDI Return Loss (correct). The caption should be "Figure 97-43 - Return Loss calculated using equation (97-29)".

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **0** *SC* **0** *P* **162** *L* **48** # i-174

Maytum, Michael RETIRED/unemployed

Comment Type **ER** *Comment Status* **D** *EZ*

zeroes

SuggestedRemedy

Change zeroes to zeros

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Make the change globally

Cl **1** *SC* **1.3** *P* **24** *L* **12** # i-56

Grow, Robert RMG Consulting

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

Previous drafts had IEC CISPR 25: 2009. P802.3bw was approved referencing the 2005 version.

SuggestedRemedy

Either get confirmation from the bw publication editor of update to the reference during publication preparation, or include a change to that bw reference.

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4.99a** *P* **24** *L* **21** # i-158

Law, David Hewlett Packard Enter

Comment Type **E** *Comment Status* **D** *EZ*

I believe our editing instruction for editing subclause 1.4 are normally based on where new definitions should be inserted after. Not sure why this instruction is different.

SuggestedRemedy

Suggest that 'Insert the following new definition before 1.4.100 "arbitration":' be changed to read 'Insert the following new definition after 1.4.99 "anomaly":'

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **1** *SC* **1.4.106a** *P* **24** *L* **25** # i-10

Anslow, Peter Ciena Corporation

Comment Type **E** *Comment Status* **D** *EZ*

"BASE-R" is 1.4.107, not 1.4.106

SuggestedRemedy

Change the editing instruction to "... After 1.4.107 "BASE-R""
Re-number 1.4.106a to 1.4.107a

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **1** *SC* **1.4.106a** *P* **24** *L* **25** # i-159

Law, David Hewlett Packard Enter

Comment Type **E** *Comment Status* **D** *EZ*

I believe that the definition for BASE-R is provided in subclause 1.4.107 in IEEE Std 802.3-2015.

SuggestedRemedy

Suggest that:

[1] The text '... after 1.4.106 "BASE-R":' be changed to read '... after 1.4.107 "BASE-R":.
[2] The text '1.4.106a BASE-T1: PHYs that belong ...' be changed to read ' 1.4.107a BASE-T1: PHYs that belong ...'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **1** *SC* **1.4.361a** *P* **24** *L* **31** # i-160

Law, David Hewlett Packard Enter

Comment Type **E** *Comment Status* **D** *EZ*

I believe that the definition for single-port device is provided in subclause 1.4.381 in IEEE Std 802.3-2015.

SuggestedRemedy

Suggest that:
[1] The text '... after 1.4.361 "single-port device":' be changed to read '... after 1.4.381 "single-port device":'.
[2] The text '1.4.361a single twisted pair copper ...'. be changed to read '1.4.381a single twisted pair copper ...'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **1** *SC* **1.4.361a** *P* **24** *L* **33** # i-64

Chini, Ahmad Broadcom Corporation

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

New added definition for single twisted pair copper cable goes beyond the definition of such cables prohibiting use of shield or jacket

SuggestedRemedy

Change

single twisted pair copper cable: two insulated conductors twisted together in a regular fashion to form a balanced transmission line without an overall shield or jacket around the conductors.

to

single twisted pair copper cable: two insulated conductors twisted together in a regular fashion to form a balanced transmission line.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **1** *SC* **1.5** *P* **24** *L* **41** # i-161

Law, David Hewlett Packard Enter

Comment Type **E** *Comment Status* **D** *EZ*

The abbreviation 'EMC electromagnetic compatibility' has already been added by IEEE Std 802.3bw-2015.

SuggestedRemedy

Delete the abbreviation 'EMC electromagnetic compatibility'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **30** *SC* **30.3.2** *P* **25** *L* **5** # i-2

Marris, Arthur Cadence Design Syst

Comment Type **E** *Comment Status* **D** *EZ*

Change "PHY devicePHY device managed object class"
To "PHY device managed object class"

SuggestedRemedy

Change "PHY devicePHY device managed object class"
To "PHY device managed object class"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **30** *SC* **30.3.2.1.2** *P* **25** *L* **12** # i-162

Law, David Hewlett Packard Enter

Comment Type **E** *Comment Status* **D** *EZ*

Suggest the editing instructions be updated based on the expected approval order.

SuggestedRemedy

Suggest that '... (as modified by IEEE Std 802.3bw-2015, IEEE Std 802.3by-201X and TBD) ...' be updated to read '... (as modified by IEEE Std 802.3bw-2015, IEEE Std 802.3by-201X and IEEE Std 802.3bq-201X) ...'.here and on line 19 for subclause 30.3.2.1.3.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **30** *SC* **30.3.2.1.3** *P* **25** *L* **11** # i-57

Grow, Robert RMG Consulting

Comment Type **E** *Comment Status* **D** *EZ*

We don't need to include all approved amendments in most editorial instructions. The reason to include a reference to an amendment is if the base in a change comes from an amendment or if the order of inserted items becomes either ambiguous or wrong (two amendments inserting at the same point and merge of documents in approval order does not remove ambiguity/correctness). In general, P802.3bv has the greatest problem as P802.3bp will very likely be approved before P802.3bv and they are both 1000 Mb/s. P802.3by, bq and others should not be inserting in in the same place (things organized in speed order).

SuggestedRemedy

Delete the reference to other amendments in all clause 30 attribute instructions except for aAutoNegLocalTechnologyAbility Force MS which appropriately references the insertion by P802.3by. Optionally, include a single Editor's note which indicates update of some editorial instructions and potentially base text may be required if amendments expected to be approved after P802.3bp are instead approved prior to P802.3bp.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The current format of editorial notes was maintained and updated at the request of 802.3 Chief Editor to keep track of changes between individual amendments and facilitate the merging of individual amendments into a single base document in the future.

Cl **45** *SC* **45.2.1** *P* **31** *L* **23** # i-1

Marris, Arthur Cadence Design Syst

Comment Type **E** *Comment Status* **D** *EZ*

The cell for "Subclause" on the bottom "Reserved" row should be blank

SuggestedRemedy

Delete the "."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.1.6.3** *P* **31** *L* **31** # i-17

RAN, ADEE Intel Corporation

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

In this draft the value 111101 is assigned to two separate PMA/PMD types, with distinction between them done by a value in a separate register. This is the first time such duality is introduced in this register, and it is not aligned with the usual semantics, which is the exact type. This would add confusion.

There are existing places to define "speed ability" (table 45-6), "speed selection" (table 45-4) and "extended ability" (table 45-14), why not use them used instead of adding new tables and registers?

With two adjacent reserved bits, 1.7.7:6, available in this register (which can enable almost 200 additional future types) I don't see why this unprecedented use is necessary.

Note that the BASE-T1 PHYs are going to be part of the 802.3 family, and their usage may extend beyond automotive applications; management software may need to support these PHY types and others. There is merit in keeping management register structure consistent.

SuggestedRemedy

Remove the change to definition of 111101 and footnote b. Assign the next available value (I assume 111110) to 1000BASE-T1.

Consider removing register 1.2100 bits 3:0 and the text in 45.2.1.131.3, as an "extended register" selection doesn't seem necessary if each PMA/PMD is selected separately.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

IEEE Std 802.3bw defines 1.2100.3:0 as the Type selection to choose among BASE-T1 PHY types

Having one selector for all of BASE-T1 in 1.7.5:0 simplifies management of BASE-T1 PHY in that the manual configuration of BASE-T1 speed and Master/Slave are all consolidated into register 1.2100

Cl **45** *SC* **45.2.1.131.1** *P* **32** *L* **30** # i-11

Anslow, Peter Ciena Corporation

Comment Type **ER** *Comment Status* **D** *EZ*

The editing instruction says "Change the content of 45.2.1.131 ..." but 45.2.1.131.1 "BASE-T1 MASTER-SLAVE manual config enable (1.2100.15)" as found in IEEE Std 802.3bw-2015 is missing and 45.2.1.131.2 and 45.2.1.131.3 are incorrectly numbered as 45.2.1.131.1 and 45.2.1.131.2.

SuggestedRemedy

Either add in 45.2.1.131.1 to the amendment or change the editing instruction to be specific to 45.2.1.131.2 and 45.2.1.131.3 and re-number the subclauses correctly.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change the editing instruction to be specific to 45.2.1.131.2 and 45.2.1.131.3 and re-number the subclauses correctly.

Cl **45** *SC* **45.2.1.131.1** *P* **32** *L* **30** # i-12

Anslow, Peter Ciena Corporation

Comment Type **E** *Comment Status* **D** *EZ*

The title of 45.2.1.131.2 in the 802.3bw amendment (45.2.1.131.1 here) is "BASE-T1 MASTER-SLAVE config value (1.2100.14)". Consequently, "100" should not appear in strikethrough font and there should be a hypen between MASTER and SLAVE

SuggestedRemedy

Remove the "100" in strikethrough font and replace the space between MASTER and SLAVE with a hyphen

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.1.133.1** *P* **33** *L* **16** # i-68

Remein, Duane Futurewei Technologie

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

If bit 1.2304.15 is a copy of 1.0.15 then the description for both bits should display identical functionality. Currently the description of bit 1.0.15 does not match the description of bit 1.2304.15.

SuggestedRemedy

Please add a change to bit 1.0.15 so it matches bit 1.2304.15. At a minimum add the following to the description of 1.0.15: "Bit 1.2304.15 is a copy of 1.0.15 and setting or clearing either bit shall set or clear the other bit." Another alternative is to remove bit 1.2304.15 and just use the existing bit.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Text is already in place: "Bit 1.2304.15 is a copy of 1.0.15 and setting or clearing either bit shall set or clear the other bit. Setting
either bit shall reset the 1000BASE-T1 PMA/PMD." - page 33, line 32.

Cl **45** *SC* **45.2.1.134** *P* **34** *L* **42** # i-18

RAN, ADEE Intel Corporation

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

Most of the functions in this 1000BASE-T1 PMA status register are defined in other registers which are common to all other PHYs:

- EEE ability is indicated in register 3.20 (45.2.3.9), which is in the PCS section.
- Receive fault ability is indicated in register 1.8.12 (45.2.1.7.3).
- Low-power ability is indicated in register 1.1.1 (45.2.1.2.5).
- Polarity swap is indicated in register 1.130 (45.2.1.63). The existing indications are separate for each of the four pairs of 10GBASE-T, but it is possible to re-use "Pair A" or use one of the reserved bits for 1000BASE-T1.
- Receive fault is indicated in register 1.8.10 (45.2.1.7.5).
- Receive link status is indicated in 1.1.2 (45.2.1.2.4).

For all of these bits, it is not stated whether they are copies of the existing ones or not (are the existing bits also functional for 1000BASE-T1?)

I do not see why 1000BASE-T1 should have a new register for these functions that is different from all other PHYs, and sometimes in a different section (EEE). Having different bits is an unnecessary complexity for software, and it adds a lot of unnecessary new subclauses.

Note that the BASE-T1 PHYs are going to be part of the 802.3 family, and their usage may extend beyond automotive applications; management software may need to support these PHY types and others. There is merit in keeping management register structure consistent.

SuggestedRemedy

Delete the duplicated bits: EEE ability, receive fault ability, receive fault, receive link status. Instead, map these indications to the bits in the existing registers listed.

Consider mapping polarity swap to 1.130.8 (Polarity swap pair A) or assign 1.130.8 (currently reserved) to the single-pair case.

Consider mapping 1000BASE-T1 OAM ability to another register, if it is the only bit left in this register.

Update PICS and clause 97 as necessary.

- alternatively -

Make the new registers/bits defined mirror the registers/bits listed above, so that the existing registers can also be used. State this clearly for each new register/bit.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

One of the goals of P802.3bp TF is to consolidate registers into a few addresses instead of

scattering them throughout the address space using legacy registers that are unrelated to 1000BASE-T1. This simplifies both hardware implementation and software implementation for 1000BASE-T1.

Cl **45** *SC* **45.2.1.135.3** *P* **36** *L* **8** # i-19

RAN, ADEE Intel Corporation

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

EEE advertisement is conrtolled by Register 7.60 (45.2.7.13) for all other PHYs. Why use a different one for this PHY?

Also applies to 45.2.1.136.3, bit 1.2307.0; the LP EEE advertisement is normally in register 7.61.

Note that the new PHYs defined in 802.3bq also advertise EEE during link training instead of during AN, but still use register 7.60 to control it (see 45.2.7.13 in 802.3bq D3.0).

Also note that the BASE-T1 PHYs are going to be part of the 802.3 family, and their usage may extend beyond automotive applications; management software may need to support these PHY types and others. There is merit in keeping management register structure consistent.

SuggestedRemedy

Delete bit 1.2306.0 and 45.2.1.135.3, and map the EEE advertisement function to an available reserved bit in 7.60.

Alternatively, keep bit 1.2306.0 definition and this subclause, but also allocate a bit in 7.60 and make these two bits mirror each other, stating this clearly.

Use the chosen remedy also for 45.2.1.136.3 and bit 1.2307.0.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

One of the goals of P802.3bp TF is to consolidate registers into a few addresses instead of scattering them throughout the address space using legacy registers that are unrelated to 1000BASE-T1. This simplifies both hardware implementation and software implementation for 1000BASE-T1.

Cl **45** *SC* **45.2.3.50b** *P* **39** *L* **1** # i-32

RAN, ADEE Intel Corporation

Comment Type **E** *Comment Status* **D** *EZ*

Table 45-163b describes the "1000BASE-T1 PCS status 1 register", but its title lacks "PCS".

SuggestedRemedy

Change table title to "1000BASE-T1 PCS status 1 register bit definitions".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.3.51.1** *P* **38** *L* **20** # i-69

Remein, Duane Futurewei Technologie

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

If bit 3.2304.15 is a copy of 3.0.15 then the description for both bits should display identical functionality. Currently the description of bit 3.0.15 does not match the description of bit 3.2304.15.

SuggestedRemedy

Please add a change to bit 3.0.15 so it matches bit 3.2304.15. At a minimum add the following text to the description of 3.0.15: "Bit 3.2304.15 is a copy of 3.0.15 and setting or clearing either bit shall set or clear the other bit." Another alternative is to remove bit 3.2304.15 and just use the existing bit.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Text is already in place: "Bit 3.2304.15 is a copy of 3.0.15 and setting or clearing either bit shall set or clear the other bit. Setting
either bit shall reset the 1000BASE-T1 PCS." - see page 38, line 33

Cl **45** *SC* **45.2.3.52** *P* **38** *L* **47** # i-20

RAN, ADEE Intel Corporation

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

All function in this PCS status 1 register already exist in register 3.1 (45.2.3.2 in the base document). However they are not stated as copies of the more general PCS status 1 register. It is not clear whether register 3.1 can also be used for 1000BASE-T1.

No other PCS seems to have a special copied register for these functions like this one. Why create this duplicity?

Note that the BASE-T1 PHYs are going to be part of the 802.3 family, and their usage may extend beyond automotive applications; management software may need to support these PHY types and others. There is merit in keeping management register structure consistent.

SuggestedRemedy

Delete 45.2.3.52 and map the functions to register 3.1 instead. Update PICS and clause 97 as necessary.

Alternatively, make these bits mirrors of corresponding bits in register 3.1, so that the regular registers can also be used. State this clearly.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

One of the goals of P802.3bp TF is to consolidate registers into a few addresses instead of scattering them throughout the address space using legacy registers that are unrelated to 1000BASE-T1. This simplifies both hardware implementation and software implementation for 1000BASE-T1.

Cl **45** *SC* **45.2.3.52.6** *P* **40** *L* **3** # i-31

RAN, ADEE Intel Corporation

Comment Type **T** *Comment Status* **D**

Bit 3.2305.2 is defined as a latching low version of 3.2306.10, but is in a different register and has a name that does not suggest this definition.

Usually pairs of normal and "latched" bits are in the same register and have names that clearly show which one means what.

The name seems incorrect. The response to #41 against D1.5 stated that "For all effects and purposes, the link is down as far as the purpose of this register [3.2305.2] is concerned". But having 3.2305.2 equal 0 does not necessarily mean the link is down: this bit is a LL version of bit 3.2306.10, which in turn reflects the immediate status of PCS_status. Its definition in 97.3.7.1 says "It is only true if block_lock is true and hi_rfer is false". According to Figure 97-13, if hi_rfer becomes true it is cleared shortly afterwards, so the PCS_status can temporarily be false and then become true. This can happen if error rate is temporarily high and then the link recovers. The LL bit will be false in that case, although the link is up.

SuggestedRemedy

Make both the normal and latched versions be in register 3.2306 (using one of the available reserved bits).

Name the latched version "Latched Receive link status" (as done for example for PCS block lock in 3.2306).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

3.2305.2 correctly references 3.2306.10.

Page 40 line 4 change
"link is down" to
"link was down since the last read to this register"

Cl **45** *SC* **45.2.3.53** *P* **40** *L* **8** # i-21

RAN, ADEE Intel Corporation

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

The functions in the PCS status 2 register can be mapped to existing registers that are used for BASE-R and 10BASE-T PCSs (3.32 and 3.33, 45.2.3.13 and 45.2.3.14 in the base document).

Unless there is a special reason to define a new separate register for the 1000BASE-T1 PCS, it seems preferable to re-use existing registers (which have quite generic definitions) and avoid adding more clauses and register addresses.

Note that the BASE-T1 PHYs are going to be part of the 802.3 family, and their usage may extend beyond automotive applications; management software may need to support these PHY types and others. There is merit in keeping management register structure consistent.

SuggestedRemedy

Delete 45.2.3.53, and instead bring in 45.2.3.13 and 45.2.3.14 and modify them to apply to 1000BASE-T1 too. Update PICS and clause 97 as necessary.

Alternatively, make the bits in the new register 3.2306 mirror the bits in registers 3.32 and 3.33, so that the existing registers can be used too. State that clearly.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

One of the goals of P802.3bp TF is to consolidate registers into a few addresses instead of scattering them throughout the address space using legacy registers that are unrelated to 1000BASE-T1. This simplifies both hardware implementation and software implementation for 1000BASE-T1.

Cl **45** *SC* **45.2.3.55.1** *P* **37** *L* **46** # i-13

Anslow, Peter Ciena Corporation

Comment Type **ER** *Comment Status* **D** *EZ*

45.2.3.55.1 is a level five heading, but it should be a level four heading for a register
Also, the editing instruction on page 37, line 51 needs expanding.

SuggestedRemedy

Change the heading for 45.2.3.55.1 to be a level four heading (45.2.3.56). This should cause:
the numbering of 45.2.3.55.2 through 45.2.3.55.5 to be corrected to be 45.2.3.56.1 through 45.2.3.56.4
The numbering of 45.2.3.56 to become 45.2.3.57
The cross-references in Table 45-119 to be corrected.
The remaining correction is that the editing instruction on page 37, line 51 needs to be changed to be:
"Insert subclauses 45.2.3.51 through 45.2.3.57, after 45.2.3.50 (as inserted by IEEE Std 802.3bw-2015) as shown below:

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.5.3.3** *P* **50** *L* **54** # i-14

Anslow, Peter Ciena Corporation

Comment Type **E** *Comment Status* **D** *EZ*

The bottom ruling is missing in the tables on Pages 50, 52, and 54

SuggestedRemedy

Place the insertion point somewhere in each table and in the Table designer pod, uncheck "Draw bottom ruling on last sheet only"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **78** *SC* **78.1.3.3.1** *P* **55** *L* **11** # i-58

Grow, Robert RMG Consulting

Comment Type **ER** *Comment Status* **D** *EZ*

This is an example of the kind of list we should be eliminating from the standard as too many projects feel obligated to add their PHY types to the list when it was only a for example statement.

SuggestedRemedy

Rather than adding to the list, delete the parenthetical list of port types that are an example of "most".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Use proper markeup.

Cl **97** *SC* **97.1.2** *P* **59** *L* **34** # i-22

RAN, ADEE Intel Corporation

Comment Type **T** *Comment Status* **D**

"using echo cancellation" is an implementation detail. It does not appear in the corresponding "Operation" subclause of 10GBASE-T. It also makes the sentence more complex than it could be otherwise.

SuggestedRemedy

Delete "(using echo cancellation)".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.1.2** *P* **59** *L* **40** # i-23

RAN, ADEE Intel Corporation

Comment Type **GR** *Comment Status* **D**

I assume type A link segments shorter than 15 meters are also supported, and so are type B link segments shorter than 40 meters.

Under this assumption, the words "at least" used here make this sentence incorrect.

The words "at least" usually appear in the project objective. They should not be quoted here.

97.5.5 has a similar issue.

Note that in 802.3by, clause 110, the similar cable assembly length is stated as "achievable length" which solves this issue; data presented to the task force shows that the length is achievable, but it does not mean that other lengths are not achievable. If it is valid, this approach can be used here too.

SuggestedRemedy

Change "at least 15 meters" to "up to 15 meters" and "at least 40 meters" to "up to 40 meters".

- Alternatively -

Change "for at least 15 meters" to "with achievable length of at least 15 meters".
Change "for at least 40 meters" to "with achievable length of at least 40 meters".

Apply the chosen remedy to fix 97.5.5 similarly.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change "at least 15 meters" to "up to at least 15 meters" and "at least 40 meters" to "up to at least 40 meters" to be consistent with other twisted-pair PHYs defined in 802.3.

Apply the remedy in 97.5.5.

Cl **97** *SC* **97.1.2** *P* **60** *L* **31** # i-3

D'Ambrosia, John INDEPENDENT

Comment Type **GR** *Comment Status* **D**

Concern about how AN has been specified. Auto-Negotiation (Clause 98) may optionally be used by 1000BASE-T1 devices to detect the abilities (modes of operation) supported by the device at the other end of a link segment, determine common abilities, and configure for normal operation. Auto-Negotiation is performed upon link startup through the use of half-duplex differential Manchester encoding. The implementation of the Auto-Negotiation function is optional. This implies that implementation of AN function is optional. However, there is no statement that if AN is implemented, it shall be done as specified by Clause 98. Therefore, different implementations of AN seems possible, creating an interoperability nightmare

SuggestedRemedy

Add text tath if AN is implmented, it shall be done as specified in Clause 98. Add appropriate PICs

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Page 60 line 35. Add sentence to the end of the paragraph.
"If Auto-Negotiation is implmented, it shall be done as specified in Clause 98."

Cl **97** *SC* **97.1.2** *P* **63** *L* **30** # i-53

Amason, Dale NXP Semiconductors

Comment Type **E** *Comment Status* **D** *EZ*

In Figure 97-2, SYNCHRONIZATION is spelled as SYNCHROIZATION.

SuggestedRemedy

Replace SYNCHROIZATION with SYNCHRONIZATION.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.1.2.1** *P* **61** *L* **9** # i-89

Remein, Duane Futurewei Technologie

Comment Type **E** *Comment Status* **D** *EZ*

It would be a kindness to the reader to introduce the two distinct modes of the PCS.

SuggestedRemedy

At the end of the para on pg 61 line 9 add: "The PCS operates in two modes; the data mode and the training mode.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Insert text at the beginning of line 14, page 61: "The PCS operates in two modes; the data mode and the training mode."

Also, change "In Training Mode (see 97.4.2.4)," (page 61, line 32) to "In the training mode (see 97.4.2.4),"

Cl **97** *SC* **97.1.2.1** *P* **61** *L* **21** # i-87

Remein, Duane Futurewei Technologie

Comment Type **ER** *Comment Status* **D** *EZ*

What is a 15-bit "side-stream" scrambler? Does it have some significant difference from normal scramblers? Is it for some data stream that is not part of the main flow? The term is very confusing.

SuggestedRemedy

Strike the term "side-stream" as it adds nothing but confusion. Alternatively provide a clear definition (Cl 1) of the term "side-stream scrambler".

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The term "side-stream" identifies the type of scrambler that does not propogate errors in the receiver as does a self-synchronizing scrambler.
The term is used in IEEE Std 802.3, Clause 55, as well as in P802.3bq and P802.3bz projects under development.

Cl **97** *SC* **97.1.2.1** *P* **61** *L* **28** # i-49

RAN, ADEE Intel Corporation

Comment Type **T** *Comment Status* **D**

The RS-FEC decoder is mentioned here but is not described in detail anywhere, so I'm pointing the comment at this subclause even though the text here is fine.

I would expect any FEC decoder to provide the count of corrected symbols or codewords. These counters exist in clauses 74, 91 and 108, and can be used for monitoring a live link, to shorten compliance tests, and possibly for other purposes. Counting corrected symbols is much more valuable than counting raw bit errors with a test pattern or or post-FEC errors with rfer_cnt (which are currently the only alternatives in the standard).

Since implementations are likely to have this functionality anyway (it is a trivial part of a decoder), it would be good if these counters become part of the standard management interface.

If the task force is concerned about adding a "feature" at this point, this function can be made optional.

SuggestedRemedy

Add a subclause under 97.3.2.3 for RS-FEC decoder, and state in it that it that the RS-FEC decoder counts the number of corrected symbols in a newly-defined counter. Map the counter to an MDIO register, cleared on read.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The implementer is free to add these additional features but we should not make these normative. The automotive channel SNR is actually high, but it experiences a lot of bursty impulse noise from the environment. The RS-FEC is in the PHY to correct these errors. Any counter on the number of correction doesn't say much on the SNR of the channel, but more on how much impulse noise it is experiencing on the line.

Cl **97** *SC* **97.1.2.1** *P* **61** *L* **32** # i-90

Remein, Duane Futurewei Technologie

Comment Type **E** *Comment Status* **D** *EZ*

"Training Mode" unnecessarily capitalized.

SuggestedRemedy

Change to "training mode".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See comment i-89

Cl **97** *SC* **97.1.2.3** *P* **63** *L* **2** # i-61

Chini, Ahmad Broadcom Corporation

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

Add "(optional)" to the Technology Dependent Interface on Figures 97.2 , 97.3 and 97.19 to match objectives and text of the standard

SuggestedRemedy

As per comment add (optional) to Figures 97.2 in page 63, line 2 and Figure 97.3 in page 67, line 2 and Figure 97.19 in page 111, line 27

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.2.2.3.3** *P* **69** *L* **9** # i-25

RAN, ADEE Intel Corporation

Comment Type **T** *Comment Status* **D**

Echo cancellation is an implementation detail. It is possible to recommend it (for example, as done in 97.4.2.3) but it has no place in the service interface definitions.

Echo cancellation is not necessarily part of the effect of receipt. Other implementations are possible. For examples, echo cancellation in the PMA Receive may be performed using PMA Transmit internal signals, without using the tx_symb directly.

SuggestedRemedy

Delete "The parameter tx_symb is also used by the PMA Receive function to process the signals received on the MDI for cancelling the echo."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.1** *P* **73** *L* **24** # i-26

RAN, ADEE Intel Corporation

Comment Type **E** *Comment Status* **D** *EZ*

The GMII definition isn't more precise than other definitions.

The word "precisely" has been removed from the similar subclause 107.1.4.1 in 802.3by. This may be expanded in future maintenance to other existing clauses.

SuggestedRemedy

Delete "precisely".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.2.1** *P* **73** *L* **38** # i-73

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **X** *PICS*

Shall statement without PICS: "The PCS Reset function shall be executed whenever one of the following conditions occur:" (could not find cross ref to 97.3.2.1 in PICS table)

SuggestedRemedy

Create PICS or remove shall

Proposed Response *Response Status* **O**

Cl **97** *SC* **97.3.2.2** *P* **75** *L* **11** # i-74

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **X** *PICS*

The following shall statement does not appear to have a complementary PICS statement "Dashed rectangles in Figure 97-14 indicate states and state transitions in the transmit process state diagram that shall be supported by PHYs with the EEE capability".

SuggestedRemedy

Remove the shall so the statement reads: "Dashed rectangles in Figure 97-14 indicate states and state transitions in the transmit process state diagram that are supported by PHYs with the EEE capability."

Proposed Response *Response Status* **O**

Cl **97** *SC* **97.3.2.2.5** *P* **79** *L* **3** # i-27

RAN, ADEE Intel Corporation

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

Equations should be numbered and well-defined. The text in monospace font does not consist of equations, nor of code in any programming language.

An important process like encoding requires clear definitions. This rough description is difficult to understand, and is insufficient.

SuggestedRemedy

Replace the text in lines 3 through 19 with either a set of numbered equations that clearly define the encoding.

Alternatively provide a valid code in some programming language that represents the process.

See 91.5.2.5 and 113.3.2.2.16 for recent examples of how this can be done.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change "The 81B block encoding is defined by the following equations where N = 10." to "The 81B block encoding is defined by the following pseudo-code, where N = 10."

Cl **97** *SC* **97.3.2.2.6** *P* **79** *L* **26** # i-28

RAN, ADEE Intel Corporation

Comment Type **E** *Comment Status* **D** *EZ*

"Will convey" is not standard language.

The previous sentence uses "conveys".

SuggestedRemedy

Change "will convey" to "conveys".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.2.2.6** *P* **79** *L* **29** # i-75

Remein, Duane Futurewei Technologie

Comment Type **T** *Comment Status* **D** *PICS, EZ*

The double "shall"s in the following statement imply two requirements where only one exists: "All GMII and 1000BASE-T1 control code values that do not appear in the table shall not be transmitted and shall be treated as an error if received."

SuggestedRemedy

Split PCT 5 into two requirements:
PCT5 | Transmitted Control codes | 97.3.2.2.6 | Values not in Table 97-1 are not to be transmitted | M | Yes [ ]
PCT5a | Received Control codes | 97.3.2.2.6 | Values not in Table 97-1 are treated as an error if received | M | Yes [ ]

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.2.2.7** *P* **79** *L* **50** # i-38

RAN, ADEE Intel Corporation

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

Why is validity of blocks discussed in the transmitter function? specifically the RS-FEC correctness is only meaningful in the receiver.

Also, what is the effect of an invalid block? it is stated in 97.3.2.2.10, but that subclause is also under the transmit function, and states that error codes are sent. This is irrelevant in the receive direction.

SuggestedRemedy

Move subclause 97.3.2.2.7 to be under the PCS receive function (97.3.2.3).

Add a paragraph to this subclause:
"An invalid block received shall cause RX_ER=1 at the GMII for all 10 octets included in it."

In 97.3.2.2.10, delete the sentence "it is also sent when invalid blocks are received".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Page 79 line 52 - change "A block" to "An 80B/81B block"

Move 97.3.2.2.7 to 97.3.2.3.3

In 97.3.2.2.10, delete the sentence "it is also sent when invalid blocks are received" then at the end of 97.3.2.3.3 add "Invalid blocks are replaced with Error."

Cl **97** *SC* **97.3.2.2.7** *P* **80** *L* **3** # i-37

RAN, ADEE Intel Corporation

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

"The RS frame containing this 80B/81B block is uncorrectable"

"uncorrectable" for the RS-FEC is not defined anywhere. This might mean that the received codeword had no more than t=22 9-bit symbol errors, but it is not obvious for a non-expert reader. Also, it is not clear that errors that are not uncorrectable are actually corrected, and that uncorrected errors must be identified as such (some implementations might not check the syndrome after a correction attempt).

The RS-FEC definition should be stated in terms of the correctness (not correctablity) of the codeword.

SuggestedRemedy

Change item (c) from
"The RS frame containing this 80B/81B block is uncorrectable"
to
"The RS frame containing this 80B/81B block is decoded without any uncorrected errors".

Proposed Response *Response Status* **W**

PROPOSED REJECT.

This terminology has been widely used in other clauses that use FEC.

Cl **97** *SC* **97.3.2.2.11** *P* **80** *L* **30** # i-29

RAN, ADEE Intel Corporation

Comment Type **E** *Comment Status* **D** *EZ*

Subclause 97.3.2.2.11 is titled "transmit process" while its parent 97.3.2.2 is titled "PCS transmit function". It seems to only repeat some information that was already provided in previous subclauses, but it is not a summary subclause since the process continues after it.

It seems to serve no purpose and it adds confusion.

Perhaps it should be deleted?

SuggestedRemedy

It seems that this subclause can be safely deleted. If any of its content does not appear in 97.3.2.2, it can be moved there.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

This is the only section where rate adaption is described in the transmit process. "Where the GMII and PMA sublayer data rates are not synchronized to that ratio, the transmit process needs to insert idles, or delete idles to adapt between the rates."

Cl **97** *SC* **97.3.2.2.12** *P* **80** *L* **1** # i-42

RAN, ADEE Intel Corporation

Comment Type **E** *Comment Status* **D** *EZ*

Equation 97-1 is cropped from above. the limit "43" is not seen fully.

SuggestedRemedy

Fix it.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.2.2.12** *P* **80** *L* **45** # i-76

Remein, Duane Futurewei Technologie

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

So only the NOTATION of 97.2.2.3 is required and not the actual bit order? This strikes me as 1) untestable (unless you are requiring access to chip design docs) and 2) not particularly useful in guaranteeing interoperability.

SuggestedRemedy

Change statement to read: "The RS encoder shall follow the bit order described in 97.3.2.2.3 ..."
Change PCT10 Values/Comment to read " follow the bit order described in 97.3.2.2.3"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.2.2.12** *P* **81** *L* **40** # i-43

RAN, ADEE Intel Corporation

Comment Type **E** *Comment Status* **D** *EZ*

The d_8 etc. after "element" are in very small print, hard to read.

SuggestedRemedy

Enlarge to fit similar elements in the beginning of the line and in line 43 (perhaps make them all a bit larger to fit the surrounding text).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Enlarge to fit similar elements in the beginning of the line and in line 43

Cl **97** *SC* **97.3.2.2.12** *P* **81** *L* **42** # i-30

RAN, ADEE Intel Corporation

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

"The code has a correction capability of up to twenty-two symbols" is out of place here. It would make more sense earlier in this subclause, after the discussion of the code parameters, right after "44 parity symbols".

Also "correction capability" is part of the decoder function, not all decoders may have this capability. The code only enables this kind of decoding.

Also "22" should be used, as this number is larger than nine.

SuggestedRemedy

Delete "The code has a correction capability of up to twenty-two symbols".

In the second paragraph of this subclause, change "and adds 44 parity symbols" to "and adds 44 parity symbols, enabling correction of up to 22 symbol errors".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.2.2.13** *P* **82** *L* **1** # i-77

Remein, Duane Futurewei Technologie

Comment Type **E** *Comment Status* **D**

Two requirements pointing to the same figure and expecting different results is just a bad idea.

SuggestedRemedy

Split Figure 97-9 into two figures one for Master and another for Slave. Update text and PICS PCT13 & PCT14 accordingly. Alternatively reference the equation in the text and requirement as is done for the receive side.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

There is no doubt which portion of the figure describes the slave and which - the master. No added value in splitting the figure into two.

Cl **97** *SC* **97.3.2.2.13** *P* **82** *L* **11** # i-78

Remein, Duane Futurewei Technologie

Comment Type **T** *Comment Status* **D** *EZ*

Another double shall "The seed values shall be non-zero and shall be transmitted during the InfoField exchange."

SuggestedRemedy

Change statement to read: "The seed values shall be non-zero and transmitted during the InfoField exchange." (as in PICS PCT15)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.2.2.16** *P* **83** *L* **43** # i-80

Remein, Duane Futurewei Technologie

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

Single "shall" spawning multiple requirements (PCT18-21). It is good practice to have a one-to-one correspondence between "shall"s and requirements. "... the lpi_tx_mode variable shall control the transmit signal through ..."

SuggestedRemedy

Either restructure the text to have 4 "shall"s or combine the PICS into a single requirement

Proposed Response *Response Status* **W**

PROPOSED REJECT.

There is nothin wrong with the current organization of PICS.

Cl **97** *SC* **97.3.2.3** *P* **84** *L* **13** # i-81

Remein, Duane Futurewei Technologie

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

Single "shall" spawning multiple requirements (PCR1 & PCR2). "The PCS Receive function shall conform to the PCS 80B/81B receive state diagram in Figure 97-12 and the PCS Receive bit ordering in Figure 97-6 including ..."

SuggestedRemedy

Either restructure the text to have 2 "shall"s or combine the PICS into a single requirement

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Similar PICS-to-shall mapping is used in 802.3 today, without any concerns for clarity.

Cl **97** *SC* **97.3.2.3** *P* **84** *L* **39** # i-40

RAN, ADEE Intel Corporation

Comment Type **ER** *Comment Status* **D**

"Partial RS frame" is mentioned here without definition. It is later defined in 97.3.4.1, but before that it not obvious at all what it means.

SuggestedRemedy

(In other comments I suggest using "codeword" instead of "frame" and "RS-FEC" instead of "RS". If accepted, this remedy should be modified accordingly)

Add a description of the partial RS frame concept in the overview subclauses (97.1.2.1?).

Add a cross-reference to 97.1.2.1 (if the concept is introduced there) and/or 97.3.4.1, after "Partial RS frame boundary".

Consider adding a definition of partial RS frame in 1.4.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See also comment i-15 for terminology changes.

Add the following text on page 84 line 41.

"One Partial RS-FEC codeword is defined to be 1/15 of a RS-FEC codeword. Fifteen Partial RS-FEC codewords concatenated back to back form one RS-FEC codeword. The start of the first Partial RS-FEC codeword coincides with the start of the RS-FEC codeword."

Cl **97** *SC* **97.3.2.3.1** *P* **85** *L* **7** # i-82

Remein, Duane Futurewei Technologie

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

Improper use of the term "Channel" (see 1.4.134 and proposed changes in P802.3by and P802.3bn): "When the receive channel is operating in the data mode... "

SuggestedRemedy

Change to read "When the receive PCS is operating in the data mode ... "

Proposed Response *Response Status* **W**

PROPOSED REJECT.

There are multiple locations in the draft where the term "channel" is used, and it is not immediately possible to identify just one specific sublayer in each of the cases.

Cl **97** *SC* **97.3.2.3.1** *P* **85** *L* **8** # i-83

Remein, Duane Futurewei Technologie

Comment Type **ER** *Comment Status* **D**

In this sentence, the pronoun "it" is not clearly associated to anything. "It shall form a PAM3 stream from the primitive by ..."

SuggestedRemedy

Change to read "The receive 1000BASE-T1 PCS shall form a PAM3 stream from the primitive by ... "

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change "it" to "The receive channel"

Cl **97** *SC* **97.3.2.3.1** *P* **85** *L* **9** # i-84

Remein, Duane Futurewei Technologie

Comment Type **ER** *Comment Status* **X**

This text does not clearly associate to it's corresponding PICS (assuming PCR3 is the entry). The text refers to "rx_data<0> to rx_data<2699>" while the PICS uses PMA_UNITDATA.indication primitive. In 97.2.2 PMA_UNITDATA.indication is reference by rx_symb not rx_data.

SuggestedRemedy

Reword text and PICS to better align and remove confusion regarding rx_data<> and PMA_UNITDATA.indication(rx_symb).

Proposed Response *Response Status* **O**

Cl **97** *SC* **97.3.2.3.2** *P* **85** *L* **14** # i-86

Remein, Duane Futurewei Technologie

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

No PICS found for this shall and probably not needed given PCR5 & PCR6. "The PHY shall descramble the data stream and return the proper sequence of symbols to the decoding process for generation of RXD<7:0> to the GMII."

SuggestedRemedy

"The PCS descrambles the data stream and return the proper sequence of symbols to the decoding process for generation of RXD<7:0> to the GMII."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.2.3.2** *P* **85** *L* **16** # i-85

Remein, Duane Futurewei Technologie

Comment Type **E** *Comment Status* **D**

More accurately the PCS "The PHY shall descramble"

SuggestedRemedy

Change to ""The PCS shall descramble"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.3** *P* **85** *L* **25** # i-35

RAN, ADEE Intel Corporation

Comment Type **T** *Comment Status* **D**

"with the input to the scrambler set to zero"

"The output of the received descrambled values should be zero"

Neither Figure 97-5 nor Figure 97-6 has a clearly distinguished "scrambler" block that suits the sentences abot. The scrambling is done by XORing the RS-FEC frame with the "Data mode Tx scrambler" or "Data mode Rx scrambler" output. So it is not clear what exactly should be set to zero or result in zeros.

I assume the intent is that the RS-FEC frame contains zeros in the transmitter, and is expected to contain zeros in the receiver (assuming no errors).

In standards language, "should be zero" means a recommendation. But here it isn't.

SuggestedRemedy

Assuming I understood correctly:

Change "with the input to the scrambler set to zero"
To ""with the content of the RS-FEC frame set to zeros"

Change "The output of the received descrambled values should be zero"

To "When the receive function operates without errors, the received RS-FEC frame is contains only zeros".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change
"with the input to the scrambler set to zero and the initial condition of the scrambler set to any non-zero value. When the receiver PCS is operating in test-pattern mode it shall receive continuously as illustrated in Figure 97–6. The output of the received descrambled values should be zero. Any
nonzero values correspond to receiver bit errors."
to
"with the input to the RS-FEC encoder set to zero and the initial condition of the scrambler set to any non-zero value. This has the same effect as setting the input to the scrambler to zero. When the receiver PCS is operating in test-pattern mode it shall receive continuously as illustrated in Figure 97–6. The output of the received descrambled values should be zero. Any nonzero values correspond to receiver bit errors. The output of the RS-FEC decoder should also be zero, however there is the possibility that the RS-FEC decoder may have corrected some errors. "

Cl **97** *SC* **97.3.4** *P* **85** *L* **32** # i-88

Remein, Duane Futurewei Technologie

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

The text here appear to directly contradict the text on pg 82 line 1.
Pg 82 Ln 1: "The PCS Transmit function employs side-stream scrambling. The scrambler for the MASTER shall produce the same result as the implementation shown in Figure 97-9. This implements the scrambler polynomial: G(x) = 1 + x4 + x15 (97-3)"
Pg 85 Ln 32: "The PCS Transmit function employs side-stream scrambling. If the parameter config provided to the PCS by the PMA PHY Control function via the PMA_CONFIG.indication message assumes the value MASTER, PCS Transmit shall employ Equation (97-5). gM(x) = 1 + x13 + x33 (97-5)
Similar contradictions exist for Pg 82 ln 6-10 and pg 85 ln 38-42.

SuggestedRemedy

Rationalize the text and PICS for the scramblers

Proposed Response *Response Status* **W**

PROPOSED REJECT.

There is no contradiction. The scrambler used during data transmission is different than the one used for PMA training.

Cl **97** *SC* **97.3.4.1** *P* **86** *L* **21** # i-44

RAN, ADEE Intel Corporation

Comment Type **E** *Comment Status* **D** *EZ*

n, InfoField, S_n and Scr_n and appear in italics in equation 97-7 but in the text of 97.3.4.1 they are usually in Roman font (n is italicized once, inconsistently) . They are also in Roman in Figure 97-10 and in the text of 97.3.4.

Italics should help readability but this inconsistent usage adds confusion.

Comment also applies to 97.4.2.6 (last paragraph of page 119, Figure 97-24, and the paragraph following it).

SuggestedRemedy

Assuming that n is the only "variable" here, always set n in italics, and always set InfoField, S and Scr in Roman. Do that consistently in the figures, equations, and text.

Apply the same remedy in 97.4.2.6.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.4.3** *P* **86** *L* **41** # i-91

Remein, Duane Futurewei Technologie

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

Text and PICS do not match. Text states "The PHY shall acquire ... and report success through scr_status." whereas the PICS on includes the reporting function.

SuggestedRemedy

Change PCR12 to: PCR12 | Scramble status | 97.3.4.3 | Acquire and report descrambler state synchronization via scr_status |
M | Yes [ ]

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.4.3** *P* **86** *L* **42** # i-92

Remein, Duane Futurewei Technologie

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

This statement appear to duplicate requirements from 97.3.4 pg 85 ln 32-43:
For side-stream descrambling, the MASTER PHY shall employ the receiver descrambler generator polynomial same as Equation (97-6) and the SLAVE PHY shall employ the receiver descrambler generator polynomial same as Equation (97-5).

SuggestedRemedy

Strike the duplicate requirements (which are not referenced in the PICS in any case.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change

For side-stream descrambling, the MASTER PHY shall employ the receiver descrambler generator polynomial same as Equation (97–6) and the SLAVE PHY shall employ the receiver descrambler
generator polynomial same as Equation (97–5).

To

For side-stream descrambling, the MASTER PHY employs the receiver descrambler generator polynomial same as Equation (97–6) and the SLAVE PHY employs the receiver descrambler generator polynomial same as Equation (97–5).

Cl **97** *SC* **97.3.5.2** *P* **88** *L* **24** # i-93

Remein, Duane Futurewei Technologie

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

This statement is misleading: "the transmitter shall put zeros on to the MDI". Are these zeros from the perspective of the GMII or do you just mean that the transmitter doesn't emit power?

SuggestedRemedy

Clarify the statement. For example change it to read: "During the quiet period the transmitter shall put zero power on to the MDI."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change text to read:

"During the quiet period the transmitter shall put PAM3 zeros on to the MDI."

Update PICS as needed

Cl **97** *SC* **97.3.6.2.2** *P* **89** *L* **50** # i-33

RAN, ADEE Intel Corporation

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

"when the rfer_cnt exceeds RFER_CNT_LIMIT" - but rfer_cnt is defined as "Count up to a maximum of RFER_CNT_LIMIT" so it cannot exceed RFER_CNT_LIMIT. Figure 97-13 sets hi_rfer to true when rfer_cnt = RFER_CNT_LIMIT.

SuggestedRemedy

Change "exceeds" to "reaches".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.6.3** *P* **92** *L* **6** # i-52

Amason, Dale NXP Semiconductors

Comment Type **E** *Comment Status* **D** *EZ*

Last text of sub-clause 97.3.6.3 abuts with 97.3.6.4.

SuggestedRemedy

Add line before sub-clause 97.3.6.4.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.6.4** *P* **92** *L* **14** # i-94

Remein, Duane Futurewei Technologie

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

Ambiguous reference in requirement: "in these state diagrams"

SuggestedRemedy

change to read: "The PCS shall perform the functions of PCS Receive, RFER monitor, and PCS Transmit,
as specified in Figure 97-12, Figure 97-13, and Figure 97-14, respectively."
Update PICS PCR16 accordingly.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.7.3** *P* **95** *L* **49** # i-95

Remein, Duane Futurewei Technologie

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

Clause 45 is optional. No clause can make it use mandatory as in this requirement: "The PCS shall be placed in loopback mode when the loopback bit in MDIO register 3.2304.14 is set to a one."

SuggestedRemedy

Change to read "The PCS shall be placed in loopback mode when directed by an appropriate management function such as the loopback bit in MDIO register 3.2304.14 being set to a one."
Change Value/Comment of PICS PCO3 to read: "Enabled when directed by management function"

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The requirement does not imply that Clause 45 is mandatory, but implies mandatory behavior of the system when Clause 45 is implemented and a specific change in particular register is done.

Cl **97** *SC* **97.3.7.3** *P* **95** *L* **51** # i-96

Remein, Duane Futurewei Technologie

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

A GMII in an interface so what am I to make of this requirement that the "PCS shall transmit a continuous stream of " interfaces "to 81B-RS encoded PAM3 ..." ?

SuggestedRemedy

Change to read "... the PCS shall transmit a continuous stream of GMII data to the 81B-RS encoded PAM3 sublayer ..."
Update PCO3 accordingly.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.8.2.1** *P* **97** *L* **36** # i-97

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **X** *PICS*

No PICS for these requirements:
Pg 97 ln 36 - "If 1000BASE-T1 OAM is not implemented then the 9-bit 1000BASE-T1 OAM field shall be set to all 0s."
Pg 97 Ln 44 - "Reserved fields shall be set to 0."
Pg 99 Ln 24 - "The CRC16 shall produce the same result as the implementation shown in Figure 97-16."
Pg 99 Ln 25 - "The 16 delay elements S0,..., S15, shall be initialized to zero."
Pg 99 Ln 44 - "All fields of the 1000BASE-T1 OAM frame shall be rejected and the 1000BASE-T1 OAM frame ignored if any of the following occurs."
Pg 100 Ln 1 -- "Otherwise all fields shall be accepted."
Pg 100 Ln 2 - "The fields shall retain their value and not be updated when a rejected 1000BASE-T1 OAM frame is received."
Pg 100 Ln 18 - "If the PHY is already in LPI then the PHY shall immediately exit LPI."
Pg 105 Ln 21 - "This variable shall clear on read."
Pg 105 Ln 33 - "This is normally the opposite value of the current toggle value, but shall reset on error conditions where ..."

SuggestedRemedy

Remove requirements or add PICS.
Might want to reword to remove ambiguous "This" in some of these requirements.

Proposed Response *Response Status* **O**

Cl **97** *SC* **97.3.8.2.12** *P* **99** *L* **37** # i-41

RAN, ADEE Intel Corporation

Comment Type **E** *Comment Status* **D** *EZ*

The switch in Figure 97-16 is confusing, it seems to always be connected to the XOR at its input.

Figure 97-23 includes a similar switch which is much clearer - it selects between the XOR output and "Logic 0".

SuggestedRemedy

Redraw the switch and its inputs, based on Figure 97-23.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The drawing is technically correct.

Cl **97** *SC* **97.3.8.4.3** *P* **106** *L* **32** # i-36

RAN, ADEE Intel Corporation

Comment Type **E** *Comment Status* **D** *EZ*

First line not aligned with others.

SuggestedRemedy

Format to correct.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Also, force mr_tx_valid definition to start on the following page

Cl **97** *SC* **97.3.8.4.6** *P* **109** *L* **25** # i-51

Amason, Dale NXP Semiconductors

Comment Type **T** *Comment Status* **D**

In Figure 97-17, the LOAD RECEIVE PAYLOAD state contains references to rx_oam_<*><*> and rx_oam<*><*> frames. There is no other use of rx_oam_<*><*> outside the LOAD RECEIVE PAYLOAD state. Looks to be a typo.

SuggestedRemedy

Change rx_oam_< to rx_oam< in LOAD RECEIVE PAYLOAD state.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.4.2.2** *P* **112** *L* **19** # i-100

Remein, Duane Futurewei Technologie

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

This requirement (& PMF2) contradict that in 97.4.2.2.1 pg 112 ln 33.(& PMF7). You can either "Continuously transmit onto the MDI ..." (PMF2) or you can "turn off the transmitter" (PMF7) but you cannot do both.

SuggestedRemedy

Rationalize the conflicts

Proposed Response *Response Status* **W**

PROPOSED REJECT.

97.4.2.2 generally describes the transmit function. 97.4.2.2.1 describes the ability to disable the transmit function

Cl **97** *SC* **97.4.2.2.1** *P* **112** *L* **33** # i-99

Remein, Duane Futurewei Technologie

Comment Type **T** *Comment Status* **D**

PMA_transmit_disable variable not formally defined.

SuggestedRemedy

Add definition

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Defined in 97.4.2.4.9, Table 97-9

Cl **97** *SC* **97.4.2.4.** *P* **113** *L* **21** # i-102

Remein, Duane Futurewei Technologie

Comment Type **E** *Comment Status* **D**

Text in 97.4.2.4 "Each message shall be transmitted" disagrees with PMF12 "Each unique InfoField".

SuggestedRemedy

Change text to read "Each InfoField ...".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.4.2.4.4** *P* **114** *L* **26** # i-103

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **X**

Shall without PICS "Moreover, for a given Message Field setting, the following Message Field setting shall be the same Message Field setting or the Message Field setting corresponding to a row below the current setting."

SuggestedRemedy

Add PICS or remove requirement

Proposed Response *Response Status* **O**

Cl **97** *SC* **97.4.2.4.5** *P* **115** *L* **21** # i-104

Remein, Duane Futurewei Technologie

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

Two requirements ("shall"s)captured in single PICS. "The PHY shall indicate the support of optional capabilities by setting the corresponding capability bits to 1. Otherwise it shall set the capability bit to 0 to indicate no support for the optional capability."

SuggestedRemedy

Reword test to single requirement: "The PHY shall indicate the support of optional capabilities by setting the corresponding capability bits to 1 or set the capability bit to 0 to indicate no support for the optional capability."

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The new combined sentence is harder to interpret.

Cl **97** *SC* **97.4.2.4.9** *P* **116** *L* **31** # i-98

Remein, Duane Futurewei Technologie

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

Mismatched variable names "pma_reset" elsewhere but PMA_reset in Table 97-9.

SuggestedRemedy

Change Table 97-9 to "pma_reset"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.4.2.6** *P* **119** *L* **17** # i-106

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **X** *PICS*

Requirement without PICS: "If the PHY is configured as MASTER, Link Synchronization shall employ Equation (97-8) as the PN sequence generator."

SuggestedRemedy

Add PICS or remove requirement

Proposed Response *Response Status* **O**

Cl **97** *SC* **97.4.2.6** *P* **119** *L* **22** # i-107

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **X** *PICS*

Requirement without PICS: "If the PHY is configured as SLAVE, Link Synchronization shall employ Equation (97-9) as PN sequence generator."

SuggestedRemedy

Add PICS or remove requirement

Proposed Response *Response Status* **O**

Cl **97** *SC* **97.4.2.6** *P* **119** *L* **33** # i-108

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **X** *PICS*

Requirement without PICS: "The PN sequence generator shift registers shall be reset to a non-zero value upon entering into TRANSMIT DISABLE state."

SuggestedRemedy

Add PICS or remove requirement

Proposed Response *Response Status* **O**

Cl **97** SC **97.4.2.6** P **119** L **34** # i-109
Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **X** *PICS*

Option without PICS: "The receiver should not assume a continuous PN sequence is provided
between separate periods of SEND_S."

SuggestedRemedy

Add PICS or remove option.

Proposed Response *Response Status* **O**

Cl **97** SC **97.4.2.6** P **120** L **26** # i-110
Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **X** *PICS*

Requirement without PICS: "The synchronization state diagram in this section shall be used to synchronize 1000BASE-T1 PHYs prior to 1000BASE-T1 link training"
Also there is no SD in "this section".

SuggestedRemedy

Add PICS or remove requirement.
Replace ambiguous :this section" with proper cross reference.

Proposed Response *Response Status* **O**

Cl **97** SC **97.4.2.6** P **120** L **27** # i-111
Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **X** *PICS*

Requirements (PLURAL, 2 ""shall"s) without PICS: "If Clause 98 Auto-Negotiation function is enabled, then the Auto-Negotiation function shall be used as the mechanism for PHY synchronization and the synchronization state diagram shall remain in the DISABLE state"

SuggestedRemedy

Add PICS or remove requirementS.

Proposed Response *Response Status* **O**

Cl **97** SC **97.4.2.6.1** P **121** L **8** # i-112
Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **X** *PICS*

Requirement without PICS: "This variable shall be set false no later than 1 us after the signal goes quiet on the MDI."

SuggestedRemedy

Add PICS or remove requirement.
Might want to reword to remove ambiguous "This" in the requirement.

Proposed Response *Response Status* **O**

Cl **97** SC **97.4.2.6.2** P **121** L **37** # i-113
Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **X** *PICS*

Requirement without PICS: "The timer shall expire 1.0 us +-0.04 us after being started."

SuggestedRemedy

Add PICS or remove requirement.
Might want to reword to remove ambiguous "The timer" in the requirement.

Proposed Response *Response Status* **O**

Cl **97** SC **97.4.2.6.2** P **121** L **41** # i-114
Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **X** *PICS*

Requirement without PICS: "The timer shall expire 4 us +-0.1 us after being started."

SuggestedRemedy

Add PICS or remove requirement.
Might want to reword to remove ambiguous "The timer" in the requirement.

Proposed Response *Response Status* **O**

Cl **97** *SC* **97.4.2.8** *P* **123** *L* **12** # i-115

Remein, Duane Futurewei Technologie

Comment Type **T** *Comment Status* **D**

This requirement seems kind of squishy, what is the formal definition of "suitable"?
"The Clock Recovery function shall provide a clock suitable for signal sampling so that the RS FER indicated in 97.4.2.3 is achieved."

SuggestedRemedy

Rephrase to: "The Clock Recovery function provides a clock suitable for signal sampling so that the RS FER indicated
in 97.4.2.3 is achieved."
Remove PMF35

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The condition under which the clock for signal sampling would be considered "suitable" is well defined: "the RS FER indicated in 97.4.2.3 is achieved" - it is implementation-dependent how to achieve this FER.

Cl **97** *SC* **97.4.3.2** *P* **123** *L* **37** # i-45

RAN, ADEE Intel Corporation

Comment Type **E** *Comment Status* **D** *EZ*

Inconsistent italics in equation and text below it.

SuggestedRemedy

Italicize text as in 97.4.3.1.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change italics on hR(t) and w(t) symbols in text in 97.4.3.2

Cl **97** *SC* **97.5.1** *P* **128** *L* **33** # i-46

RAN, ADEE Intel Corporation

Comment Type **E** *Comment Status* **D** *EZ*

"See 96.5.1" points generally at a subclause from another amendment which is not among the ones listed as a part of 802.3.

It is not clear what this reference means. Are there normative requirements? looking at 802.3bw these subclauses look like recommendations.

Also applies to 97.5.1.1 and 97.5.1.2.

SuggestedRemedy

Change "see 96.5.1" to "Recommendations for EMC testing of 1000BASE-T1 PHYs are the same as the ones in 96.5.1".

Change similarly in 97.5.1.1 and 97.5.1.2, or merge these subclauses.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Clause 96.5.1 is part of 802.3bw, which is already published and part of 802.3 family of standards.

Cl **97** *SC* **97.5.2** *P* **128** *L* **50** # i-117

Remein, Duane Futurewei Technologie

Comment Type **T** *Comment Status* **D**

Two "shall"s in a single requirement: "The test modes shall only change the data symbols provided to the transmitter circuitry and shall not alter the electrical and jitter characteristics of the transmitter and receiver from those of normal (non-test mode) operation."

SuggestedRemedy

Rephrase by removing 2nd shall to: "The test modes shall only change the data symbols provided to the transmitter circuitry and do not alter the electrical and jitter characteristics of the transmitter and receiver from those of normal (non-test mode) operation."
Update PME6

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.5.2** *P* **128** *L* **50** # i-116

Remein, Duane Futurewei Technologie

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

Clause 45 is optional. No clause can make it use mandatory as in this requirement: "These test modes shall be enabled by setting a control register 1.2308.15:13 ..."

SuggestedRemedy

Change to read ""These test modes shall be enabled when directed by an appropriate management function such as control register 1.2308.15:13 ..."
Change Value/Comment of PICS PME5 to read: "Enabled when directed by management function"

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The requirement does not imply that Clause 45 is mandatory, but implies mandatory behavior of the system when Clause 45 is implemented and a specific change in particular register is done.

Cl **97** *SC* **97.5.2** *P* **129** *L* **24** # i-118

Remein, Duane Futurewei Technologie

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

Text & PICS disagree; Text say provide clock A <OR> TX_TCLK125. PICS requires TX_TCLK125.

SuggestedRemedy

Align text & PICS , such as by removing the or in the text to read "When in this mode, the 1000BASE-T1 PHY shall provide access to TX_TCLK125.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Update PICS to match the text.

Cl **97** *SC* **97.5.2** *P* **129** *L* **28** # i-119

Remein, Duane Futurewei Technologie

Comment Type **T** *Comment Status* **D**

This requirement could be misinterpreted to mean 3 {+1} symbols followed by a continuous stream of 3 {-1} symbols.
"When test mode 2 is enabled, 1000BASE-T1 PHY shall transmit three {+1} symbols followed by three {-1} symbols
continually with the transmitted symbols timed from its local clock source of 750 MHz."

SuggestedRemedy

Rephrase to: "When test mode 2 is enabled, the 1000BASE-T1 PHY shall transmit a continuous pattern of three {+1} symbols followed by three {-1} symbols with the transmitted symbols timed from its local clock source of 750 MHz."
Update PICS PME8 accordingly.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The number of symbols in the test pattern is well defined as is right now.

Cl **97** *SC* **97.5.2** *P* **130** *L* **49** # i-124

Remein, Duane Futurewei Technologie

Comment Type **T** *Comment Status* **D**

The following requirement could be misinterpreted to mean a pattern of 15 {-1} sym followed by continuous {+1} sym. "When test mode 6 is enabled, 1000BASE-T1 PHY shall transmit fifteen {+1} symbols followed by fifteen {-1} symbols continually with the transmitted symbols timed ..."

SuggestedRemedy

Rephrase to: "When test mode 6 is enabled, 1000BASE-T1 PHY shall transmit a continuous pattern of fifteen {+1} symbols followed by fifteen {-1} symbols with the transmitted symbols timed ..."

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The number of symbols in the test pattern is well defined as is right now.

Cl **97** *SC* **97.5.2** *P* **131** *L* **3** # i-48

RAN, ADEE Intel Corporation

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

Test mode 7 suggests (in the final paragraph) that zeros replace the "received data from the MAC" and that "after FEC and 80B/81B decoding, zero data sequence is expected with no error".

This is different from the requirement in 97.3.3 that zeros are fed into the scrambler.

The text here means that zeros are transmitted before the FEC encoding and are expected after FEC decoding. If this is done, the only errors that can ever be detected are those that the RS-FEC does not correct; an uncorrectable RS-FEC codeword should be very rate and when it occurs it causes many bits to be in error. Therefore counting the "1" bits at the GMII has little value.

SuggestedRemedy

Align the text here with 97.3.3 which seems more correct.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See response to comment i-35, which modifies this text accordingly.

Cl **97** *SC* **97.5.2.1** *P* **131** *L* **12** # i-181

Moffitt, Bryan

Comment Type **E** *Comment Status* **D** *EZ*

incorrect figure reference

SuggestedRemedy

reference should be to figure 97-30, and this test description should be moved to where the rest of the test is described at 97.5.3.2

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.5.2.1** *P* **131** *L* **20** # i-182

Moffitt, Bryan

Comment Type **E** *Comment Status* **D** *EZ*

A in Figure 97-29 is not used in the test description

SuggestedRemedy

it should be deleted

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.5.2.1** *P* **132** *L* **12** # i-126

Remein, Duane Futurewei Technologie

Comment Type **T** *Comment Status* **D** *EZ*

Text states: "In Figure 97-33, the sinusoidal disturbing signal Vd, ..." There is no disturbing signal in Fig 97-33.

SuggestedRemedy

Change the Reference to "Figure 97-30" (Transmitter test fixture 2 for transmitter distortion measurement)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.5.2.1** *P* **132** *L* **47** # i-183

Moffitt, Bryan

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

BALUN of fig 97-32 and 97-33 has no specifications.

SuggestedRemedy

Should at least be 30 dB balance with CM impedance defined

Proposed Response *Response Status* **O**

Cl **97** *SC* **97.5.3.1** *P* **133** *L* **25** # i-129

Remein, Duane Futurewei Technologie

Comment Type **E** *Comment Status* **D** *EZ*

Stranded parenthetical in text "zero crossing. (12 ns period)"

SuggestedRemedy

Bring the parenthetical inside the sentence by moving the period: "zero crossing (12 ns period)."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.5.3.2** *P* **133** *L* **31** # i-152

Remein, Duane Futurewei Technologie

Comment Type **ER** *Comment Status* **D** *EZ*

Per Mathworks web site (see http://www.mathworks.com/company/aboutus/policies_statements/trademarks.html) MATLAB is a registered trademark and should be noted as such in the draft

SuggestedRemedy

Add trademark symbol (q in symbol font) after "MATLAB" and footnote "MATLAB is registered trademark of The MathWorks, Inc."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Replace "MATLAB" with "pseudo-code"

Cl **97** *SC* **97.5.3.2** *P* **133** *L* **36** # i-60

Chini, Ahmad Broadcom Corporation

Comment Type **T** *Comment Status* **D**

Need to increase transmit distortion level from 10mV to 20 mV peak to allow for PoDL distortion

SuggestedRemedy

change

shall be less than 10mV.

to

shall be less than 20 mV.

update PICS accordingly

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Increased distortion affects echo and link partner performance.

Cl **97** *SC* **97.5.3.2** *P* **133** *L* **41** # i-153

Remein, Duane Futurewei Technologie

Comment Type **E** *Comment Status* **D** *EZ*

Format of code is incorrect

SuggestedRemedy

Correct format for code is
Para/Indents: First 18 pt, Left 18 pt, /Tabs: first at 36 repeating every 18 pt. /Alignment: justified
Font: Courier New, 9 pt
(WG Secretary will include this in next version of the template)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.5.3.3** *P* **134** *L* **49** # i-132

Remein, Duane Futurewei Technologie

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

Text does not match requirement PME20 (missing meas. Interval).

SuggestedRemedy

Add measurement interval to text so it reads: " ... the RMS value of the MASTER TX_TCLK125 jitter relative to an un-jittered reference shall be less than 5 ps when measured over an interval of 1 ms +/- 10%"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Update PICS to match current text. PICS is not normative

Cl **97** *SC* **97.5.3.3** *P* **134** *L* **51** # i-133

Remein, Duane Futurewei Technologie

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

Text does not match requirement PME21 (missing meas. Interval).

SuggestedRemedy

Add measurement interval to text so it reads: " ... reference shall be less than 50 ps when measured over an interval of 1 ms +/- 10%."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Update PICS to match current text. PICS is not normative

Cl **97** *SC* **97.5.3.3** *P* **135** *L* **2** # i-134

Remein, Duane Futurewei Technologie

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

Text does not match requirement PME22 (missing meas. Interval).

SuggestedRemedy

Add measurement interval to text so it reads: " ... reference shall be less than 10 ps when measured over an interval of 1 ms +/- 10%."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Update PICS to match current text. PICS is not normative

Cl **97** *SC* **97.5.3.3** *P* **135** *L* **3** # i-135

Remein, Duane Futurewei Technologie

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

Text does not match requirement PME23 (missing meas. Interval).

SuggestedRemedy

Add measurement interval to text so it reads: " ... reference shall be less than 100 ps when measured over an interval of 1 ms +/- 10%."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Update PICS to match current text. PICS is not normative

Cl **97** *SC* **97.5.3.3** *P* **135** *L* **6** # i-136

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **X** *PICS*

This requirement is capture in separate PICS statement (PME20-23). Can be resolved as per my other comments against the text and then make this statement informative (remove shall) <OR> add a separate PICS for the jitter measurement period and remove the text on that topic from PME20-23.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **97** *SC* **97.5.3.3** *P* **135** *L* **11** # i-39

RAN, ADEE Intel Corporation

Comment Type **T** *Comment Status* **D**

Jitter specifications do not seem to cover the case of SLAVE when MASTER is in LPI mode. The SLAVE is supposed to transmit using its recovered clock, but the clock recovery loop is open when MASTER is in LPI. 97.1.2.3 states that both sides can enter LPI independently, so the SLAVE can operate like that for extended periods.

Having a continuously running reference clock does not help, since the SLAVE clock recovery does not use it.

Having the same jitter requirements for open-loop (MASTER in LPI) as in closed-loop (MASTER transmits normally) does not seem reasonable to me, but I found no exception for SLAVE when MASTER is in LPI.

SuggestedRemedy

I think there should be a separate specification for SLAVE jitter when MASTER is in LPI, but providing a detailed proposal is beyond my expertise.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

There is no difference between LPI and non-LPI mode

Cl **97** *SC* **97.5.3.3** *P* **135** *L* **15** # i-138

Remein, Duane Futurewei Technologie

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

Text does not match requirement PME25 (missing meas. Interval). Also several "shall"s in text are not covered in the PICS.

SuggestedRemedy

Change text to read:
"The RMS value of the MDI output jitter relative to an un-jittered reference shall be less than 5 ps measured over an interval of 1 ms +/- 10%. The Peak to Peak value of the MDI output jitter relative to an un-jittered reference shall be less than 50 ps measured over an interval of 1 ms +/- 10%. The band-pass
bandwidth of the measurement device used to measure MDI jitter shall be larger than 2 MHz."

Add PICS statements:
PME25a | PME25 MDI output jitter Peak to Peak | 97.5.3.3 | Less than 50 ps RMS when measured over an interval of 1 ms +/- 10% | M | Yes [ ]
PME25b | PME25 MDI jitter measurement bandwidth | 97.5.3.3 | larger than 2 MHz | M | Yes [ ]

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Align PICS with existing text - text is normative, PICS is not.

Cl **97** *SC* **97.5.3.6** *P* **136** *L* **20** # i-139

Remein, Duane Futurewei Technologie

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

Ambiguous time reference "short-term". To a star several billion years may be considered short-term.

SuggestedRemedy

Define a precise interval over which this requirement must be met and replace the 3 instances of "short-term" with that interval. My assumption is that this will represent the maximum amount of time that the MASTER can be in low power mode.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Said short-term variation is already defined: 0.1 ppm/second

Cl **97** *SC* **97.5.4.1** *P* **136** *L* **30** # i-140

Remein, Duane Futurewei Technologie

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

There are a number of issues with this statement: "This specification shall be satisfied by a frame error ratio less than 10-7 for 125-octet frames."
First off I must assume this is a receiver specification of some sort, but the receiver cannot control most of the parameters that will impact the received differential signal, which, per PMI4, is the Feature. Secondly "this specification" is an ambiguous statement (is it talking about the 802.3 standard as a whole or something less than). Thirdly any received signal does not have a BER or an FER, these only appear after the signal is received and are not a characteristic of the signal itself.
I must assume that this is an overall receiver specification which is intended to say something like if you have a diff signal input that is sent from a compliant transmitter over a link of type A (or is it a link segment?) a compliant receive will receive it with a BER of 10-10.

SuggestedRemedy

Rewrite the paragraph so the requirement and what it applies to are clear. If you keep the two "shall"s, one for "link type A" and another for "link segment B" then also generate another PICS statement.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

No specific proposed text to satisfy commenter was suggested.

Cl **97** *SC* **97.5.4.2** *P* **136** *L* **41** # i-141

Remein, Duane Futurewei Technologie

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

This requirement appear to be a duplicate of the requirement stated in 97.5.4.1 but with a specific amount of noise injected. As such it could be informative. If it is kept normative then a PICS should be added to cover it.

SuggestedRemedy

Change the "shall" to "will be" so the statement reads "The BER will be less than 10-10, and to satisfy this specification ..."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change the "shall" to "will be" so the statement reads "The BER is expected to be less than 10-10, and to satisfy this specification ..."

Cl **97** *SC* **97.5.4.2** *P* **137** *L* **12** # i-65

Chini, Ahmad Broadcom Corporation

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

The noise source defined in the text does not match the note on Figure 97-35

SuggestedRemedy

change

(1000BASE-T1 compliant transmitter sending idles nonsynchronous to the transmitter under test or Gaussian signal generator)

to

(Gaussian signal generator)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.5.5** *P* **137** *L* **19** # i-24

RAN, ADEE Intel Corporation

Comment Type **E** *Comment Status* **D** *EZ*

Link segment is not part of the PMA. It is somewhat strange to find its characteristics under the "PMA electrical specifications" subclause 97.5.

SuggestedRemedy

Promote 97.5.5 to become 97.6, change all descendant subclauses accordingly.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.5.5** *P* **137** *L* **22** # i-164

Law, David Hewlett Packard Enter

Comment Type **T** *Comment Status* **D** *EZ, PICS*

I'm not sure what 'All implementations of the balanced cabling link segment specification shall be electrically compatible at the MDI' is trying to state. Link segments can't be plugged together so they don't have to be 'electrically compatible' at the MDI. In addition, if a link segment meets all the normative requirements in subclause 97.5.5 'Link segment characteristics', which I hope provides all the requirements for operation, I'm not sure what this statement adds.

SuggestedRemedy

Suggest the second sentence of subclause 97.5.5 'Link segment characteristics' that reads 'All implementations ... at the MDI' be deleted.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Delete associated PICS

Cl **97** *SC* **97.5.5** *P* **137** *L* **22** # i-163

Law, David Hewlett Packard Enter

Comment Type **T** *Comment Status* **D** *EZ*

Subclause 97.5.5 'Link segment characteristics' states in the second sentence that 'A single twisted pair copper cable supports an effective data rate of 1 Gb/s in each direction simultaneously.' This seems to me to be a rather broad statement as I imagine there may be some single twisted pair copper cables that do not support an effective data rate of 1 Gb/s.

SuggestedRemedy

Suggest the text 'A single twisted pair copper cable supports ...' be changed to read 'The single twisted pair copper cable supports ...'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change text 'A single twisted pair copper cable supports ...' to read 'The single twisted-pair copper cable supports ...'. (added hyphen)

Cl **97** *SC* **97.5.5** *P* **137** *L* **24** # i-142

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **D** *EZ, PICS*

Ambiguous requirement: "All implementations of the balanced cabling link segment specification shall be electrically compatible at the MDI." What precisely does it mean to be "electrically compatible" at the MDI???

SuggestedRemedy

Clarify the requirement or strike it. Update PICS accordingly

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See comment i-164

Cl **97** *SC* **97.5.5** *P* **137** *L* **29** # i-165

Law, David Hewlett Packard Enter

Comment Type **E** *Comment Status* **D** *EZ*

Typo.

SuggestedRemedy

Suggest that '... in automotive applications supports up to ...' should be changed to read '... in automotive applications that supports up to ...'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.5.5** *P* **137** *L* **37** # i-143

Remein, Duane Futurewei Technologie

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

Shall without PICS "Alien crosstalk for type A link segments shall be tested following the test procedure in Annex 97B."
My interpretation of this would mean that each instantiation of a type A link segment would need to be tested. This seems like an undue burden on an installer for a standard that prides itself on plug n play.

SuggestedRemedy

Convert the statement to be informative such as "Compliant type A link segments meet the Alien crosstalk when tested following the test procedure in Annex 97B."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.5.5.1.4** *P* **139** *L* **29** # i-63

Chini, Ahmad Broadcom Corporation

Comment Type **T** *Comment Status* **X**

This comment is to support in principle an earlier comment from WG to consider multiple classes of balance requirements

SuggestedRemedy

change

Each type A link segment shall meet

to

. Three classes of requirements E1, E2 and E3 are considered. For class E3, each type A link segment shall meet

In the next page line 39 insert the following

Class E1 shall meet differential to common mode conversion loss that is relaxed by 20 dB as compared to class E3. Class E2 shall meet differential to common mode conversion loss that is relaxed by 10 dB as compared to class E3.

update PICS accordingly

Proposed Response *Response Status* **O**

Cl **97** *SC* **97.5.5.3** *P* **143** *L* **29** # i-5

Schicketanz, Dieter Reutlingen University

Comment Type **E** *Comment Status* **D** *EZ*

In Annex 97B Alien noise definision and measurement described for Type A, but the refernce to this Annex is missing like for unbalance

SuggestedRemedy

Add in line 29 page 143: The test methodologies are specified in Annex 97B

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.5.5.3.2** *P* **144** *L* **4** # i-185
Moffitt, Bryan

Comment Type **T** *Comment Status* **X**
PSANEXT loss has no floor

SuggestedRemedy
make it 65 so it is not required to be tighter than type B link

Proposed Response *Response Status* **O**

Cl **97** *SC* **97.5.5.3.2** *P* **144** *L* **25** # i-184
Moffitt, Bryan

Comment Type **E** *Comment Status* **D** *EZ*
axis label is incorrect

SuggestedRemedy
change to PSANEXT

Proposed Response *Response Status* **W**
PROPOSED ACCEPT.

Cl **97** *SC* **97.5.5.3.4** *P* **144** *L* **28** # i-186
Moffitt, Bryan

Comment Type **E** *Comment Status* **D** *EZ*
axis label is incorrect

SuggestedRemedy
change Return Loss axis label to PSAACRF

Proposed Response *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

Comment is actually against page 145

Cl **97** *SC* **97.5.5.3.4** *P* **145** *L* **9** # i-187
Moffitt, Bryan

Comment Type **T** *Comment Status* **X**
PSAACRF has no floor

SuggestedRemedy
make it 70 like type B

Proposed Response *Response Status* **O**

Cl **97** *SC* **97.5.5.3.4** *P* **145** *L* **26** # i-66
Chini, Ahmad Broadcom Corporation

Comment Type **ER** *Comment Status* **D** *EZ*
Figure 97-42 lable is not correct

SuggestedRemedy
change

Return loss (dB)

to

PSAACRF loss (dB)

Proposed Response *Response Status* **W**
PROPOSED ACCEPT.

Cl **97** *SC* **97.5.5.4** *P* **145** *L* **48** # i-6
Schicketanz, Dieter Reutlingen University

Comment Type **T** *Comment Status* **D**
While alien noise for Type A is fully caracterized , type B is only partially defined. A presentation can be given to explain the missing elemets which are definition and linkage to local envinronment.

SuggestedRemedy
Add in line 48 page 145: This is tested as specified in IEC 61156-1 (6.3.7.1)

Proposed Response *Response Status* **W**
PROPOSED REJECT.

See comments i-7 and i-8.

Cl **97** *SC* **97.5.5.4.2** *P* **146** *L* **20** # i-7

Schicketanz, Dieter Reutlingen University

Comment Type **T** *Comment Status* **D**

the limit given by eq 97-26 is rather high and would be acceptable if correlated to coupling attenuation for an local envinronment E3

SuggestedRemedy

Proposed Change to add a note saying :This limits are defined for a local environment E3 with coupling attenuation of 60 dB at 100 MHz- or change the values to a limit similar to type A. See presentation with wording and formulas proposed if this second option is preferred.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

For type B, 1000BASE-T1 PHY definition uses ANSI/TIA-1005-A-2012 Telecommunications Infrastructure Standard for Industrial Premises coupling attenuation requirements which we have included in the draft; aligning with cabling standards that specify in those environments and support from those with industrial application interests that participated in the consensus. Regarding alien crosstalk, the limit is consistent with shielded/screened cabling that meet the coupling attenuation requirements. A screen or shielded cable can easily achieve > 65 dB alien crosstalk.

Cl **97** *SC* **97.5.5.4.4** *P* **146** *L* **50** # i-8

Schicketanz, Dieter Reutlingen University

Comment Type **T** *Comment Status* **D**

the limit given by eq 97-28 is rather high.It would be acceptable if correlated to coupling attenuation for an local envinronment E3

SuggestedRemedy

Proposed Change to add a note saying this:This limits are defined for a local environment E3 with coupling attenuation of 60 dB at 100 MHz or change the values to a limit similar to type A. See presentation with formulas and wording proposed.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

For type B, 1000BASE-T1 PHY definition uses ANSI/TIA-1005-A-2012 Telecommunications Infrastructure Standard for Industrial Premises coupling attenuation requirements which we have included in the draft; aligning with cabling standards that specify in those environments and support from those with industrial application interests that participated in the consensus. Regarding alien crosstalk, the limit is consistent with shielded/screened cabling that meet the coupling attenuation requirements. A screen or shielded cable can easily achieve > 65 dB alien crosstalk.

Cl **97** *SC* **97.6** *P* **147** *L* **54** # i-155

Dove, Daniel Linear Technology

Comment Type **TR** *Comment Status* **X**

There is no MDI mode-conversion specification. This leaves a gaping hole in the specification as it will be impossible to determine the BER performance of a system that may be impacted by external noise.

SuggestedRemedy

I recommend adding an MDI Differential to Common Mode Conversion section to the draft. The formula to match that for link segment mode conversion (formula 97-18) with 5db of margin as described in gardner_01_3bu_0116.pdf This will provide a definite limit, and gives sufficient margin to ensure the MDI does not impact overall BER. Attachment provided at http://www.ieee802.org/3/bu/public/jan16/gardner_01_3bu_0116.pdf

Proposed Response *Response Status* **O**

Cl **97** *SC* **97.6.1** *P* **147** *L* **5** # i-196

Zimmerman, George

Comment Type **E** *Comment Status* **D** *EZ*

The description of the MDI mechanical interface is vague and leaves the reader wondering whether there is further definition elsewhere, yet it appears to be undefined, or out of scope.

SuggestedRemedy

Add, after "multi-pin connector.", "Further specification of the mechanical interface is beyond the scope of this standard."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.6.2** *P* **147** *L* **9** # i-145

Remein, Duane Futurewei Technologie

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

I fail to see how an MDI CONNECTOR mated to a twister pair can meet: output droop, Transmitter distortion, Transmitter timing jitter (all per 97.5.3), or Alien crosstalk noise rejection (per 97.5.4).

SuggestedRemedy

Strike the requirement and PICS MDI2

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change text to read: "The electrical requirements specified in 97.5.3 and 97.5.4 shall be met when the PHY is connceted to the MDI connector mated with a specified balanced twisted-pair cable connector."

Update PICS as needed

Cl **97** *SC* **97.6.2** *P* **147** *L* **10** # i-197

Zimmerman, George

Comment Type **T** *Comment Status* **X**

The referenced electrical requirements are not requirements on the MDI connector mated with the specified balanced twisted-pair cable connector. 97.5.3 and 97.5.4 are the transmitter and receiver electrical specifications, respectively, and contain only requirements on the signal produced by the PHY, not the cable or connector. Further, electrical requirements on the MDI follow in the next subclause (return loss), and at least one electrical requirement usually specified for the MDI appears to be missing (MDI impedance balance, common-to-differential mode conversion, or alien crosstalk).

SuggestedRemedy

Change "97.5.3 and 97.5.4." to "97.5.5.3, and, if operation on link segment type B is supported, 97.5.5.4." Insert subclause 97.6.2.2 MDI Mode Conversion Loss, based on 96.8.2 text and mode conversion loss equation 97-18. Presentation with more detail on proposal to be provided.

Proposed Response *Response Status* **O**

Cl **97** *SC* **97.6.2** *P* **147** *L* **10** # i-188

Moffitt, Bryan

Comment Type **E** *Comment Status* **D**

incorrect section references

SuggestedRemedy

not sure what they refer to

Proposed Response *Response Status* **W**

PROPOSED REJECT.

These point to
97.5.3 Transmitter electrical specifications
97.5.4 Receiver electrical specifications
for PMA, which is correct

Cl **97** *SC* **97.6.2** *P* **148** *L* **4** # i-62

Chini, Ahmad Broadcom Corporation

Comment Type **TR** *Comment Status* **X**

MDI mode conversion limit needs to be added

SuggestedRemedy

add the following

97.6.2.3 MDI mode conversion loss

Mode conversion LCL (Sdc11) of the PHY measured at MDI shall exceed by 5dB the limit defined in 97.5.5.1.4 for all frequencies from 10 MHz to 600 MHz. Alternatively, TCL (Scd11) may be measured to pass the limit line.

Proposed Response *Response Status* **O**

Cl **97** *SC* **97.6.2.1** *P* **147** *L* **15** # i-189

Moffitt, Bryan

Comment Type **T** *Comment Status* **X**

Stated as specified reflected from a nominal cable leaves uncertainty since cable impedance is not fixed

SuggestedRemedy

should be specified as measured from a calibrated 100 Ohm differential test port

Proposed Response *Response Status* **O**

Cl **97** *SC* **97.6.2.1** *P* **147** *L* **19** # i-198

Zimmerman, George

Comment Type **T** *Comment Status* **X**

The return loss requirements on the MDI are not economically feasible with coupling networks for power-over-data-line applications being developed in by IEEE P802.3bu, but require a minor relaxation at low frequencies. A presentation will be provided on this subject.

SuggestedRemedy

Change MDI return loss equation 97-29 to change the first frequency range to start at 2 Mhz and end at 20 MHz: as follows:"MDI RL (dB) >= 18−18xlog10(20/f) 2<f<20 MHz, and 18 dB from 20 <= f < 100 MHz" (range from 100 MHz to 600 MHz is unchanged)

Proposed Response *Response Status* **O**

Cl **97** *SC* **97.6.2.1** *P* **147** *L* **22** # i-154

Dove, Daniel Linear Technology

Comment Type **TR** *Comment Status* **X**

The MDI return loss specification does not adequately provide for PoDL coupling networks. In order to enable economically feasible devices for PoDL/1000BASE-T1 applications, a change is required.

SuggestedRemedy

I recommend changing the formula to match that for PoDL (formula 104-3) as described in gardner_01_3bu_0116.pdf which relaxes the low frequency limit from 10MHz to 20MHz. Attachment provided at http://www.ieee802.org/3/bu/public/jan16/gardner_01_3bu_0116.pdf

Proposed Response *Response Status* **O**

Cl **97** *SC* **97.6.2.1** *P* **147** *L* **50** # i-190

Moffitt, Bryan

Comment Type **T** *Comment Status* **D** *EZ*

incorrect label

SuggestedRemedy

change PSANEXT to Return loss

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.6.2.1** *P* **147** *L* **51** # i-67

Chini, Ahmad Broadcom Corporation

Comment Type **ER** *Comment Status* **D** *EZ*

Figure description 97-43 not correct

SuggestedRemedy

change

Figure 97-43--PSANEXT calculated using Equation (97-29)

to

Figure 97-43--Return loss calculated using Equation (97-29)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.6.2.2** *P* **148** *L* **1** # i-200

Zimmerman, George

Comment Type **E** *Comment Status* **D** *EZ*

MDI fault tolerance requirements aren't MDI electrical requirements, they should not be in a subclause of 97.6.2. Having these requirements at the 97.6.x level would be consistent with other PHY clauses (e.g., clause 96)

SuggestedRemedy

Promote 97.6.2.2 to 97.6.3

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.6.2.2** *P* **148** *L* **3** # i-199

Zimmerman, George

Comment Type **T** *Comment Status* **D** *EZ*

Requirements are implied, but not specified by the statement "are contained in 96.8.3."

SuggestedRemedy

Change "are contained in" to "shall meet the requirements of", OR, preferably, copy the text of the requiremetns into this clause rather than incorporating by reference.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change

The MDI fault tolerance requirements for 1000BASE-T1 are contained in 96.8.3

to

See 96.8.3.

Cl **97** *SC* **97.7.1** *P* **148** *L* **13** # i-148

Remein, Duane Futurewei Technologie

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

"Shall"s without PICS: "All 1000BASE-T1 PHYs shall be capable of operating as MASTER or SLAVE. Support for Auto-Negotiation (Clause 98) shall be optional. If Auto-Negotiation is supported and enabled the mechanism described in Clause 98 shall be used."
If I logically expand the first statement I get "All 1000BASE-T1 PHYs shall be capable of operating as MASTER or of operating as SLAVE or of operating as either a MASTER or a SLAVE." This need not be a requirement as it is an implementation detail and will be resolved by market forces. If the intent of the first statement is to ensure that devices must support both modes than also include a PICS statement to that affect in your resolution.
The second statement is obviously not a requirement as it is optional.
The last statement needs a PICS statement.

SuggestedRemedy

Change to read: ""All 1000BASE-T1 PHYs may be capable of operating as MASTER, as a SLAVE, or either a MASTER or a SLAVE. Support for Auto-Negotiation (Clause 98) is optional."
Add PICS:
"G4 | Auto-negotiation | 97.7.1 | If supported per Clause 98 | O | Yes [ ] N/A [ ]"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change text to read: "All 1000BASE-T1 PHYs shall be capable of operating as MASTER or SLAVE. Support for Auto-Negotiation (Clause 98) is optional"

Update PICS as needed.

Cl **97** *SC* **97.9** *P* **149** *L* **32** # i-34

RAN, ADEE Intel Corporation

Comment Type **T** *Comment Status* **D**

PAUSE functionality in 31B.3.7 and 31B.2 is defined in units of pause_quantum (= 512 bit times). Most PHYs set a limit on delay that is an integer number of a pause_quanta (for example see 44.3 for 10 Gb/s PHYs). Having a non-integer limit makes less sense.

7200 bit times are 14.0625 pause_quanta. The nearest integer is 14 pause_quanta which are 7168 bit times (7168 ns). if this is not enough, the next integer is 15 pause_quanta (7680 bit times or ns).

"bit time" should be in plural. Also, it would be good to point to its definition and the equivalent in pause_quanta and in time units, as done in other clauses.

SuggestedRemedy

Change "shall not exceed 7200 bit time" to "shall not exceed 7168 bit times (14 pause_quanta or 7168 ns)"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.10.3** *P* **151** *L* **21** # i-70

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **D** *PICS, EZ*

PICS table entry "*AUTO" missing Subclause cross reference and description.

SuggestedRemedy

Add the proper cross reference

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.10.4** *P* **152** *L* **5** # i-71

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **D** *PICS, EZ*

PICS table entry "G1" missing Subclause cross reference.

SuggestedRemedy

Add the proper cross reference (probably 97.1.2)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.10.5** *P* **153** *L* **10** # i-79

Remein, Duane Futurewei Technologie

Comment Type **ER** *Comment Status* **D** *PICS, EZ*

Imprecise cross reference "Implement the EEE portion of the PCS transmit state diagram"

SuggestedRemedy

Include proper cross reference to Figure 97-14.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.10.5** *P* **153** *L* **18** # i-72

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **X** *PICS*

The "Yes" in the Value/Comment field for PICS PCT19 here is confusing. Does it imply for example that PCT17, 18, 20 & 21 may be either Yes or No? Typically the detail in a PICS statement is provided in the Value/Comment field not in the Feature field so the requirement is not ambiguous.

SuggestedRemedy

Restructure the following PICS statements so the requirement Feature and Value/Comment are clearly delineated; PCT8, PCT9, PCT17, PCT18, PCT19, PCT20, PCT21, PMF32, PME5, PME6, PME7, PME8, PME9, PME10, PME11, PME12, PME15, PME16, PME24, EEE2, EEE3, EEE4, EEE5, ES1, ES2, ES3, ES4, and ES5.
This will typically require moving what is currently in the Feature field to the Value/Comment field and creating a short Feature. For example: PCT17 feature could be "No partially low power idle RS frames" and the Value/Comment would be "Transmit no RS frames partially filled with LP_IDLES".
At a very minimum remove the Yes so it does not mislead the reader.

Proposed Response *Response Status* **O**

Cl **97** *SC* **97.10.8** *P* **156** *L* **30** # i-101

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **D** *PICS, EZ*

MDIO is option and cannot be made mandatory by another clause. PMF9 implies MDIO is mandatory (or at lease Cl 45 registers are, which are equally optional).

SuggestedRemedy

Change Status to MDIO:O

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.10.8** *P* **157** *L* **15** # i-105

Remein, Duane Futurewei Technologie

Comment Type **E** *Comment Status* **D** *EZ, PICS*

Missing space between ")" & "of" in "x+1)of the"

SuggestedRemedy

Change to "x+1) of the"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.10.9** *P* **158** *L* **35** # i-121

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **D** *PICS, EZ*

Missing requirement. Text pg 129 line 41 states: "The maximum-length shift register used to generate the sequences defined by this polynomial shall be updated once per symbol interval (2/750 MHz)." I cannot find a complementary PICS entry.

SuggestedRemedy

Add PICS:
PME9a | Test mode 4 Sequence generator clock | 97.5.2 | 2/750 MHz | M | Yes [ ]

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.10.9** *P* **158** *L* **35** # i-123

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **D** *PICS, EZ*

Missing requirement. Text pg 129 line 47 states: "The transmit signal level and spectral shaping in this mode shall be same as normal (non-test) mode." I cannot find a complementary PICS entry.

SuggestedRemedy

Add PICS:
PME10a | Test mode 4 signal level | 97.5.2 | Same as non-test mode | M | Yes [ ]

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.10.9** *P* **158** *L* **35** # i-120

Remein, Duane Futurewei Technologie

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

PME10 description disagrees with the text: "Time the transmitted symbols from a 750 MHz +/- 0.01% clock when in MASTER timing mode". Note there is not mention of being in test mode 4 in the requirement. The test for this requirement is "The transmitter shall time the transmitted symbols from a 750 MHz +/- 0.01% clock in the MASTER timing mode." I read this text to mea that a device always is in MASTER timing mode when in Text mode 4 and uses a 750 MHz clock to generate the text pattern.

SuggestedRemedy

Change PME10 Feature to read: "Test Mode 4 transmit clock"
Add Value/Comment field to read: "750 MHz +/- 0.01% clock in MASTER timing mode"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Update PICS to match text.

Cl **97** *SC* **97.10.9** *P* **158** *L* **35** # i-122

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **D** *PICS, EZ*

Missing requirement. Text pg 129 line 46 states: "The bit sequences ... generated from combinations of the
scrambler bits as shown in the following equations, shall be used to generate the ternary symbols, ... as shown in Table 97-13." I cannot find a complementary PICS entry.

SuggestedRemedy

Add PICS:
PME9b | Test mode 4 ternary symbols Ton and T1n | 97.5.2 | generated from bits X0n, X1n, and x2n of the test mode 4 sequence generator | M | Yes [ ]

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.10.9** *P* **158** *L* **47** # i-125

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **D** *PICS, EZ*

Missing requirement. Text pg 131 line 8 states: "The following fixtures, or their equivalents, as shown in Figure 97-29, Figure 97-30, Figure 97-31, Figure 97-32, and Figure 97-33, in stated respective tests, shall be used for measuring the transmitter specifications for data communication only." I cannot find a complementary PICS entry.

SuggestedRemedy

Add PICS:
PME12a | Test fixtures | 97.5.2.1 | Per Figure 97-29, Figure 97-30, Figure 97-31, Figure 97-32, and Figure 97-33 or equivalent | M | Yes [ ]

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.10.9** *P* **158** *L* **47** # i-127

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **D** *PICS, EZ*

Missing requirement. Text pg 131 line 12 states: "In Figure 97-33, the sinusoidal disturbing signal Vd, shall have amplitude of 3.6 volts peak-to-peak differential, and frequency given by one-sixth of the symbol rate (125 MHz) synchronous with the test pattern." I cannot find a complementary PICS entry.

SuggestedRemedy

Add PICS:
PME12b | Disturbing signal characteristics| 97.5.2.1 | sinusoidal, amplitude of 3.6 volts peak-to-peak differential, and frequency of one-sixth the symbol rate (125 MHz) synchronous with the test pattern| M | Yes [ ]

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.10.9** *P* **159** *L* **8** # i-128

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **D** *PICS, EZ*

From the text on pg 133 I must assume that the timing of the measurement is critical. "measured with respect to an initial value at 4 ns after the zero crossing and a final value at 16 ns after the zero crossing. (12 ns period)"

SuggestedRemedy

Change Value/Comment of PME17 to read:
"Less than 10% measured with respect to an initial value at 4 ns after the zero crossing and a final value at 16 ns after the zero crossing."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.10.9** *P* **159** *L* **10** # i-130

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **X**

Missing requirements. Text pg 133 line 32:
"The captured block of signal shall be at least 40 us long."
"The captured block of signal shall be sampled with the minimum sampling rate of 7.5 Gs/s (10 times the transmit symbol rate of 750 Ms/s)."

SuggestedRemedy

Combine text into a single requirement:
"The captured block of signal shall be at least 40 <<u>>s long and be sampled with the minimum sampling rate of 7.5 Gs/s (10 times the transmit symbol rate of 750 Ms/s)."
Add PICS:
PME17a | Transmitter distortion signal capture | 97.5.3.2 | at least 40 <<u>>s long and sampled at a rate of at least 7.5 Gs/s (10 times the transmit symbol rate of 750 Ms/s).

Proposed Response *Response Status* **O**

Cl **97** *SC* **97.10.9** *P* **159** *L* **10** # i-131

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **D** *PICS, EZ*

Requirement PME18 does not match text pg 133 ln 35:
"measured at a minimum of 10 equally-spaced phases of a single symbol period, shall be less than 10mV."
PME18 "Less than 10 mV for all equally-spaced measured phases"
It would be difficult to measure all equally equally-spaced phases ;-)

SuggestedRemedy

Change PME18 to read: ""Less than 10 mV for at least 10 measured equally-spaced phases."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.10.9** *P* **159** *L* **29** # i-137

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **D** *PICS, EZ*

Missing PICS statement. Test pg 135 ln : "The band-pass bandwidth of the capturing device shall be larger than 2 MHz."

SuggestedRemedy

Add PICS:
PME23b | TX_TCLK125 jitter measurement bandwidth | 97.5.3.3 | larger than 2 MHz | M | Yes [ ]

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.10.10.1** *P* **161** *L* **42** # i-144

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **D** *PICS, EZ*

A requirement within a requirement is highly unusual LKS13 "Equation (97-28). Calculations that result in PSAACRF loss values greater than 70 dB shall revert to a requirement of 70 dB minimum."

SuggestedRemedy

On Pk 146 line 46 change from:
"The power sum AACRF between a disturbed type B link segment and the disturbing type B link segment shall meet the values determined using Equation (97-28). Calculations that result in PSAACRF loss values greater than 70 dB shall revert to a requirement of 70 dB minimum."
to:
"The power sum AACRF between a disturbed type B link segment and the disturbing type B link segment shall meet the values determined using Equation 97-28) or 70 dB, whichever is less."
Change LKS13 Value/Comment to read: The lesser of Equation (97-28) and 70 dB.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.10.11** *P* **162** *L* **10** # i-146

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **D** *PICS, EZ*

PICS disagrees with text. Text (pg 147 line 14) specifies an attenuation NOT an impedance as indicated in MDI3

SuggestedRemedy

Change MDI3 to read:
MDI3 | Return loss | 97.6.2.1 | Equation (97-29) | M | Yes [ ]

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.10.11** *P* **162** *L* **13** # i-147

Remein, Duane Futurewei Technologie

Comment Type **ER** *Comment Status* **D** *PICS, EZ*

MDI4, MDI5, and MDI6 have incorrect references

SuggestedRemedy

Change to 96.8.3 (in forest green, this assumes that the text in 97.6.2.2 is correct)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.10.13** *P* **163** *L* **5** # i-149

Remein, Duane Futurewei Technologie

Comment Type **T** *Comment Status* **D** *PICS, EZ*

ES1 is inconsistent with text pg 148 ln 30: "All equipment subject to this clause shall conform to IEC 60950-1 (for IT and motor vehicle applications) and to ISO 26262 (for motor vehicle applications only, if required by the given application)."
The text has lot of exceptions based on applications.

SuggestedRemedy

Change text to read: "All equipment subject to this clause shall conform to IEC 60950-1. All equipment subject to this clause and intended for motor vehicle applications shall conform to ISO 26262.
Add PICS
ES1a | Conforms to ISO 26262 | 97.8.1 | if intended for motor vehicle applications | AUTO:M | Yes [ ] N/A[ ]

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97A** *SC* **97A.2** *P* **201** *L* **22** # i-191

Moffitt, Bryan

Comment Type **E** *Comment Status* **D** *EZ*

unit typo error

SuggestedRemedy

30 cm should be 30 mm as shown in diagram

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97B** *SC* **97B.1.1** *P* **205** *L* **22** # i-192

Moffitt, Bryan

Comment Type **E** *Comment Status* **D** *EZ*

incomplete references

SuggestedRemedy

should include Figure 97B-4

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97B** *SC* **97B.1.1** *P* **205** *L* **35** # i-193

Moffitt, Bryan

Comment Type **E** *Comment Status* **D**

This is an incomplete statement because the far ends of the segments under test must also be terminated - Multiport link segments not under test are terminated in 100 Ω differential mode and common mode (200 Ω)
at both ends

SuggestedRemedy

Also consider converging it with the other incomplete sentence in 97B.3 because it applies to all and not just multiport. change to: Link segment ends not under test are terminated in 100 Ω differential mode and 200 Ω common mode.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change

Multiport link segments not under test are terminated in 100 Ω differential mode and common mode (200 Ω)
at both ends.

to

Link segment ends not under test are terminated in 100 Ω differential mode and 200 Ω common mode.

Cl **97B** *SC* **97B.2** *P* **205** *L* **49** # i-194

Moffitt, Bryan

Comment Type **E** *Comment Status* **D** *EZ*

incorrect reference

SuggestedRemedy

Annex 97B instead of 97A

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97B** *SC* **97B.3** *P* **206** *L* **38** # i-195

Moffitt, Bryan

Comment Type **E** *Comment Status* **D** *EZ*

This is an incomplete statement because the far ends of the segments under test must also be terminated - Cables not under test are terminated in 100 Ω differential mode and 200 Ω common mode at both ends.

SuggestedRemedy

converge it with the other incomplete requirement in 97B.1.1

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Remove "Cables not under test are terminated in 100 Ω differential mode and 200 Ω common mode at both ends." from page 206, line 38

Cl **98** *SC* **98.2.1.1.1** *P* **170** *L* **24** # i-175

Mcclellan, Brett Marvell Semiconducto

Comment Type **T** *Comment Status* **D**

Figure 98-3-CRC16 "Oct4 through Oct10" applies only to the Clause 97 Infofield, not the Auto-Negotiation page

SuggestedRemedy

change "Oct4 through Oct10"
to "48-bit page"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **98** *SC* **98.2.1.1.1** *P* **170** *L* **24** # i-59

Chini, Ahmad Broadcom Corporation

Comment Type **ER** *Comment Status* **D** *EZ*

Data index in Figure 98-3 needs an update to match Figure 98-6

SuggestedRemedy

Change

Oct4 through Oct10

to

D0 through D47

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **98** *SC* **98.2.1.2.5** *P* **174** *L* **32** # i-176

Mcclellan, Brett Marvell Semiconducto

Comment Type **T** *Comment Status* **D** *EZ*

"default" should be "fault"

SuggestedRemedy

change "default" to "fault"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **98** *SC* **98.2.3** *P* **126** *L* **22** # i-177

Mcclellan, Brett Marvell Semiconducto

Comment Type **E** *Comment Status* **D** *EZ*

grammar fix

SuggestedRemedy

change "random wait time listen for a DME page"
to "random wait time to listen for a DME page"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **98** *SC* **98.2.4.3.1** *P* **177** *L* **40** # i-178

Mcclellan, Brett Marvell Semiconducto

Comment Type **E** *Comment Status* **D** *EZ*

delete unnecessary comma "28.2.3.4.7,"

SuggestedRemedy

delete unnecessary comma "28.2.3.4.7,"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **98** *SC* **98.5.1** *P* **186** *L* **47** # i-179

Mcclellan, Brett Marvell Semiconducto

Comment Type **E** *Comment Status* **D** *EZ*

missing indent

SuggestedRemedy

indent "transmission"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **98** *SC* **98.6.3** *P* **194** *L* **12** # i-150

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **D** *PICS, EZ*

No supporting text for G3 in text of 98.3.

SuggestedRemedy

Strike the PICS

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **98** *SC* **98.6.8** *P* **198** *L* **31** # i-151

Remein, Duane Futurewei Technologie

Comment Type **ER** *Comment Status* **D** *PICS, EZ*

Referencing figure title in Value/Comment is ambiguous. Note also these are all in SCl 98.5.5 not 98.5

SuggestedRemedy

Replace 98.5 with 98.5.5 in Reference.
Replace titles with figure cross references (Figure 98-7, Figure 98-8, Figure 98-9) in Value/Comment.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **98A** *SC* **98A.2** *P* **212** *L* **1** # i-180

Mcclellan, Brett Marvell Semiconducto

Comment Type **T** *Comment Status* **D** *PICS, EZ*

Annex 28A Selector Field definitions does not have a PICS section. Why does 98A need a PICS? Similarly 28B and 28C don't have PICS but why are PICS needed for 98B and 98C?

SuggestedRemedy

delete 98A.2, 98B.6 and 98C.5

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.