Cl **FM** *SC* **FM** *P* **1** *L* **27** # r01-2

Anslow, Peter Ciena Corporation

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

If we are goint to list all of the prior amendments at the top of the page, then we should list them also in the opening paragraph as P802.3by D3.1 is doing.

SuggestedRemedy

Change "This draft is an amendment of IEEE Std 802.3-2015." to:
"This draft is an amendment of IEEE Std 802.3-2015 as amended by IEEE Std 802.3bw-2015, IEEE Std 802.3by-201X, and IEEE Std 802.3bq-201X."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **FM** *SC* **FM** *P* **12** *L* **35** # r01-20

Grow, Robert RMG Consulting

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

Incomplete changes were made in response to P802.3bp being designated Amendment 4.

SuggestedRemedy

P.1, L.10, change Amendment: to Amendment 4: (amendment number used to be part of the PAR and template, but perhaps because of our difficulty in numbering amendments at PAR time editorial staff went too far). Delete editors notes in 30.3.2.1.3, 30.5.1.1.2, and 30.4.1.1.4. Clean version P.23, L.46 should not list P802.3bn, it properly includes P802.3bw, P802.3by, and P802.3bq but not P802.3bn in the note.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

P.1, L.10, change Amendment: to Amendment 4:

Delete editors notes in 30.3.2.1.3, 30.5.1.1.2, and 30.4.1.1.4.

Change text on page 23/46 from "(e.g., IEEE P802.3bw and IEEE P802.3bn)" to "(e.g., IEEE P802.3bw)"

Cl **FM** *SC* **FM** *P* **12** *L* **35** # r01-21

Grow, Robert RMG Consulting

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

The amendment identification is not consistent. I believe it is correct here and most places in the draft, but not in another location in the clean version. Basically, we have drifted away from all references in the body of the standard being of the form IEEE Std 802.3bp-20xx, (with document title and headers using the project designation P802.3bp/D3.1). Though likely to be caught in publication preparation (especially since this note is instructed to be this way in current IEEE templates), we should strive for consistency in the body of the document so publication editors only search for one string that needs to be updated.

SuggestedRemedy

This is a problem in the clean version P.11 ,L.3. The note is something carried into the published standard and therefore should in that note be IEEE Std 802.3bp-201x. This may be something that IEEE editorial staff has changed recently. We should get clear guidance from staff (especially since they are currently revising the Style Manual). We also use the IEEE Std 802.3bp-201x in the PICS template and the PICS in this draft.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

PICS for Clasue 97 and 98 use term "IEEE Std 802.3bp-201x"

Page 12/32 uses "IEEE Std 802.3bp-201x", which is consistent with PICS as well.

Document headers follow the template other projects have been using so far. The Editor believes no changes to the draft are needed.

Cl **0** *SC* **0** *P* **90** *L* **19** # r01-16

RAN, ADEE Intel Corporation

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

Following comment i-15, the term "PHY frame" is now used, but there are still instances of "Reed-Solomon frame".

Neither of these terms seem to be appropriately defined anywhere.

SuggestedRemedy

Go over all instances of "frame" and make all (except for those referring to MAC frames) use "PHY frame".

Add an explicit description/definition of the term "PHY frame", preferably as a new paragraph in 97.1.2.1. It should precede the first place this term is mentioned (parentheses in P61 L23).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Insert the following sentence in page 61 line 22.
"The 4050 bits are referred to interchangeably as a PHY frame or as a Reed-Solomon frame. "

Change standalone "frame" to "PHY frame in the following locations:
61/27, 75/23, 75/24, 84/38, 84/53, 88/4,

Change "data frame(s)" to "MAC frame(s)" in the following locations:
62/8, 80/4, 80/14,

Change "frame" to "1000BASE-T1 OAM frame" in the following locations:
98/45,

Definition is included in the text and does not need to be provided separately in Clause 1.

Cl **1** *SC* **1.5** *P* **24** *L* **43** # r01-22

Grow, Robert RMG Consulting

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

Though out of scope, editing instruction is not correct. The first character either has a font or capitalization problem or both. Also, the acronyms list is an alphanumeric list not just an alphabetic list.

SuggestedRemedy

Correct capitalization and/or font for first letter. Change alphabetical to alphanumeric.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Fix the issue with the word "Insert", which seems to have "I" cut out for some reason.

Cl **30** *SC* **30.3.2.1.2** *P* **25** *L* **12** # r01-23

Grow, Robert RMG Consulting

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

The response to my D3.0 comment on removing unnecessary lists of amendments was unsatisfactory, and the primary reason I did not flip my disapprove vote. In discussion with our publication editors at the Atlanta meeting, I understood their instruction to be to only include reference to an amendment when it is relevant to the editing instruction. In this case and most other instructions with a parenthetical list, the list has nothing to do with the insertion point for new content. In looking at this for P802.3bv (assuming it could be Amendment 9), if following ths format, I would be listing six amendments that inserted something into the SYNTAX before bv, none of which are relevant to the insert point specified. The insert point can be specified clearly in all of the seven amendments inserting into this attribute without a list of previous amendments.) This draft (though not all 802.3 drafts in ballot) is also inconsistent. The list is included in SYNTAX, but not in BEHAVIOUR, both are part of an attribute specification. Similarly, this draft inserts into 1.5, but correctly does not list all amendments that have modified that alphanumeric list.

SuggestedRemedy

Delete the parenthetical list of amendments in editing instructions and only include reference to an amendment when it is necessary to specify the insertion point. *Eight times in clause 30, two times in clause 45,

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Please see the guidelines "Listing of prior amendments in editing instructions", located at the following URL: http://ieee802.org/3/WG_tools/editorial/requirements/words.html

Cl **30** *SC* **30.3.2.1.3** *P* **25** *L* **23** # r01-3

Anslow, Peter Ciena Corporation

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

The publication order has now been settled, so the editor's notes can be removed

SuggestedRemedy

Remove the three editor's notes

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **30** *SC* **30.5.1.1.2** *P* **25** *L* **35** # r01-4

Anslow, Peter Ciena Corporation

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

Now that the publication order has now been settled, the TBDs can be replaced with amendments as appropriate.

SuggestedRemedy

Replace the TBDs in the editing instructions for 30.5.1.1.2 and 30.5.1.1.4 (2 instances).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.1.131** *P* **32** *L* **16** # r01-42

Law, David Hewlett Packard Enter

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

IEEE Std 802.3bw-2015 defines bit 1.2100.15 as the 'MASTER-SLAVE manual config enable' bit in Table 45-98a (see draft D3.3, page 26, line 30) and subclause 45.2.1.131.1 (see draft D3.3, page 26, line 46). Based on this, and the changes in IEEE P802.3bp, this text needs to be shown is strikeout as well.

SuggestedRemedy

Suggest that: [1] the text 'Reserved' in the Table 45-98a row for the bit 1.2100.15 be changed to read '<S> MASTER-SLAVE manual config enable</S><U>Reserved</U> and [2] subclause 45.2.1.131.1 (see draft IEEE P802.3bw D3.3, page 26, line 46) be included in strikeout.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.1.131.2** *P* **32** *L* **33** # r01-43

Law, David Hewlett Packard Enter

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

Isn't there also the case of 100BASE-T1 where the PHY Type doesn't support Auto-Negotiation.

SuggestedRemedy

Suggest the text '... set to zero, or if Auto-Negotiation is not implemented. be changed to read '... set to zero, if Auto-Negotiation is not implemented, or if the PHY Type doesn't support Auto-Negotiation.' on line 33 and line 41.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

We are enabling the option for 100BASE-T1 to support auto-neg. So in the case of 802.3bw implementd as is specified today, the AN is not implemented.

Cl **45** *SC* **45.2.1.134.6** *P* **35** *L* **13** # r01-44

Law, David Hewlett Packard Enter

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

Subclause 45.2.1.134.6 'Receive fault (1.2305.1)' does not describe a latching bit, yet Table 45-98d lists bit 1.2305.1 as 'LH' (Latching high) and PICS item MM142 which cross-references subclause 45.2.1.134.6 states that 'Bit 1.2305. is implemented with latching low behaviour.'. Based on this we have one place where it appears to be stated that the bit is latching high, one where it appears to be stated that it is latching low, and one where it appears to be stated that it isn't latching.

SuggestedRemedy

It is not clear what type of bit this is intended to be, this should be decided, and then Table 45-98d, subclause 45.2.1.134.6 and the PICS should be aligned.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Page 34 line 28 Delete:
"/LH"
fix the PICS to match

Cl **45** *SC* **45.2.1.134.7** *P* **35** *L* **24** # r01-45

Law, David Hewlett Packard Enter

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

Latching bits only report the condition since they were last read. Hence if the Receive link status (1.2305.0) bit, defined in subclause 45.2.1.134.7, is implemented with latching low behavior, when read as a zero is doesn't indicate that the 1000BASE-T1 PMA/PMD receive link is down as stated in the second sentence of the subclause, instead it indicates that the 1000BASE-T1 PMA/PMD receive link was down since the bit was last read. An example of this being correctly described can be found in subclause 45.2.3.52.1 'Tx LPI received (3.2305.11)' which is latching high where it is stated that 'When read as a one, bit 3.2305.11 indicates that the transmit 1000BASE-T1 PCS has received LPI signalling one or more times since the register was last read.'. Similar 'one or more times since the register was last read' text should be provided for all latching bits.

SuggestedRemedy

Suggest that:

[1] In subclause 45.2.1.134.7 'Receive link status (1.2305.0)' the text '... the 1000BASE-T1 PMA/PMD receive link is down.' should be changed to read '... the 1000BASE-T1 PMA/PMD receive link has been down one or more times since the register was last read'.

[2] In subclause 45.2.3.53.4 'Latched high BER (3.2306.7)' the text '... has detected a high BER.' should be changed to read '... has detected a high BER one or more times since the register was last read.'.

[3] In subclause 45.2.3.53.5 'Latched block lock (3.2306.6)' the text '... has lost block lock.' should be changed to read '... has lost block lock one or more times since the register was last read.'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.3.52.5** *P* **39** *L* **52** # r01-46

Law, David Hewlett Packard Enter

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

Subclause 97.3.7.1 'Status' states in its definition of 'PCS_status' that '... latch high of the inverse of this status, Receive fault, is reflected in MDIO register 3.2305.7.'. Register bit 3.2305.7 however is defined in subclause 45.2.3.52.5 'Fault' as once when the '... PCS has detected a fault condition on either the transmit or receive paths.'. Further this bit is not defined as a latching bit and defined in Table 45-163b simply as 'RO'.

SuggestedRemedy

It is difficult to propose a remedy since I'm not sure of the intent here, I also note that there is no definition of transmit fault for the PCS in the draft that I can see. Based on this I'd propose that the bit be updated to match the definition found in subclause 97.3.7.1, that is a latching bit of the inverse of this status, although it would have to latching low. Latching high the inverse of PCS receive link status would result in the same functionality since it would be the inverse of an inverse (an alternative would have been to change PCS receive link status to Latching High and keep this as Latching High which might the bit names better, but would result in more changes).

Based on the above suggest that:

[1] Change the Table 45-163b '1000BASE-T1 PCS status 1 register bit definitions' entry for bit 3.2305.7 to read '1 = PCS receive link down<CR>0 = PCS receive link up' in the Description column and to read 'RO/LL' in the Status column.
[2] The subclause 45.2.3.52.5 title be changed from 'Fault (3.2305.7)' to read 'Receive fault (3.2305.7)'.
[3] Subclause 45.2.3.52.5 be changed to read 'When read as a one, bit 3.2305.7 indicates that the 1000BASE-T1 PCS receive link is down. When read as a zero, bit 3.2305.7 indicates that the 1000BASE-T1 PCS receive link was up since the last read from this register. This bit is a latching low version of the inverse of bit 3.2306.10. The receive fault bit shall be implemented with latching low behavior.'.
[4] Add a new PICS entry in respect to the requirement for the latching low behaviour.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Page 96 line 11. Delete the clause:
"a latch high of"

Cl **45** *SC* **45.2.3.52.6** *P* **40** *L* **5** # r01-47

Law, David Hewlett Packard Enter

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

Subclause 45.2.3.52.6 'PCS receive link status (3.2305.2)' states that 'The receive link status bit shall be implemented with latching low behaviour.' however the 'receive link status' bit is bit 3.2306.10 and is not latching low. I think this text should be refinancing the bit this subclause is defining which is the 'PCS receive link status' bit.

SuggestedRemedy

Suggest that the text 'The receive link status bit shall ...' be changed to read 'The PCS receive link status bit shall ...'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.3.53.2** *P* **40** *L* **42** # r01-48

Law, David Hewlett Packard Enter

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

Subclause 45.2.3.53.2 'PCS high BER' states that the bit is set when the BER is >= 4 x 10^^-4 yet subclause 97.3.6.2.2 'Variables' where hi_rfer is defined, which this bit is based on, states it is set true once the BER is > 4 x 10^^-4.

SuggestedRemedy

Suggest that '... is detecting a BER of >= 4 x 10^^-4. When read as a zero, bit 3.2306.9 indicates that the 1000BASE-T1 PCS receiver is detecting a BER of < 4 x 10^^-4.' should be changed to read '... is detecting a BER of > 4 x 10^^-4, when read as a zero, bit 3.2306.9 indicates that the 1000BASE-T1 PCS is not.'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change
'... is detecting a BER of >= 4 x 10^^-4. When read as a zero, bit 3.2306.9 indicates that the 1000BASE-T1 PCS receiver is detecting a BER of < 4 x 10^^-4.'
to read
'... is detecting a BER of > 4 x 10^^-4. When read as a zero, bit 3.2306.9 indicates that the 1000BASE-T1 PCS is not detecting a BER of > 4 x 10^^-4.'.

Cl **45** *SC* **45.2.7.14a** *P* **45** *L* **10** # r01-5

Anslow, Peter Ciena Corporation

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

Now that it has been agreed that IEEE Std 802.3bq is ahead of .3bp in the queue, the draft should take account of the insertion of 45.2.7.14a and 14b by P802.3bq.

SuggestedRemedy

Renumber 45.2.7.14a through 45.2.7.14f to be 45.2.7.14c through 45.2.7.14h.
Renumber Tables 45-211a through 45-211f to be Tables 45-211c through 45-211h.
Change the editing instruction to say after 45.2.7.14b as inserted by IEEE Std 802.3bq-201x

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.7.14a.2** *P* **46** *L* **10** # r01-49

Law, David Hewlett Packard Enter

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

Bits 1.2100.3:0 are the 'Type selection' bits (see 45.2.1.131.3).

SuggestedRemedy

Suggest the text '... then PHY type bits 1.2100.3:0 and ...' should read '... then type selection bits 1.2100.3:0 and ...'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.5** *P* **50** *L* **6** # r01-6

Anslow, Peter Ciena Corporation

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

In the heading for 45.5, the "Clause 45" should be a cross-ref and the footnote for copyright release should be added.

SuggestedRemedy

Make "Clause 45" a cross-reference and add the copyright release footnote

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.5.3.3** *P* **50** *L* **13** # r01-7

Anslow, Peter Ciena Corporation

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

The highest item number being added here is 148, not 147.
The other amendments changing this text need to be called out.
Editing instructions should include the subclause number, not just rely on the location.
P802.3by D3.1 is adding PICS item MM129

SuggestedRemedy

Modify the editing instruction to be:
"Insert PICS items MM130 through MM149 at the bottom of the table in 45.5.3.3 (as modified by IEEE Std 802.3bw-2015 and IEEE Std 802.3by-201x) as follows:"
Renumber the PICS items accordingly.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.5.3.3** *P* **50** *L* **21** # r01-1

Marris, Arthur Cadence Design Syst

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

Renumber PICS items starting at MM130

SuggestedRemedy

MM129 is being used by 802.3by so 1 needs to be added to each PICS item

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.5.3.7** *P* **52** *L* **41** # r01-50

Law, David Hewlett Packard Enter

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

PICS item RM120 states that 'Bit 3.2306.10 is implemented with latching high behavior.' yet Table 45-163c defines bit 3.2306.10 just as 'RO'. Further, bit 3.2306.10 is defined in subclause 45.2.3.53.1, yet PICS item RM120 cross references subclause 45.2.3.52.6. Based on this I think this PICS item is actually related to subclause 45.2.3.52.6 which defines bit 3.2305.2 (the PCS receive link status bit) since this is a latching bit, although it is latching low rather than latching high.

SuggestedRemedy

Suggest that the text 'Bit 3.2306.10 is implemented with latching high behavior.' is changed to read 'Bit 3.2305.2 is implemented with latching low behavior.'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.5.3.7** *P* **52** *L* **52** # r01-51

Law, David Hewlett Packard Enter

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

Subclause 45.2.3.53.5 'Latched block lock (3.2306.6)' states that 'The latched block lock bit shall be implemented with latching low behavior.' yet PICS item RM123 states 'Bit 3.2306.6 is implemented with
latching high behavior.'.

SuggestedRemedy

Suggest that '... with latching high behavior.' be changed to read ' with latching low behavior.'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.5.3.9** *P* **54** *L* **6** # r01-8

Anslow, Peter Ciena Corporation

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

P802.3bq is adding PICS items AM61 through AM64

SuggestedRemedy

Modify the editing instruction to be:
"Insert PICS items AM65 through AM89 at the bottom of the table in 45.5.3.9 (as modified by IEEE Std 802.3by-201x) as follows:"
Renumber the PICS items accordingly.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **78** *SC* **78.1.3.3.1** *P* **56** *L* **18** # r01-24

Grow, Robert RMG Consulting

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

Out of scope, but editing instruction could be improved. The use of between for the insert point makes subsequent amendments more difficult than would a simple after editing instruction.

SuggestedRemedy

Rewrite to simply state after 1000BASE-T in the three instructions.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Current editing instructions are clear and correct.

Cl **97** *SC* **97.1** *P* **59** *L* **12** # r01-53

Law, David Hewlett Packard Enter

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

The 1000BASE-T1 PHY isn't really a 'full-duplex network specifications' but rather a 'full-duplex PHY specification'.

SuggestedRemedy

Suggest the text '... high-speed full-duplex network specifications ...' be changed to read '... high-speed full-duplex PHY specifications ...'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.1** *P* **59** *L* **12** # r01-52

Law, David Hewlett Packard Enter

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

This text reads 'The 1000BASE-T1 PHY is one of the Gigabit Ethernet family of high-speed full-duplex network specifications, capable of operating at 1000 Mb/s and intended to be operated over a single twisted-pair ...'. This could be misread to imply that the Gigabit Ethernet family is intended to be operated over a single twisted-pair.

SuggestedRemedy

Suggest that '... capable of operating at 1000 Mb/s and intended to be operated over a single twisted-pair ...' be changed to read '... capable of operating at 1000 Mb/s. The 1000BASE-T1 PHY is intended to be operated over a single twisted-pair ...'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.1.1** *P* **59** *L* **27** # r01-54

Law, David Hewlett Packard Enter

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

Suggest the start of the first sentence be change to match the title.

SuggestedRemedy

Suggest that 'Relations between the 1000BASE-T1 PHY ...' be changed to read 'The relationship between the 1000BASE-T1 PHY ...'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.1.2** *P* **59** *L* **48** # r01-55

Law, David Hewlett Packard Enter

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

The terms 81B and 80B/81B encoder, decoder and block seem to be used interchangeably throughout the draft. I suggest that 80B/81B be used consistently in realtion to the encoder and decoder, and in particular in the introductory text.

SuggestedRemedy

As some examples suggest that:

On page 59, line 48 suggest that '... using 81B encoding ...' be changed to read '... using 80B/81B encoding ...'.
On page 59, line 51 suggest that '... of 45 81B blocks ...' be changed to read '... of 45 80B/81B blocks ...'.
On page 59, line 51 suggest that '... and 81B encoder/decoder ...' be changed to read '... and 80B/81B encoder/decoder ...'.
On page 61, line 16 suggest that '... cycles are encoded into an 81-bit "81B block" that ..' be changed to read 'cycles are 80B/81B encoded into an 81-bit "81B block" that ...'
On page 61, line 30 suggest that '... the 45 81B blocks is decoded into GMII data or control ...' be changed to read '... the 45 81B blocks is 80B/81B decoded into GMII data or control ...'
On page 79, line 1 suggest that 'The 81B block encoding ...' be changed to read 'The 80B/81B block encoding ...'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.1.2** *P* **60** *L* **35** # r01-56

Law, David Hewlett Packard Enter

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

IEEE P802.3bp is a draft interoperability specification, not implementation specification.

SuggestedRemedy

Suggest that the text '... implemented, it shall be done as specified in Clause 98.' should be changed to read '... implemented, it shall meet the requirements of Clause 98.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Changes per comment + Update PICS

Cl **97** *SC* **97.2.2.2** *P* **68** *L* **18** # r01-57

Law, David Hewlett Packard Enter

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

Shouldn't the case of Auto-Negotiation not being implemented also be covered.

SuggestedRemedy

Suggest the text 'If the Auto-Negotiation process is not Enabled ...' should be changed to read 'If the Auto-Negotiation process is not implemented or not Enabled ...'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change
'If the Auto-Negotiation process is not Enabled ...'
to
'If the Auto-Negotiation process is not implemented or not enabled ...'.

Cl **97** *SC* **97.3.2.1** *P* **73** *L* **42** # r01-58

Law, David Hewlett Packard Enter

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

Subclause 97.3.2.1 'PCS Reset function' states that 'PCS Reset sets pcs_reset = ON while any of the above reset conditions hold true.' and one of the conditions is 'Power for the device containing the PMA has reached the operating state'. This therefore seems to state that pcs_reset is set to 'ON', which will hold the PCS in reset, when the power for the PMA has reached the operating state. This doesn't seem correct, and instead shouldn't the inverse should be true. Also shouldn't it be the power to the PCS rather than the PMA.

See also similar comment on pma_reset.

SuggestedRemedy

Suggest that '... PMA has reached the operating state' should be changed to read '... PCS has not reached the operating state'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.2.2.3** *P* **75** *L* **45** # r01-59

Law, David Hewlett Packard Enter

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

It seems odd to place the statement '80B/81B encodes 10 data octets or control characters into an 81B block.' Under the subclause heading '97.3.2.2.3 Notation conventions'. In addition isn't data and control, rather than data octets or control, that is encoded into an 81B block (see 97.1.2).

SuggestedRemedy

Since 80B/81B encoding is described elsewhere suggest that the second paragraph of '97.3.2.2.3 Notation conventions' be deleted.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.2.2.11** *P* **81** *L* **45** # r01-78

Mcclellan, Brett Marvell Semiconducto

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

font size is smaller than surrounding text

SuggestedRemedy

fix the font size

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.2.3.2** *P* **85** *L* **20** # r01-79

Mcclellan, Brett Marvell Semiconducto

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

grammer
change 'return' to 'returns'

SuggestedRemedy

change 'return' to 'returns'

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.5** *P* **87** *L* **37** # r01-80

Mcclellan, Brett Marvell Semiconducto

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

fix typo in figure

SuggestedRemedy

change '25' to '255'

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.6.2.2** *P* **90** *L* **31** # r01-60

Law, David Hewlett Packard Enter

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

RXD[7:0] should be RXD<7:0>, see Figure 97-2, 97-3 and IEEE Std 802.3-2015 subclause 35.2.2.8.

SuggestedRemedy

RXD[n][7:0]' should be 'RXD[n]<7:0>' here and on line 33.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.6.2.2** *P* **90** *L* **33** # r01-61

Law, David Hewlett Packard Enter

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

Aren't the assignments here reversed, that is the RX_DV, RX_ER and RXD[7:0] derived from rx_raw, subclause 97.3.2.3 'PCS Receive function' states 'The received 81B-RS frames are decoded with error correction; the framing is checked; and the 80B/81B blocks are converted to 10 data octets to obtain the signals RXD<7:0>, RX_DV and RX_ER for transmission to the GMII.'.

SuggestedRemedy

Suggest that 'For n = 0 to 9, rx_raw<10n> = RX_DV[n], rx_raw<10n+1> = RX_ER[n], rx_raw<10n+9:10n+2> = RXD[n][7:0]' should read 'For n = 0 to 9, RX_DV[n] = rx_raw<10n>, RX_ER[n] = rx_raw<10n+1>, RXD[n][7:0] = rx_raw<10n+9:10n+2>'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.6.2.2** *P* **91** *L* **6** # r01-62

Law, David Hewlett Packard Enter

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

TXD[7:0] should be TXD<7:0>, see Figure 97-2, 97-3 and IEEE Std 802.3-2015 subclause 35.2.2.4.

SuggestedRemedy

TXD[n][7:0]' should be 'TXD[n]<7:0>' here and on line 8.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.6.4** *P* **92** *L* **24** # r01-81

Mcclellan, Brett Marvell Semiconducto

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

unnecessary comma

SuggestedRemedy

change "Figure 97-14, respectively."
to "Figure 97-14 respectively."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.7.1** *P* **96** *L* **11** # r01-63

Law, David Hewlett Packard Enter

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

Since the name of register 3.2305.7 is stated at the end of the sentence, suggest the name for register 3.2305.2 should be provided earlier in the sentence.

SuggestedRemedy

Suggest the text 'A latch low view of this status is reflected ...' be changed to read 'A latch low view of this status, PCS receive link status, is reflected ...'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Remove 'Receive fault,' on page 96/11

Cl **97** *SC* **97.3.7.2** *P* **96** *L* **37** # r01-64

Law, David Hewlett Packard Enter

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

Suggest that the subclause heading and first paragraph be updated since there is only one counter.

SuggestedRemedy

Suggest that the subclause heading be changed to read 'Counter' and the first paragraph of the subclause be changed to read 'The following counter is reset to zero upon read and upon reset of the PCS. When it reaches all ones, it stops counting. Its purpose is to help monitor the quality of the link.'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.7.2** *P* **96** *L* **41** # r01-66

Law, David Hewlett Packard Enter

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

Suggest the state diagram where the referenced state can be found should also be referenced.

SuggestedRemedy

Suggest that '... each time RFER_BAD_RF state is entered.' be changed to read '... each time the RFER_BAD_RF state of the RFER monitor state diagram (see Figure 97-13) is entered.'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.7.2** *P* **96** *L* **41** # r01-65

Law, David Hewlett Packard Enter

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

Subclause 45.2.3.53.6 'BER count (3.2306.5:0)' states that ' The BER counter formed by bits 3.2306.5:0 is a six bit count as defined by RFER_count in 97.3.7.2.' however 97.3.7.2 'Counters' states under the heading 'RFER_count' states 'This counter is reflected in MDIO register bits 3.2305.5:0. The counter is reset when register 3.2305 is read by management.'. Assume that subclause 45.2.3.53.6 is correct.

SuggestedRemedy

Suggest that 'This counter is reflected in MDIO register bits 3.2305.5:0. The counter is reset when register 3.2305 is read by management.' should be changed to read 'This counter is reflected in MDIO register bits 3.2306.5:0. The counter is reset when register 3.2306 is read by management.'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.7.2** *P* **96** *L* **44** # r01-67

Law, David Hewlett Packard Enter

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

Typo.

SuggestedRemedy

Suggest that '... the RFER_BAD_RF can ...' be changed to read '... the RFER_BAD_RF state can ...'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.7.3** *P* **96** *L* **52** # r01-82

Mcclellan, Brett Marvell Semiconducto

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

PAM3 is not a sublayer.
"random wait time to listen for a DME page" was added by mistake.

SuggestedRemedy

change "In addition, the PCS shall transmit a continuous stream of GMII data to the 81B-RS encoded PAM3 sublayer, random wait time to listen for a DME page and shall ignore all data presented to it by the PMA sublayer."
to "In addition, the PCS shall transmit a continuous stream of GMII data to the 81B-RS encoder and on further to the PMA sublayer and shall ignore all data presented to it by the PMA sublayer."
Update PIC PCO3 as necessary

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.3.8.2.13** *P* **101** *L* **51** # r01-83

Mcclellan, Brett Marvell Semiconducto

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

typo

SuggestedRemedy

change "be be" to "be"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.4.2.1** *P* **113** *L* **9** # r01-68

Law, David Hewlett Packard Enter

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

Subclause 97.4.2.1 'PMA Reset function' states that 'PMA Reset sets pma_reset = ON while any of the above reset conditions hold true.' and one of the conditions is 'Power for the device containing the PMA has reached the operating state'. This therefore seems to state that pma_reset is set to 'ON', which will hold the PMA in reset, when the power for the PMA has reached the operating state. This doesn't seem correct, and instead shouldn't the inverse should be true.

See also similar comment on pcs_reset.

SuggestedRemedy

Suggest that '... PMA has reached the operating state' should be changed to read '... PMA has not reached the operating state'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.4.2.4.9** *P* **117** *L* **41** # r01-69

Law, David Hewlett Packard Enter

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

The name of the register that contains bit 1.2305.1 is the '1000BASE-T1 PMA status register' (see 45.2.1.134).

SuggestedRemedy

Suggest the text '1000BASE-T1 status register' in Table 97-10 be changed to read '1000BASE-T1 PMA status register'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.4.2.4.11** *P* **119** *L* **18** # r01-70

Law, David Hewlett Packard Enter

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

Bits 1.2100.3:0 are the 'Type selection' bits (see 45.2.1.131.3).

SuggestedRemedy

Suggest the text 'PHY Type' should read 'Type selection'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.4.2.6.4** *P* **123** *L* **43** # r01-71

Law, David Hewlett Packard Enter

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

According to Table 21-5 in IEEE Std 802.3-2015 subclause 21.5, which is referenced for the notation for state diagrams, the 'Not equal to' symbol should be used, and not '!='.

SuggestedRemedy

Suggest that '!=' in the test 'force_phy_type != 1000-T1' should be changed to the 'Not equal to' symbol.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.5.1** *P* **128** *L* **33** # r01-77

Thompson, Geoffrey GraCaSI S.A.

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

This comment is with respect to the resolution of comment # i-46.
The resolution claims that 802.3bw has been published. I can find no evidence that Std 802.3bw was published as of Feb. 1, 2016.

SuggestedRemedy

Change outstanding comment resolution to read: "Clause 96.5.1 is part of 802.3bw, which is already approved and is a part of 802.3 family of standards. (IEEE Std 802.3bw was not yet published as of Feb. 1, 2016.)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

At the time when the comment was being resolved, that was the information available to TF. There is no value in changing comment resolution, especially that by the time P802.3bp is done, IEEE Std 802.3bw will be published.

Cl **97** *SC* **97.5.3.2** *P* **134** *L* **16** # r01-9

RAN, ADEE Intel Corporation

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

The response to comment i-152 changed "Matlab code" to "pseudo-code". But this is indeed Matlab code and there's no reason to make it obscure. Wikipedia describes psuedocode as "intended for human reading rather than machine reading" - this is not the case here.

Any implications of using the name "Matlab" should be taken care of - if Matlab is useful for us we should respect it.

Matlab code is used in clause 40 and in clause 68 for similar purposes, and Matlab is included in the "normative references" subclause 1.3. Where it's used, "Matlab" appears with copyright release footnotes and either a reference to 1.3 or "Matlab (R)" in a comment inside the code. This has been accepted, so it seems that the same style of reference can be used here.

SuggestedRemedy

Change "pseudo code" to "Matlab code", in the text (twice) and in the comment. Add a reference to 1.3 in the first occurence.

Add "Matlab (R)" in a comment in the code as done in 68.6.6.2.

Add copyright note or footnote as in 40.6.1.2.4 or 68.6.6.2.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The example code, which uses Matlab-like syntax, may be executed in many environments using a number of commercially-available or open-source software packages. The P802.3bp Task Force does not believe that it, or the 802.3 Working Group, should endorse a specific commercial product.

Cl **97** *SC* **97.5.3.3** *P* **136** *L* **6** # r01-12

RAN, ADEE Intel Corporation

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

Equations 97-14 and 97-15 use f as an input to the PSD functions UpperPSD(f) and LowerPSD(f), but the expressions include f_MHz which is undefined.

Compare to Eq 97-16.

SuggestedRemedy

In both equations, change "f_MHz" everywhere to "f" and add after each equation "where f is the frequency in MHz".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

In both equations, change "f_MHz" everywhere to "f" and add after Equation 97-15 statement: "where f is the frequency in MHz".

Cl **97** *SC* **97.5.3.6** *P* **137** *L* **1** # r01-17

RAN, ADEE Intel Corporation

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

(This is a new comment - issue was identified when reviewing 802.3bq and is relevant here too. It may impact interoperability when LPI is used.)

"When the transmitter is in the LPI transmit mode, the transmitter clock short-term rate of frequency variation shall be less than 0.1 ppm/second"

This requirement might be impossible for the SLAVE if, during the time it is in LPI mode, the MASTER also goes into LP mode:

- The SLAVE uses its recovered clock to source its TX_TCLK (97.4.2.2).
- The SLAVE clock recovery function depends on the MASTER's signal being active; when it is active, the SLAVE TX_TCLK will have 0 PPM offset from the MASTER TX_TCLK.
- If MASTER goes into LPI then the recovered clock is in open-loop and can't have precisely the same frequency (e.g. with a digital clock recovery there will be some quantization error). Therefore the offset cannot be 0 PPM in general. It is reasonable to have an offset of a few PPM under this condition.
- The transition of the MASTER from/to LPI is practically instantaneous and the variation would be much higher than 0.1 ppm/second.

Under the conditions described, this requirement is not only impossible to meet, but also impossible to validate.

However, there should be some requirement on the SLAVE's clock when MASTER is in LPI mode, otherwise the frequency change can be too large and might be detrimental for the MASTER's clock recovery function. The exact offset requirement can be debated but something has to be specified.

It is suggested to require the SLAVE to have a frequency offset lower than +/- 10 PPM relative to the MASTER's clock frequency at all times (this requirement practically applies only to the time MASTER is in LPI; in other times the offset is practically 0).

SuggestedRemedy

Make this paragraph apply only to the MASTER (this is justified, since SLAVE TX_TCLK frequency is governed by the MASTER):

"For a MASTER PHY, when in the LPI transmit mode, the transmitter clock short-term rate of frequency variation shall be less than 0.1 ppm/second. The short-term frequency variation limit shall also apply when switching to and from the LPI mode".

Add a separate requirement for SLAVE:

"For a SLAVE PHY, when the link partner is in the LPI transmit mode, transmitter clock shall be within +/- 10 ppm relative to the frequency it has when the link partner is in normal transmit mode."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Page 137 line 1
Change "When the transmitter is" to
"For a MASTER PHY, when the transmitter is"

A specification for the SLAVE is not required during either during normal operation, MASTER in LPI, or SLAVE in LPI.
During normal operation and SLAVE in LPI the SLAVE has no trouble tracking since the MASTER is always transmitting.

When MASTER is in LPI the loop timing of the SLAVE is not in open loop since the MASTER has to send refresh signal periodically – in particular for 1000BASE-T1 the refresh occurs once every 86.4us or equivalently 64800 symbols.
A max 0.1 ppm/s drift at the MASTER over 64800 symbols translates to at most 2.3 degree phase shift between MASTER and SLAVE to which the MASTER's receiver can easily track.

Another way to look at this is to consider normal operation with a SLAVE loop timing implementation that only adjusts every 86.4us and ignores the timing information in between. This case is no different than when the MASTER is in LPI.

Cl **97** *SC* **97.5.4.1** *P* **137** *L* **7** # r01-15

RAN, ADEE Intel Corporation

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

Following unsatisfied comment i-140:

Multiple issues in this subclause...

The content deals with the receiver's performance requirements (stated as BER but actually measured using "frame error ratio", which is undefined) when used with various link segments. The title "receiver differential input signals" seems completely irrelevant for its content.

The required performance is probably dependent on having a fully compliant remote transmitter (otherwise, anything can happen). 97.5.3.1 is just a part of the transmitter specifications.

The "shall" in this clause seems to address the way of satisfying the specification - this complex and unusual way of making normative requirements.

"frame error ratio" is not defined anywhere and it isn't clear how it's supposed to be measured. A suitable performance metric which is already defined (see 1.4.223) is "frame loss ratio". It is probably what is intended here.

"link type A" and "link segment B" are inconsistent with the defined terms for link segments.

SuggestedRemedy

Change the title from "Receiver differential input signals" to "Receiver performance specification" or "Receiver error rate specification" or the like. Change the feature name of PICS item PMI4 accordingly.

Change
"Differential signals received at the MDI that were transmitted from a remote transmitter within the specifications of 97.5.3.1 and have passed through a link type A"
to
"A receiver that is connected to a compliant remote transmitter using a link segment type A"

Change "are received with a BER less than" to "shall detect incoming data with a BER less than", and change "shall be satisfied" to "is satisfied". Alternatively, delete the BER requirement and altogether and use "shall detect incoming data with a frame loss ratio lower than 1e-7" - this will match the comment of PICS item PMI4.

Change "frame error ratio" to "frame loss ratio" everywhere (and in the PICS).

Change "link type A" "link segment type A" and "link segment B" to "link segment type B".

Change "shall also be met for link segments specified at 97.6.2 and 97.6.4" to "this specification also applies when link segment type B is used to connect the transmitter and the receiver".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

==========

Change the title from "Receiver differential input signals" to "Receiver performance specification" or "Receiver error rate specification" or the like. Change the feature name of PICS item PMI4 accordingly.

Editor's response: no change. For BASE-T PHYs this is well understood, see 10GBASE-T, [802.3] subclause 55.5.4.1 Receiver differential input signals

==========

Change: "Differential signals received at the MDI that were transmitted from a remote transmitter within the specifications of 97.5.3.1 and have passed through a link type A" to "A receiver that is connected to a compliant remote transmitter using a link segment type A"

Editor's response: change to: Differential signals received at the MDI that were transmitted from a remote transmitter within the specifications of 97.5.3.1 and have passed through a link specified in 97.6 are received with a BER less than
10–10 and sent to the PCS after link reset completion. This BER specification shall be satis fied by a frame error ratio less than 10-7 for 125-octet frames.

==========

Change "frame error ratio" to "frame loss ratio" everywhere (and in the PICS).

Editor's response: change per comment

==========

Change "link type A" "link segment type A" and "link segment B" to "link segment type B".

Editor's response: no change, links designated as type A need to remain designated as such.

==========

Change "shall also be met for link segments specified at 97.6.2 and 97.6.4" to "this specification also applies when link segment type B is used to connect the transmitter and the receiver".

Editor's response: the original statement is wider than the proposed new text, in covering link type A and B. No change.

Cl **97** *SC* **97.6** *P* **138** *L* **6** # r01-25

Moffitt, Bryan CommScope, Inc.

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

sentence is out of place.

SuggestedRemedy

move to 97.6.3 and replace The test methodologies are specified in Annex 97B.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Delete the sentence. Reference is already in 97.6.3.

Cl **97** *SC* **97.6.1.1** *P* **138** *L* **14** # r01-28

Moffitt, Bryan CommScope, Inc.

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

to be consistent with Differential Return Loss. (there is a common mode insertion loss even if not specified...)

SuggestedRemedy

Change to Differential Insertion Loss

Proposed Response *Response Status* **W**

PROPOSED REJECT.

This comment refers to unchanged text in the base document and is out-of-scope for the recirculation ballot.

Terminology is consistent with consistent with BASE-T PHYs: Differential Return Loss specified as Return Loss

Cl **97** *SC* **97.6.1.1** *P* **138** *L* **31** # r01-18

RAN, ADEE Intel Corporation

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

The frequency plots in figures 97-36 through 97-44 do not show which region represents compliant values.

Compare to figure 85-4.

SuggestedRemedy

Add "meets equation constraints" in the appropriate place in each figure.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The specification tyle is consistent with existing BASE-T PHYs: plots are simply a graphical representation of the equations given. All the equations have already text specifying the compliance limits, and are normative, not figures. . All the equations include notation to specify the compliance limits i.e. Return loss ≥ (greater than or equal to limit).

Cl **97** *SC* **97.6.1.2** *P* **139** *L* **3** # r01-29

Moffitt, Bryan CommScope, Inc.

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

nominal has a different meaning than an engineering spec. It is a statement of design and manufacturing intent and not a spec across a frequency range. See similar usage in TIA-568-C.2 section B.7.1.1 and C.4.10.8.4.4.

SuggestedRemedy

delete for all frequencies between 1 MHz and 600 MHz

Proposed Response *Response Status* **W**

PROPOSED REJECT.

This comment refers to unchanged text in the base document and is out-of-scope for the recirculation ballot.

Specification is consistent with multiple BASE-T PHYe. For an example, see [802.3] Clause 55: Frequency range bounds frequency of approximation.

Cl **97** *SC* **97.6.1.3** *P* **139** *L* **12** # r01-13

RAN, ADEE Intel Corporation

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

The equations in this clause are inconsistent in using "log" vs. "log_10", and in using or not using the cross symbol for multiplication. compare eq. 97-17 and eq. 97-18.

As of 802.3bx the base standard does not seem to use the cross symbol before "log", though it is used in other cases.

SuggestedRemedy

In equations 97-17, 97-18, 97-22, 97-24, 97-27, 97-28, 97-30: Change "log" to "log_10" and delete the cross symbol before "log"

In Eq. 97-29, fix the placement of the "10" subscript of "log".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

In equations 97-17, 97-18, 97-22, 97-24, 97-27, 97-28, 97-30: Change "log" to "log_10" and delete the cross symbol before "log"

Cl **97** *SC* **97.6.1.3** *P* **139** *L* **14** # r01-30

Moffitt, Bryan CommScope, Inc.

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

log should be log10

SuggestedRemedy

use all 10 fingers

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.6.1.4** *P* **140** *L* **3** # r01-32

Moffitt, Bryan CommScope, Inc.

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

Needs to reference the Annex

SuggestedRemedy

Add: Compliant type A link segments meet the balance requirement when tested following the test procedure in Annex 97A.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

This comment refers to unchanged text in the base document and is out-of-scope for the recirculation ballot.

Text already present in 97.6

Cl **97** *SC* **97.6.1.4** *P* **140** *L* **3** # r01-27

Moffitt, Bryan CommScope, Inc.

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

needs a period

SuggestedRemedy

period

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.6.2.1** *P* **141** *L* **21** # r01-19

RAN, ADEE Intel Corporation

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

Equation 97-19 has multiple terms that are numeric multiples of the factor sqrt(f). Is this the intent? if so, perhaps they could be merged to a single term?

Compare to eq 97-16 which doesn't have this problem.

SuggestedRemedy

Correct or merge terms.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The reason each term is broken out is to show different components contributing to the link segment. Three of them happen to have sqrt(f).

Cl **97** *SC* **97.6.4** *P* **146** *L* **31** # r01-26

Moffitt, Bryan CommScope, Inc.

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

Test has no methodology so add the most obvious, a direct long and short test set.

SuggestedRemedy

Measurement is done with two reference configurations: 6 maximum length links bundled over a maximum length victim link, all links having 4 inline connectors uniformly spaced and arranged for worst case application, and 6 15 meter length links bundled over a 15 meter victim link, all links having 4 inline connectors uniformly spaced and arranged for worst case application.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

This comment refers to unchanged text in the base document and is out-of-scope for the recirculation ballot.

Cl **97** *SC* **97.6.4.2** *P* **146** *L* **54** # r01-41

Schicketanz, Dieter Reutlingen University

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

see explanatiom at clause 97.6.4.4

SuggestedRemedy

insert at line 54 " for local envinronment E3" line 54 would read..... segment.shall meet for local envinronment E3 the values determined using equation (97-27).

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Current specification reflects Task Force consensus that the alien crosstalk limits apply to “all” type B link segments consistent with the use of shield or screen.

Cl **97** *SC* **97.6.4.4** *P* **147** *L* **28** # r01-11

RAN, ADEE Intel Corporation

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

The equation can include the minimum - it would be easier to read and would simplify the PICS.

SuggestedRemedy

Change eq 97-28 to read
PSAACRF(f) >= min(70, 61-20 (cross) log_10(f/100)) dB

Delete "or 70 dB, whichever is less".

Update PICS item LKS13 accordingly.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Although the commenter proposes a simplification, the current equation form is similar to equation forms used in BASE-T and structured cabling standards.

Cl **97** *SC* **97.6.4.4.** *P* **147** *L* **27** # r01-40

Schicketanz, Dieter Reutlingen University

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

In Atlanta there was a deathlock around a similar comment. To solve this the comment was withdrawn. Additionally there was a linkage between coupling attenuation and PSAACRF which was not intendet to but at the end was discussed as beeing of major importance.As for type B links there are 3 specified local envinronments it should be indicated to what level it is meant. Type A link has a ~20 dB lower specification.

SuggestedRemedy

Insert at line 28 after " shall meet" and before " the values" for local envinronment E3 .
Line 28 would read :.....shall meet for local envinronment E3 the values determined using Equqtion(97-28) or 70 dB, whichever is less

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Current specification reflects Task Force consensus that the alien crosstalk limits apply to “all” type B link segments consistent with the use of shield or screen.

This comment is essentially a restatement of comments i-7 and i-8 from Initial Sponsor Ballot on draft D3.0 (http://www.ieee802.org/3/bp/comments/8023bp_D30_approved_A.pdf)

Cl **97** *SC* **97.7.2.1** *P* **148** *L* **4** # r01-14

RAN, ADEE Intel Corporation

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

"Return Loss" in equation 97-29 is not shown as a function of f. Compare to Eq. 97-30

SuggestedRemedy

Change "Return Loss" to "ReturnLoss(f)"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.7.2.2** *P* **148** *L* **38** # r01-31

Moffitt, Bryan CommScope, Inc.

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

Needs a CM impedance spec.

SuggestedRemedy

Add: The common mode test impedance is 200 Ohms.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The commenter has not provided sufficient technical justification to support adding suggested common mode impedance values.

Cl **97** *SC* **97.7.2.2** *P* **149** *L* **13** # r01-84

Mcclellan, Brett Marvell Semiconducto

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

MDI mode conversion loss doesn't match equation 97-30

SuggestedRemedy

replace the figure based on equation 97-30

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.7.3.1** *P* **149** *L* **29** # r01-85

Mcclellan, Brett Marvell Semiconducto

Comment Type **G** *Comment Status* **D** *EZ*

subclause 97.7.3.1 has no content

SuggestedRemedy

delete 97.7.3.1

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97** *SC* **97.8.1** *P* **149** *L* **40** # r01-10

RAN, ADEE Intel Corporation

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

"All 1000BASE-T1 PHYs shall be capable of operating as MASTER or SLAVE" - this normative requirement appears in the "optional support for auto-negotiation" subclause, which seems inappropriate, and has no PICS.

The requirements of supporting MASTER and SLAVE are discussed in 97.1.2, so it makes sense to place this sentence there. The proposed change replaces a sentence which is already covered by later normative requirements.

SuggestedRemedy

Delete the sentence "All 1000BASE-T1 PHYs shall be capable of operating as MASTER or SLAVE" in 97.8.1

Change the first sentence of the third paragraph of 97.1.2 (currently starting with "A 1000BASE-T1 PHY can be configured") to:

"A 1000BASE-T1 PHY shall support both MASTER and SLAVE modes of operation".

Add a corresponding item to the PICS.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Delete the sentence "All 1000BASE-T1 PHYs shall be capable of operating as MASTER or SLAVE" in 97.8.1

Change the first sentence of the third paragraph of 97.1.2 (currently starting with "A 1000BASE-T1 PHY can be configured") to:

"A 1000BASE-T1 PHY shall be capable of operating as MASTER or SLAVE, per runtime configuration".

Add a corresponding item to the PICS.

Cl **97** *SC* **97.11.4** *P* **154** *L* **13** # r01-72

Law, David Hewlett Packard Enter

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

The support column for an optional status is Yes[ ], No [ ].

SuggestedRemedy

Suggest that 'N/A [ ]' should be changed to read 'No [ ]'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **97A** *SC* **97A.2** *P* **201** *L* **16** # r01-33

Moffitt, Bryan CommScope, Inc.

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

add like Annex 97B

SuggestedRemedy

Measurements to be performed at 25xC +/- 5xC relative humidity 25x - 75x.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

This comment refers to unchanged text in the base document and is out-of-scope for the recirculation ballot.

Cl **97A** *SC* **97A.2** *P* **201** *L* **49** # r01-34

Moffitt, Bryan CommScope, Inc.

Comment Type **G** *Comment Status* **D**

Note 3 is overly speced, since the analyzer does not need to be over the ground plane. Also fix comma glitch.

SuggestedRemedy

change to: The entire area of measurement is on a large metal GND plane, which extends at least 30mm beyond the setup.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

This comment refers to unchanged text in the base document and is out-of-scope for the recirculation ballot.

Cl **97A** *SC* **97A.2** *P* **202** *L* **11** # r01-35

Moffitt, Bryan CommScope, Inc.

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

The 3 port measurement fixture is not adequately specified.

SuggestedRemedy

change:
VNA impedances are set to:
- 200? common-mode on the differential port
- 100? on the single-ended port*
* Assuming a 75? center tap resistor, the resistive network provides 100? in series with the VNA impedance of 100?, resulting in 200? termination for common mode.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

This comment refers to unchanged text in the base document and is out-of-scope for the recirculation ballot.

It is not obvious that the suggested changes are a technical improvement to the specification included in this draft.

Cl **97B** *SC* **97B.1.1** *P* **205** *L* **27** # r01-36

Moffitt, Bryan CommScope, Inc.

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

Multiproblems with this paragraph lead me to conclude that it should all be deleted, but I offer a couple of options.

SuggestedRemedy

1) It migrates from specifying multiport test fixtures to a connector significance test that is outside the scope of this standard. Connectors are not specified and the test is already clear to test the 2 or 4 disturbers in the stated configurations. The power sum is not for connectors. It is for links. Delete this 90 dB criteria. The concept of connector significance is good and should be properly stated as perhaps:
Connectors should be located in the intended mounting systems with worst case proximity for the measurements.

2) Multiport fixtures may be used but are not required and would be dependent on the cabling solution design. change: Multiport test fixtures are used for multiport link segments. To: Multiport test fixtures may be used for multiport link segments.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The text reflects the language in ANSI/TIA-568-C.2 C.4.6.5 Region of influence and is used to assess the number of disturbing ports to be included in the power sum calculation.

Cl **97B** *SC* **97B.1.1** *P* **205** *L* **35** # r01-37

Moffitt, Bryan CommScope, Inc.

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

The requirement for 200 ? common mode termination on far ends is onerous and unnecessary, as will be shown in a simple presentation.

SuggestedRemedy

Change: Link segment ends not under test are terminated in 100 ? differential mode and 200 ? common mode. To: Link segment ends not under test are terminated in 100 ? differential mode and <=200 ? common mode. This would also apply to deleting the note on page 206 line 13.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The requirement for the common mode terminations and test configuration were developed from multiple presentations and debate from broad range of participation PHY/test labs/Cabling. We should endeavor to achieve that level of review before making changes that may stimulate others to comment on the next draft.

Cl **97B** *SC* **97B.2** *P* **206** *L* **23** # r01-38

Moffitt, Bryan CommScope, Inc.

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

The first note is not true and should be deleted

SuggestedRemedy

Also 200 mm should be made consistent with 30 mm spec for the balance measurement. There is no reason to make this more restrictive since alien measurement is even less dependent on the ground plane.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The requirement for the common mode terminations and test configuration were developed from multiple presentations and debate from broad range of participation PHY/test labs/Cabling. We should endeavor to achieve that level of review before making changes that may stimulate others to comment on the next draft.

Cl **97B** *SC* **97B.3** *P* **206** *L* **32** # r01-39

Moffitt, Bryan CommScope, Inc.

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

Must ensure complete coupling even with meandered placement to fit over a limited ground, so add "uniformly"

SuggestedRemedy

change to: The cables are uniformly fixed in their position by means of cable straps or adhesive tape to keep the cables attached together with a maximum distance between the fixation devices of 30 cm.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **98** *SC* **98.2.1.1.3** *P* **171** *L* **47** # r01-73

Law, David Hewlett Packard Enter

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

Subclause 98.2.1.1.1 'DME page encoding' states that 'The first 26 transition positions contain the Start Delimiter, which marks the beginning of the page.' and the subclause 98.5.1 'State diagram variables' defines the 'detect_mv_start' variable as 'Status indicating that the receiver has detected a Start Delimiter as defined in 98.2.1.1.1.'. Subclause 98.2.1.1.3 'DME page Delimiters' however states that 'The page is preceded by a unique sync header consisting of a 26 x T1 sequence that includes multiple DME transition violations.'. Further, figure 98-6 'DME Page' illustrates the 'Start Delimiter', yet the note to that figure states that ' The sync header may begin with a 0 to +1 or 0 to -1 transition depending upon the DME page starting polarity randomizer.'.

I assume that based on this the terms 'Start Delimiter' and 'sync header' actually refer to the same thing. I would suggest that only one term be used, and since 'sync header' appears fewer times, it should be changed to 'Start Delimiter'.

SuggestedRemedy

[1] Suggest the subclause 98.2.1.1.3 'DME page Delimiters' text '... a unique sync header consisting of a 26 x T1 sequence that includes multiple DME transition violations. For a sync header starting ...' be changed to read '... a unique Start Delimiter consisting of a 26 x T1 sequence that includes multiple DME transition violations. For a Start Delimiter starting ...'.

[2] Suggest the Figure 98-6 'DME Page' note text 'The sync header may begin ...' be changed to read 'The Start Delimiter may begin ...'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **98** *SC* **98.5.1** *P* **185** *L* **11** # r01-74

Law, David Hewlett Packard Enter

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

The low-power bit 1.2304.11 is in the '1000BASE-T1 PMA control' register (see subclause 45.2.1.133) rather than the 'MMD control register' as stated.

SuggestedRemedy

Suggest the text '... set via MMD control register bit ...' should be changed to read '... set via 1000BASE-T1 PMA control register bit ...'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **98** *SC* **98.5.3** *P* **188** *L* **47** # r01-75

Law, David Hewlett Packard Enter

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

Both 'tx_bit_cnt' and 'rx_bit_cnt' are defined in subclause 98.5.3 'State diagram counters', and in both cases it is stated these are counters '... that may take on integer values ...'. They therefore can't also have the values 'not_done', 'done' and 'init'. Other than 'tx_bit_cnt' being assigned the value 'init' in the state 'TRANSMIT ABILITY' and 'rx_bit_cnt' being assigned the value 'init' in the state 'DME_CAPTURE', I however don't see these values being used.

SuggestedRemedy

[1] Suggest that for 'rx_bit_cnt' (page 188, line 47):

[a] The text 'When this variable reaches 64 ...' be changed to read 'When this counter reaches 64 ...'.
[b] The text 'Values: not_done: 0 to 63 inclusive done: 64 init: counter is reset to zero' is deleted.

[2] Suggest that for 'tx_bit_cnt' (page 189, line 3):

[a] The text 'When this variable reaches 64 ...' be changed to read 'When this counter reaches 64 ...'.
[b] The text 'Values: not_done: 1 to 63 inclusive done: 64 init: counter is initialized to 1' is deleted.

[3] Suggest that in Figure 98-8 'Transmit state diagram' (page 190, line 25):

[a] The text 'tx_bit_cnt <= init' be changed to read 'tx_bit_cnt <= 1'

[4] Suggest that in Figure 98-9 'Receive state diagram'(page 191, line 16):

[a] The text 'rx_bit_cnt <= init' be changed to read 'rx_bit_cnt <= 0'

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **98** *SC* **98.5.5** *P* **190** *L* **34** # r01-76

Law, David Hewlett Packard Enter

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

There is no condition on the transition from the state 'TRANSMIT CLOCK BIT' to the state 'TRANSMIT DELIMITER TAIL'. I suspect that this transition should be taken when tx_bit_cnt = 64 and when the interval_timer is done as that will provide a transmit clock bit for the end delimiter which is a 0 bit.

SuggestedRemedy

Suggest that:

[1] The transition from the state 'TRANSMIT CLOCK BIT' to the state 'TRANSMIT DELIMITER TAIL' be qualified by the condition ' interval_timer_done * tx_bit_cnt = 64'.
[2] The qualification from the state 'TRANSMIT CLOCK BIT' to the state 'TRANSMIT DELIMITER TAIL' should be changed from 'interval_timer_done' to 'interval_timer_done * tx_bit_cnt = 64'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

[1] The transition from the state 'TRANSMIT CLOCK BIT' to the state 'TRANSMIT DELIMITER TAIL' be qualified by the condition 'tx_bit_cnt=done'.
[2] The qualification from the state 'TRANSMIT CLOCK BIT' to the state 'TRANSMIT DELIMITER TAIL' should be changed from 'interval_timer_done' to 'tx_bit_cnt=done'.