Cl **030** *SC* **30.5.1.1.4** *P* **30** *L* **1** # 1

Lewis, Jon — Dell

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

If the MAU is a 10M b/s... This should be 10 Mb/s for consistency

SuggestedRemedy

Change 10M b/s to 10 Mb/s.

Proposed Response *Response Status* **O**

Cl **069** *SC* **69.2.3** *P* **54** *L* **19** # 2

Lewis, Jon — Dell

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

In Table 69-1a on the line for 25GBASE-KR: I don't understand M(a) It seems that this would indicate Mandatory/Optional which doesn't make sense. Also, O(a) and (a)O seem to be reversed in the table and table footer.

SuggestedRemedy

I think for the column labeled RS it should only be "M" and the "(a)" should be removed.

Make the O(a) consistent by changing the table footer/note to be the same as the table content

Proposed Response *Response Status* **O**

Cl **093A** *SC* **93A.1** *P* **203** *L* **24** # 3

Hajduczenia, Marek — Bright House Network

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

Please fix font size for "Table 83D–6" - it seems larger than other entries

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **110B** *SC* **110B** *P* **225** *L* **8** # 4

Hajduczenia, Marek — Bright House Network

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

Missing serial "," in "25GBASE-CR, 25GBASE-CR-S and 25GAUI C2M"

SuggestedRemedy

Change to "25GBASE-CR, 25GBASE-CR-S, and 25GAUI C2M"
Same fix on page 228, line 9, in 110B.2.1; and page 228, line 38, in 110B.2.2.2; page 229, line 14, in 110B.2.4 (caption)

Proposed Response *Response Status* **O**

Cl **110C** *SC* **110C.1** *P* **230** *L* **21** # 5

Hajduczenia, Marek — Bright House Network

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

Missing serial comma in "CA-L, CA-S and CA-N"

SuggestedRemedy

Change to "CA-L, CA-S, and CA-N"

Proposed Response *Response Status* **O**

Cl **110C** *SC* **110C.1** *P* **230** *L* **48** # 6

Hajduczenia, Marek — Bright House Network

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

The text
"QSFP28 to
4×SFP28
(110C.3.3)"
should be left aligned. Now "to" seems to be right aligned for some reason

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **110C** *SC* **110C.2.1** *P* **231** *L* **10** # 7
Hajduczenia, Marek Bright House Network

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

missing "see" when referencing subclauses.

SuggestedRemedy

Change "(110C.3.1)" to "(see 110C.3.1)". Multiple locations in 110C.2.1 and 110C.2.2, 110C.3.1, 110C.3.2, and 110C.3.3

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.3.17** *P* **47** *L* **38** # 8
Hajduczenia, Marek Bright House Network

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

Unclear editorial instruction: "Change second last sentence of first paragraph as follows:"

SuggestedRemedy

Mmodify "second last" to "second sentence from the end"

Proposed Response *Response Status* **O**

Cl **069** *SC* **69.3** *P* **54** *L* **30** # 9
Hajduczenia, Marek Bright House Network

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

Missing "," after "111.4"

SuggestedRemedy

Insert missing ","

Proposed Response *Response Status* **O**

Cl **074** *SC* **74.7.4.5.1** *P* **68** *L* **3** # 10
Hajduczenia, Marek Bright House Network

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

Wrong format of editorial instructions "Change Figure 74–8 and item b) as follows:"

SuggestedRemedy

Apply the proper style to editorial instructions

Proposed Response *Response Status* **O**

Cl **078** *SC* **78.1.1** *P* **73** *L* **20** # 11
Hajduczenia, Marek Bright House Network

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

"these PCSs generate" - I think it should be "these PCSes generate" or even better "these PCS types generate"

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **078** *SC* **78.1.1** *P* **73** *L* **23** # 12
Hajduczenia, Marek Bright House Network

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

Missing serial comma in "25GAUI, XLAUI and CAUI-n" (two instances)

SuggestedRemedy

Change "25GAUI, XLAUI and CAUI-n" to ""25GAUI, XLAUI, and CAUI-n"
Use proper markup

Proposed Response *Response Status* **O**

Cl **078** *SC* **78.1.4** *P* **74** *L* **4** # 13
Hajduczenia, Marek Bright House Network

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

Stray line with "."

SuggestedRemedy

Remove
The same issue on page 76, line 11

Proposed Response *Response Status* **O**

Cl **105** *SC* **105.4.1** *P* **83** *L* **20** # 14

Hajduczenia, Marek Bright House Network

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

Unnecessary reference to Clause 78 in "(see Clause 78, 78.1.3.3.1)"

SuggestedRemedy

Change to "(see 78.1.3.3.1)"

Proposed Response *Response Status* **O**

Cl **107** *SC* **107.1.3** *P* **97** *L* **29** # 15

Hajduczenia, Marek Bright House Network

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

Double "." at the end of the sentence

SuggestedRemedy

Change ".." to "."

Proposed Response *Response Status* **O**

Cl **108** *SC* **108.5.2.7** *P* **109** *L* **1** # 16

Hajduczenia, Marek Bright House Network

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

Figure 108–3 breaks text into two section.

SuggestedRemedy

Wrestle with Frame and make sure that Figure 108–3 does not break text in the middle.

Proposed Response *Response Status* **O**

Cl **108** *SC* **108.7.4.2** *P* **123** *L* **44** # 17

Hajduczenia, Marek Bright House Network

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

Wrong font format in RF12

SuggestedRemedy

Font for "Figure 49–7" seems larger than the remaining text in PICS entries

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.5.1.1.2** *P* **29** *L* **30** # 18

Hajduczenia, Marek Bright House Network

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

"Change “BEHAVIOUR DEFINED AS” section of 30.5.1.1.2 as follows:" - typically, in cases like this, we only include the second para that isbeing modified to avoid attracting comments on text that was not changed.

SuggestedRemedy

Remove first para (lines 32-43) and change editorial note to read "Change second paragraph in “BEHAVIOUR DEFINED AS” section of 30.5.1.1.2 as follows:"

There are also other locations in Clause 30, e.g., 30.5.1.1.4, 30.5.1.1.17, 30.5.1.1.18 where similar change should be applied, i.e., show only changes to specific para of interest and scrub paras with text that are not being modified. In 30.5.1.1.18 (for example), the only change is in first sentence of "BEHAVIOUR DEFINED AS:" and "APPROPRIATE SYNTAX:"

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.6.1.1.5** *P* **32** *L* **16** # 19

Hajduczenia, Marek Bright House Network

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

Rather than list the whole aAutoNegLocalTechnologyAbility list of PHYs, remove everything up to "10GBASE-KRFD" entry (inclusive) and from 40GBASE-KR4 onwards (includive) - editorial instruction is already clear and sufficient for editor to merge in new listings in order.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.94** *P* **41** *L* **40** # 20

Hajduczenia, Marek Bright House Network

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

In cases like this, it is sufficient to indicate to change caption for Table 45-74 and then show changes, without dragging in the table structure itself.

SuggestedRemedy

Change editorial instructions to read as follows: "Change the text of heading 45.2.1.94, first sentence in 45.2.1.94, and caption for Table 45-74 as follows:"
Remove empty table 45-74 and leave just the text of caption with proper markup.
Change ":" to "." at the end of line 37 (seems like something got copied incorrectly).

The same changes to be applied to 45.2.1.95, 45.2.1.96

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.102.1** *P* **43** *L* **45** # 21

Hajduczenia, Marek Bright House Network

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

Since you're replacing the whole content of 45.2.1.102.1 with a new text, the proper editorial instruction is "Replace" and not "Change"

SuggestedRemedy

Align editrial instructions per comment, for 45.2.1.102.1, 45.2.1.102.2

Proposed Response *Response Status* **O**

Cl **073** *SC* **73.6.5.2** *P* **57** *L* **35** # 22

Hajduczenia, Marek Bright House Network

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

Incorrect editorial instructions: "Make second and third paragraphs of 73.6.5 a new subclause “73.6.5.2 For 10 Gb/s per lane PHYs” and change as follows:"

SuggestedRemedy

Change to "Remove second and third paragraphs in 73.6.5. Insert new subclause 73.6.5.2 as follows:" - and then new text in 73.6.5.2 does not require any markup since it is considered new text, even though it is based on existing text from 73.6.5.

Similar change for 73.6.5.3 and associated editorial instructions.

Proposed Response *Response Status* **O**

Cl **073** *SC* **73.10.1** *P* **59** *L* **35** # 23

Hajduczenia, Marek Bright House Network

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

List format does not match list format in 802.3bx-D3.2

SuggestedRemedy

Please align - there are missing "." at the end of each entry

Proposed Response *Response Status* **O**

Cl **031B** *SC* **31B.4.3** *P* **201** *L* **27** # 24

Hajduczenia, Marek Bright House Network

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

Modify editorial instruction to read: "Insert a new PICS item MIIf and renumber current MIIf and MIIg accordingly" + remove all unmodified PICS items to avoid comment bait

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **031B** *SC* **31B.4.6** *P* **202** *L* **1** # 25

Hajduczenia, Marek Bright House Network

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

Modify editorial instruction to read: "Insert a new PICS item TIM7 and renumber current TIM7 and TIM8 accordingly" + remove all unmodified PICS items to avoid comment bait. Remove TIM1

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **110B** *SC* **110B.1** *P* **225** *L* **17** # 26

Hajduczenia, Marek Bright House Network

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

Multiple dead links:
Cable assembly measurements for the SFP28-SFP28 form factor (see >>110C.3.1<<) are made between TP1 and TP4 with cable assembly test fixtures as specified in 110B.1.2 on both ends. Cable assembly measurements for the QSFP28-QSFP28 form factor (see >>110C.3.2<<) are made between TP1 and TP4 with cable assembly test fixtures as specified in 92.11.2 on both ends. Cable assembly measurements for the QSFP28-4×SFP28 form factor (see >>110C.3.3<<) are made between TP1 and TP4 with a cable assembly test fixture as specified in 110B.1.2 for each connector on the SFP28 end, and with a cable assembly test fixture as specified in 92.11.2
Links to 110B work fine, but to 110C not so much ...
for the QSFP28 end.

SuggestedRemedy

Please fix broken links

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **4** *L* **1** # 27

Hajduczenia, Marek Bright House Network

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

please re-apply the front matter text again into the draft - there are apparently extra white lines inserted between paragraphs without any reason.

SuggestedRemedy

For example, page 4, lines 6-8, 14-18, etc.

Proposed Response *Response Status* **O**

Cl **078** *SC* **78.2** *P* **75** *L* **16** # 28

Hajduczenia, Marek Bright House Network

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

Editorial instruction could be more detailed, and no need to show all of Table 78-2 and attract stray comments

SuggestedRemedy

Change "Change Table 78–2 as follows:" to "Insert two rows into Table 78-2, between 10GBASE-T and 40GBASE-KR4, as follows (unmodified rows not shown):"
Remove all existing rows from Table 78-2 apart from two newly added rows for 25G PHYs.

Similar change for 78.1.4, editorial instruction in line 3, page 74 and Table 78-1, editorial instruction in line 9, page 76, and Table 78–4.

Proposed Response *Response Status* **O**

Cl **031B** *SC* **31B.3.7** *P* **199** *L* **14** # 29

Hajduczenia, Marek Bright House Network

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

incorrect editorial instruction.
Change to "Insert the following new paragraph before the paragraph starting with "At operating speeds of 40 Gb/s ...":"
Add new editorial instruction "Insert the following calculation for 25 Gb/s operation, before the line "40 Gb/s - max_overrun = 7552 + frame_length.:""

SuggestedRemedy

Remove all unmodified text to avoid comment bait

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.101.a** *P* **43** *L* **23** # 30

Hajduczenia, Marek — Bright House Network

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

"This bit enables the 25GBASE-R Reed-Solomon FEC described in Clause 108" - it is much clearer, when bit number is referenced explicitly rather than implicitly.

SuggestedRemedy

Change to "Bit 1.200.2 enables the 25GBASE-R Reed-Solomon FEC described in Clause 108". Similarly, change "When set to a zero, this bit disables the" to "When set to a zero, bit 1.200.2 disables the"

Similar changes to be applied to 45.2.1.101.1, 45.2.1.101.2, and other locations in Clause 45 where reference to "this bit", "this register", etc. is made implicitly. Explicit references are much clearer to reader and leave no need for context based interpretation.

Proposed Response *Response Status* **O**

Cl **073** *SC* **73.6.5.1** *P* **57** *L* **23** # 31

Hajduczenia, Marek — Bright House Network

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

New subclause 73.6.5.1 covers 25 Gb/s operation only - no need to list anything for 10Gb/s.

SuggestedRemedy

Remove "while bits F0 and F1 are used for 10 Gb/s per lane operation. Bits F0 and F1 are not used for 25G PHYs"

Renumber existing "73.6.5.1" to "73.6.5.2 FEC capability for 25G PHYs"
Add 73.6.5.1 "FEC capability for 10G PHYs" with the following text: "Bits F0 and F1 are used for resolving FEC operation for 10G PHYs. For 10G PHYs if neither PHY requests FEC operation in bits F0 or F1 then FEC is not enabled." - it is not clear whether additional text is needed.

Proposed Response *Response Status* **O**

Cl **107** *SC* **107.1.4.1** *P* **98** *L* **37** # 32

Hajduczenia, Marek — Bright House Network

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

"The PCS service interface is precisely defined as the 25GMII in Clause 106" - this makes me wonder whether other elements of 25G PHY are defined less precisely than PCS service interface ... quantifiers of this type are meaningless. PCS service interface is the 25GMII. Period.

SuggestedRemedy

Remove the word "precisely" from the selected statement.

Proposed Response *Response Status* **O**

Cl **107** *SC* **107.2.1** *P* **99** *L* **35** # 33

Hajduczenia, Marek — Bright House Network

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

"For values shown as binary, the leftmost bit is the first transmitted bit." and "Binary values are shown with the first transmitted bit (the LSB) on the left." are repetetive

SuggestedRemedy

Replace "Binary values are shown with the first transmitted bit (the LSB) on the left." and "For values shown as binary, the leftmost bit is the first transmitted bit." with a single statement: "Values represented in binary are shown with the first transmitted bit (the LSB) on the left."

Proposed Response *Response Status* **O**

Cl **107** *SC* **107.4** *P* **101** *L* **24** # 34

Hajduczenia, Marek — Bright House Network

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

"A description of overall system delay constraints can be found in 106.1.4" - but the link points only to Table 106-1, which lists MAC, RS, and MAC Control RTT constraints.

SuggestedRemedy

Change reference to 105.5, where Table 105-3 lists all elements of 25G PHYs. For reference, note that 108.4 specifies this correctly, linking it to 105.5.

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.4** *P* **36** *L* **12** # 35

Hajduczenia, Marek Bright House Network

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

Please align your draft with the latest version of P802.3bx-D3.2. There have been changes to Clause 45 (at least) per comment i-51 (http://www.ieee802.org/3/bx/comments/P8023-D3p0-Comments_Final_byCls.pdf) that have been not reflected in this draft

SuggestedRemedy

Per comment. In this particular case, new 1.4.15:12 bit range needs to have name changed to "Reserved" per P802.3bx-D3.2

Similar change needed in Table 45–122 bits 3.4.15:5, Table 45–125 bits 3.20.11:10

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.7.14** *P* **50** *L* **1** # 36

Hajduczenia, Marek Bright House Network

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

MIssing description of newly defined bits 7.61:15 and 7.61:14

SuggestedRemedy

Insert subclauses 45.2.7.14a and 45.2.7.14b with definition of bits 7.61:15 and 7.61:14

Proposed Response *Response Status* **O**

Cl **105** *SC* **105.2** *P* **81** *L* **10** # 37

Hajduczenia, Marek Bright House Network

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

Perhaps I am reading Table 105-2 wrong, but it seems that 25GBASE-CR-S and 25GBASE-KR-S do not support FEC (see PHY definitions in Table 105–1), e.g., "25 Gb/s PHY equivalent to 25GBASE-CR without support for the RS-FEC sublayer"; yet Table 105-2 lists Clause 74 BASE-R FEC as mandatory for these PHYs
Sublause 105.3.3 also states:
The BASE-R FEC (see Clause 74) may be used by some 25GBASE-R PHYs.
The RS-FEC (see Clause 108) may be used by some 25GBASE-R PHYs.

SuggestedRemedy

Please confirm that support for Clause 74 BASE-R FEC is intended for 25GBASE-CR-S and 25GBASE-KR-S. It is also not clear whether PHYs using FEC are supposed to use Clause 74 BASE-R FEC and Clause 108 RS-FEC simultaneously or not.

Proposed Response *Response Status* **O**

Cl **105** *SC* **105.2** *P* **81** *L* **3** # 38

Hajduczenia, Marek Bright House Network

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

"This standard specifies a family of Physical Layer implementations. " - once merged into the main standard, the statement will lose its meaning.

SuggestedRemedy

Change "This standard specifies a family of Physical Layer implementations. " to "This clause specifies a family of Physical Layer implementations."

Proposed Response *Response Status* **O**

[The commenter did not provide a comment type. The editor set comment type to "E".]

Cl **073** *SC* **73.6.4** *P* **57** *L* **4** # 39

Hajduczenia, Marek Bright House Network

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

Font size / type issue in line 4 for ":11]" - it seems to be a point smaller than the test of the text

SuggestedRemedy

Please apply the proper font type / size

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.94** *P* **41** *L* **36** # 40

Hajduczenia, Marek Bright House Network

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

"The assignment of bits in the Single-lane PHY" - "Single-lane" should likely start with lower caps

SuggestedRemedy

Change "The assignment of bits in the Single-lane PHY" to read "The assignment of bits in the single-lane PHY"

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.3.1** *P* **45** *L* **16** # 41

Hajduczenia, Marek — Bright House Network

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

Extra "." at the end of the sentence "Change the indicated row of Table 45–120 for 25 Gb/s speed selection as follows (unchanged rows not shown)"

SuggestedRemedy

Remove extra "."

Proposed Response *Response Status* **O**

Cl **074** *SC* **74.1** *P* **61** *L* **6** # 42

Hajduczenia, Marek — Bright House Network

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

Editorial instruction should precede the modified subclause and not be within the modified subclause

SuggestedRemedy

Move lines 6-7 to line 4.5 :)

Also, editorial instructions could be simplified: "Change first paragraph in 74.1 as follows. Insert a new paragraph between existing second and third paragraph as follows."

Similar change to editorial instructions in 74.4 (page 62, line 36) - also remove the third and fourth para which are not modified.

Proposed Response *Response Status* **O**

Cl **074** *SC* **74.4.1a** *P* **63** *L* **43** # 43

Hajduczenia, Marek — Bright House Network

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

Wrong format of Figure 74-2a caption

SuggestedRemedy

Please apply the correct caption format (missing "-" between number and text, see Figure 74-1 for example of proper format)

Proposed Response *Response Status* **O**

Cl **074** *SC* **74.5** *P* **64** *L* **13** # 44

Hajduczenia, Marek — Bright House Network

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

Missing serial comma before "and 100GBASE-R"

SuggestedRemedy

Change " and 100GBASE-R" to ", and 100GBASE-R"
The same issue pn page 64, line 18: change " and CAUI-n for 100GBASE-R" to ", and CAUI-n for 100GBASE-R"
The same issue on page 65, line 45: change "40GBASE-R and 100GBASE-R" to "40GBASE-R, and 100GBASE-R"
The same issue on page 67, line 5 and line 24 (in Figure 74-6): change "40GBASE-R and 100GBASE-R" to "40GBASE-R, and 100GBASE-R"
The same issue on page 68, line 5 and line 27 (in Figure 74-8): change "40GBASE-R and 100GBASE-R" to "40GBASE-R, and 100GBASE-R
The same issue on page 72, line 31: change "40GBASE-R and 100GBASE-R" to "40GBASE-R, and 100GBASE-R" (in FE4 PICS)
Use proper markup in all referenced cases

Proposed Response *Response Status* **O**

Cl **110** *SC* **110.10.7** *P* **154** *L* **18** # 45

Zambell, Andrew — FCI

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

On slide 7 of goergen_3by_01_0715.pdf, the value of the transmitter differential peak output voltage of the alien far-end agressor is 0.4V, which was the original value. There was no suggestion to change it to 0.6V.

SuggestedRemedy

Change the alien far-end aggressor voltage to 0.4V.

Proposed Response *Response Status* **O**

Cl **111** *SC* **111.9** *P* **175** *L* **22** # 46

Zambell, Andrew FCI

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

The first paragraph in clause 111.9 states,
"Channel characteristics for the links that comprise two 25GBASE-KR PHYs shall be the same as those of a single lane of 100GBASE-KR4, as defined in 93.9.1 through 93.8.4."
It should state, ..."as defined in 93.9.1 through 93.9.4."

SuggestedRemedy

Change 93.8.4 to 93.9.4.

Proposed Response *Response Status* **O**

Cl **109** *SC* **109.1.3** *P* **126** *L* **14** # 47

Marris, Arthur Cadence Design Syste

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

Change "The function diagram" to "The functional block diagram"

SuggestedRemedy

Change "The function diagram" to "The functional block diagram"

Proposed Response *Response Status* **O**

Cl **109** *SC* **109.1.4** *P* **127** *L* **3** # 48

Marris, Arthur Cadence Design Syste

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

Remove the comma after "physical"

SuggestedRemedy

Change:
"An implementation may use one or more PMA sublayers to provide an interface with a physical, electrical interface, 25GAUI, between devices"
To:
"An implementation may use one or more PMA sublayers to provide an interface with a physical electrical interface, 25GAUI, between devices"

Proposed Response *Response Status* **O**

Cl **109** *SC* **109.4.4.2** *P* **131** *L* **20** # 49

Marris, Arthur Cadence Design Syste

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

Change "variables" to "variable"

SuggestedRemedy

Change "variables" to "variable"

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.3.2.1.5** *P* **28** *L* **31** # 50

Marris, Arthur Cadence Design Syste

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

There is too much legacy text here.

SuggestedRemedy

Prune the text to include only the text that has been modified and a minimmum amount of legacy text to show the context of the modified text.

Also do the same for 30.5.1.1.2, 30.5.1.1.4, 30.5.1.1.17 and 30.5.1.1.18

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.6.1.1.5** *P* **33** *L* **11** # 51

Marris, Arthur Cadence Design Syste

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

New text has not been underlined

SuggestedRemedy

Underline "RS-FEC25G Req" and "BASE-RFEC25G Req"

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.7.4** *P* **38** *L* **11** # 52

Marris, Arthur Cadence Design Syste

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

In table 45-9 put "25GBASE-KR, 25GBASE-KR-S" on a single line to match the base standard

SuggestedRemedy

Make formatting of Tables 45-9 and 45-10 match the base standard by removing line feeds in the PMA/PMD column.

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.8** *P* **38** *L* **48** # 53

Marris, Arthur Cadence Design Syste

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

Make formatting of table 45-12 match the base standard

SuggestedRemedy

Change "25GBASE-KR,25GBASE-KR-S" to "25GBASE-KR and 25GBASE-KR-S"
Change "25GBASE-CR,25GBASE-CR-S" to "25GBASE-CR and 25GBASE-CR-S"

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.10.a** *P* **39** *L* **23** # 54

Marris, Arthur Cadence Design Syste

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

Renumber 45.2.1.10.a to 45.2.1.10.b as 45.2.1.10.a is being used by 802.3bw

SuggestedRemedy

Change 45.2.1.10.a to 45.2.1.10.b

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.94** *P* **41** *L* **41** # 55

Marris, Arthur Cadence Design Syste

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

Remove blank table below Table 45-74 so just the table title remains

SuggestedRemedy

Remove the empty table below the table title so just the table title remains for tables 45-74, 45-75 and 45-76.

Proposed Response *Response Status* **O**

Cl **073** *SC* **73.3** *P* **55** *L* **45** # 56

Marris, Arthur Cadence Design Syste

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

Incorrect cross reference

SuggestedRemedy

Change 73.6 to 73.9

Proposed Response *Response Status* **O**

Cl **031B** *SC* **31B.3.7** *P* **199** *L* **14** # 57

Marris, Arthur Cadence Design Syste

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

Too much legacy text

SuggestedRemedy

Prune the text to include only the text that has been modified and a minimmum amount of legacy text to show the context of the modified text. Make similar change in the PICS.

Proposed Response *Response Status* **O**

Cl **107** *SC* **107.5** *P* **101** *L* **30** # 58

Marris, Arthur Cadence Design Syste

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

Missing "a"

SuggestedRemedy

Change to:
"as a 10GBASE-KR PMD"

Proposed Response *Response Status* **O**

Cl **109** *SC* **109.1.1** *P* **125** *L* **14** # 59

Marris, Arthur Cadence Design Syste

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

There is only one PMA service interface for 25G.

SuggestedRemedy

Change:
"PMA service interfaces are defined in an abstract manner and do not imply any particular implementation."
to:
"The PMA service interface is defined in an abstract manner and does not imply any particular implementation."

Proposed Response *Response Status* **O**

Cl **109** *SC* **109.6** *P* **134** *L* **19** # 60

Marris, Arthur Cadence Design Syste

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

Register name wrong for PIASE and PEASE.

Also consider adding "C2M and 25GAUI C2M recommended CTLE register (Register 1.179)" to table 109-3 and perhaps "CAUI-4 chip-to-chip transmitter equalization, receive direction, lane 0 register (Register 1.180)" and "CAUI-4 chip-to-chip transmitter equalization, transmit direction, lane 0 register (Register 1.184)" to table 109-4.

SuggestedRemedy

Change "PMA ingress AUI stop enable" to "PMA/PMD control 2"
Change "PMA egress AUI stop enable" to "PMA/PMD control 2"

Proposed Response *Response Status* **O**

Cl **112** *SC* **112.5.4** *P* **187** *L* **11** # 61

Marris, Arthur Cadence Design Syste

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

Single as it is just a single fibre in each direction is it really global? Consider deleting the word global.

SuggestedRemedy

Change:
"112.5.4 PMD global signal detect function
The PMD global signal detect function shall report the state of SIGNAL_DETECT via the PMD service interface."
To:
"112.5.4 PMD signal detect function
The PMD signal detect function shall report the state of SIGNAL_DETECT via the PMD service interface."

Proposed Response *Response Status* **O**

Cl **078** *SC* **78.2** *P* **75** *L* **37** # 62

Marris, Arthur Cadence Design Syste

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

25GBASE-R sleep times (Ts) are incorrect.

SuggestedRemedy

Change Ts time for the rows on lines 37 and 40 to 4.9 and 5.1 to match the 10GBASE-KR values and the values specified in 107.3

Proposed Response *Response Status* **O**

Cl **105** *SC* **105.3.1** *P* **81** *L* **40** # 63

Marris, Arthur — Cadence Design Syste

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

Include the word logical in the 25GMII description as was done for XLGMII in 80.2.1. Also change "this" to "the".

SuggestedRemedy

Change:
"The 25GMII (Clause 106) provides an interconnection between the Media Access Control (MAC) sublayer and Physical Layer entities (PHY). This 25GMII supports 25 Gb/s operation through its 32-bit-wide transmit and receive data paths."
To:
"The 25GMII (Clause 106) provides a logical interconnection between the Media Access Control (MAC) sublayer and Physical Layer entities (PHY). The 25GMII supports 25 Gb/s operation through its 32-bit-wide transmit and receive data paths."

Proposed Response *Response Status* **O**

Cl **105** *SC* **105.4.3.1.2** *P* **84** *L* **35** # 64

Marris, Arthur — Cadence Design Syste

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

Isn't the signalling rate always going to be 25.78125 GBd for the PMD, PMA and FEC service interfaces?

SuggestedRemedy

Change:
The sublayer continuously sends a bit stream IS_UNITDATA.request(tx_bit) to the next lower sublayer, at a nominal signaling rate defined by a specific instance of the inter-sublayer service interface.
To:
The sublayer continuously sends a bit stream IS_UNITDATA.request(tx_bit) to the next lower sublayer, at a nominal signaling rate of 25.78125 GBd.

Make similar change in 105.4.3.2.2

Proposed Response *Response Status* **O**

Cl **105** *SC* **105.5** *P* **89** *L* **48** # 65

Marris, Arthur — Cadence Design Syste

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

Missing subnanosecond bits for 25GBASE-R PMA

SuggestedRemedy

Change 164 to 163.84 in table 105-3 and make similar change in table 109-1.

Proposed Response *Response Status* **O**

Cl **105** *SC* **105.4** *P* **82** *L* **52** # 66

Marris, Arthur — Cadence Design Syste

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

25GBASE-R is single lane so delete the text referring to multiple streams.

SuggestedRemedy

Delete:
"Note that the 25GBASE-R inter-sublayer service interfaces use multiple scalar REQUEST and INDICATION primitives to indicate the transfer of multiple independent streams of data units, as explained in 105.4.1 through 105.4.3."

Proposed Response *Response Status* **O**

Cl **001** *SC* **1.3** *P* **25** *L* **35** # 67

Remein, Duane — Huawei Technologies

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

In Draft 3.2 of 802.3bx the removed footnote is 18 not 16

SuggestedRemedy

change to 18

Proposed Response *Response Status* **O**

Cl **001** *SC* **1.5** *P* **26** *L* **35** # 68

Remein, Duane Huawei Technologies

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

If you want these inserted in alphabetical order they should start in alphabetical order

SuggestedRemedy

Swap 25GMII and 25GAUI

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.3.2.1.5** *P* **28** *L* **31** # 69

Remein, Duane Huawei Technologies

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

For consistency with other sub-clauses of Cl 30 it would be better to omitt ATTRIBUTE

SuggestedRemedy

Remove "ATTRIBUTE"

Proposed Response *Response Status* **O**

Cl **074** *SC* **74.7.4.5.1** *P* **68** *L* **3** # 70

Remein, Duane Huawei Technologies

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

Incorrect formatting of Editing Instruction "Change Figure 74–8 and item b) as follows:"

SuggestedRemedy

use paragraph style Editing Instruction rather than T, Text

Proposed Response *Response Status* **O**

Cl **074** *SC* **74.7.4.8** *P* **70** *L* **1** # 71

Remein, Duane Huawei Technologies

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

It appears that in most places teh editing instruction is after the header block not before it in this case.
This is also an issue at
SCL pg ln
74.8.1 71 37
74.11.3 72 5
74.11.5 72 23

SuggestedRemedy

Move the Editing Instruction "Change the first paragraph of 74.7.4.8 (and split it into multiple paragraphs) as follows:" so it is below the H4 para 74.7.4.8.
Make a similar fix at other location noted (and any other you might run across)

Proposed Response *Response Status* **O**

Cl **074** *SC* **74.8** *P* **71** *L* **23** # 72

Remein, Duane Huawei Technologies

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

It is common practice in 802.3 to avoid allowing variable names to cross line brakes. While I understand this is a royal pain, please follow the convention.

SuggestedRemedy

In Table 74-1 adjust the column wsizes so FEC varibales are not broken.
For normal text remove the underscore (may want to consider slash also) from the characters that can precede a line break by:
Choose Format > Document > Text Options, enter the characters in the Allow Line Breaks After text box, and click Set. For example, you might want to remove the slash character from the list if you use terms such as and/or.
Specific word can be made non-breaking (Hyphenation control) by placing the curser in teh work and typeing <Esc> n s (see FM help on "Changing hyphenation and line breaks")

Proposed Response *Response Status* **O**

Cl **107** *SC* **107.2** *P* **98** *L* **53** # 73

Remein, Duane Huawei Technologies

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

In Figure 49-15 I don't see anything labled "125 microsecond timer" only something called "125_timer"

SuggestedRemedy

Change:
"The BER monitor state diagram shown in Figure 49–15 still applies but with a 2 millisecond timer instead of a 125 microsecond timer and ber_cnt is tested for a value of 97 rather than 16."
To:
"The BER monitor state diagram shown in Figure 49–15 still applies but the definition of "125_timer" in 49.2.13.2.5 is replaced with 'Timer that is triggered every 2 us +1%, –25%' and ber_cnt exit criteria following state BER_BAD_SH a value of 97 rather than 16."

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.14.4** *P* **40** *L* **5** # 74

Remein, Duane Huawei Technologies

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

Which bit is "this bit"? Typical wording is to specifically mention the bit number in the description in the first reference.
Same issue in 45.2.1.14.4a, 4b, 4c, adn 4d.

SuggestedRemedy

Change:
"25GBASE-CR this bit shall" to
"25GBASE-CR bit 1.16.5 shall"
Apply a similar fix in 45.2.1.14.4b-4d

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.102.1** *P* **43** *L* **47** # 75

Remein, Duane Huawei Technologies

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

Which bit is "this bit"? Typical wording is to specifically mention the bit number in the description in the first reference as was the case in the removed text.
Same issue in 45.2.1.102.2

SuggestedRemedy

Change initial:
"This bit indicates ..." to
"Bit 1.201.1 indicates ..."
Apply a similar fix in 45.2.1.102.2

Proposed Response *Response Status* **O**

Cl **074** *SC* **74.7.4.8** *P* **70** *L* **12** # 76

Remein, Duane Huawei Technologies

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

It appears that there are two options if "the optional EEE deep sleep capability is supported". On VERY careful reading it appears that The first option (detailed in the new 3rd para is for Cl 107 PCS and the second option is for Cl 82 PCS. Paragraph order can have a more logical order and wording could be clarified.

SuggestedRemedy

Swap the order of the 3rd & 4th para. and change the first sentence of each so they read as follows:
"A Clause 82 PCS sublayer that supports the optional EEE deep sleep capability also encodes /I/ during ..."
"A Clause 107 PCS sublayer that supports the optional EEE deep sleep capability also encodes /I/ during ..."

Proposed Response *Response Status* **O**

Cl **001** *SC* **1.4.64h** *P* **26** *L* **21** # 77

Remein, Duane Huawei Technologies

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

Perhaps this is more of a question but what is a "duplex multimode fiber"? The term could not be found in the standard (D3.2 802.3bx; looked for "duplex multimode fiber", "duplex fiber", "duplex singl mode fiber", "duplex SMF fiber", and "duplex SMF" all to no avail).
Is this a special two stranded fiber? Or perhaps it is a single strand of fiber that has special bi-directional capabilities?

SuggestedRemedy

Replace "duplex" with "single"

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.14.4a** *P* **40** *L* **5** # 78

Remein, Duane Huawei Technologies

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

You might want to reconsider the use of the term "shall be" here as I would expect to see a PICS entry for each new shall in the standard.
Given there are not proposed additions to Cl 45 PICS there is an issue.

Note this is differerent from the shall in 45.2.7.13.a/b which already have a PICS statement (AM58).

SuggestedRemedy

Change
"shall be" to
"is"

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.3.1** *P* **45** *L* **32** # 79

Remein, Duane Huawei Technologies

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

It strikes me as very odd that in 45.2.1 you modify the entry for register 1.0.5:2 while here you don't.

SuggestedRemedy

Add Editing Instruction and text as follows
45.2.3.1.5 Speed selection (3.0.13, 3.0.6, 3.0.5:2)
"Add as the last para in 45.2.3.1.5 as follows:
When bits 5 through 2 are set to 0010 the use of a 40G PCS is selected; when set to 0011 the use of a 100G PCS is selected; when set to 0100 the use of a 25G PCS is selected."

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1** *P* **34** *L* **10** # 80

Remein, Duane Huawei Technologies

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

The instructed change indicates that 25 Gb/s interfaces are specified over multiple PMAs in 83.1.4 however in P802.3bx Cl 83.1.4 I see no reference to 25 Gb/s, only 40 & 100.
P802.3by does not include changes too 83.1.4. I am therefore confused.

SuggestedRemedy

It seems like a reference to 109.1.4 is more appropriate for 25 Gbps interfaces

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.102.7** *P* **44** *L* **20** # 81

Remein, Duane Huawei Technologies

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

Now really Which bit is "this bit"? :-)
In this case the error is somewhat more confusing as the only bit referenced in teh text is FEC_bypass_indication_enable which is not the "this" bit you're talking about.

SuggestedRemedy

Change:
"When FEC_bypass_indication_enable is set to one, this bit is ..." to
"When FEC_bypass_indication_enable is set to one, bit 1.201.2 is ..."

Proposed Response *Response Status* **O**

Cl **000** *SC* **0** *P* **45** *L* **6** # 82

Remein, Duane — Huawei Technologies

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

Here your are defining one register in two places with different defintions. Dual definition is always a bad idea, dual definitions that are different is an even worse idea.

108.6.9 FEC_symbol_error_counter
FEC_symbol_error_counter is a 32-bit counter that counts once for each 10-bit symbol corrected when FEC_align_status is true. This variable is mapped to the registers defined in 45.2.1.106 (1.210, 1.211).

91.6.11 FEC_symbol_error_counter_i
FEC_symbol_error_counter_i, where i=0 to 3, is a 32-bit counter that counts once for each 10-bit symbol corrected on FEC lane i when fec_align_status is true. These variables are mapped to the registers defined in 45.2.1.106 and 45.2.1.107 (1.210 to 1.217).

SuggestedRemedy

In 45.2.1.106 remove the reference to 108.6.9
In 108.6.9 change the wording to:
"FEC_symbol_error_counter is defined in 91.6.11 for i=0. This variable is mapped to the registers defined in 45.2.1.106 (1.210, 1.211)."

Proposed Response *Response Status* **O**

Cl **000** *SC* **0** *P* **28** *L* **48** # 83

Remein, Duane — Huawei Technologies

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

I question the wisdom of changing from a list of speeds to " xx Gb/s or greater speed".
Have you enquired if 400 Gb/s will use this same function in each case? Is 400 G even in a position yet to make such a determination? If not it might be a better idea to extend the list of speeds rather than globally assert that the function will be useful from now utill the end of time (AEO).
Here are some locations I noticed this issue (search for "Gb/s or greater"):

Scl	pg	ln	
30.3.2.1.5	28	48	
30.5.1.1.4	30	30	
45.2.1.2.3	35	39	
78.1.3.3.1	73	38	(in this case the issue exist in the origional text)
78.1.3.3.1	73	42	(in this case the issue exist in the origional text)
78.1.3.3.1	73	47	(in this case the issue exist in the origional text)
78.5.2	77	23	(in new title "and greater-speed")
78.5.2	77	26	(here the implication is that 25G can be extend with CAUI-4)

Other instances of this issue may exist in the draft.

SuggestedRemedy

Rather than changing to an "or grater" construct extend these list by adding 25 Gb/s.

Proposed Response *Response Status* **O**

Cl **108** *SC* **108.5.2.4** *P* **108** *L* **16** # 84

Lo, William — Marvell Semiconductor

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

Not sure whether the following is intentional or is a typo.
Lane 0 alignment marker is referencing table 82-2 which is from 100GBASE-R
Lane 1, 2, 3 alignment marker is referencing 82-3 which is from 40GBASE-R

SuggestedRemedy

Fix reference to table 82-2 to 82-3 if this is a typo.
Else - I withdrawl this comment if the differnce is intentional.

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.5.1.1.17** *P* **31** *L* **17** # 85
Laubach, Mark Broadcom Corporation

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

Consider making "10 Gb/s" non-breaking. Do same for any similar "value<space>units" or "value<dash>units", etc. in the draft where it makes visual sense.

SuggestedRemedy

As per comment.

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.7.14** *P* **50** *L* **30** # 86
Laubach, Mark Broadcom Corporation

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

Any PICS impact?

SuggestedRemedy

Provide PICS update if needed.

Proposed Response *Response Status* **O**

Cl **069** *SC* **69.2.3** *P* **54** *L* **7** # 87
Laubach, Mark Broadcom Corporation

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

Table 69.1 and 69.2 clause numbers are horizontal. The Clause numbers on line 9 should probably match by being horizontal. It doesn't look like there is a space issue for requiring vertical. Also consider making them active cross references.

SuggestedRemedy

As per comment.

Proposed Response *Response Status* **O**

Cl **074** *SC* **74.11.3** *P* **72** *L* **16** # 88
Laubach, Mark Broadcom Corporation

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

Suggest "100GBASE-R" should be non-breaking. (or widen column slightly..)

SuggestedRemedy

As per comment.

Proposed Response *Response Status* **O**

Cl **110** *SC* **110.8.4.2** *P* **148** *L* **10** # 89
Laubach, Mark Broadcom Corporation

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

Suggestion: what looks like an odd spurious check mark symbol in front of "GHz" should look a squareroot symbol. Might have to use the equation editor or perhaps use "dB/root-GHz", or do what was done in Table 111-4.

Same for line 37. Same Page 149, Line 10.

Clause 11.8.3.1, Page 173, Line 29, Table 111-4, Table 111-5, and Table 111-6, be consistent with how the squareroot is specified in the six tables.

SuggestedRemedy

As per comment.

Proposed Response *Response Status* **O**

Cl **105** *SC* **105.5** *P* **89** *L* **41** # 90
Mellitz, Richard Intel Corporation

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

table 105-3. 25G RS, MAC, and MAC Control is 8192 bits time of 40ps (note a).
This is not 32.678 ns

SuggestedRemedy

Change 32.678 to 327.68 ns

Proposed Response *Response Status* **O**

Cl **112** *SC* **112.7.1** *P* **189** *L* **22** # 91
Lewis, David Lumentum

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

The reference for pattern 5 should be to 82.2.10, not 82.2.11.

SuggestedRemedy

Replace 82.2.11 with 82.2.10.

Proposed Response *Response Status* **O**

Cl **110** *SC* **10** *P* **154** *L* **15** # 92
Palkert, Thomas Molex

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

Die capacitance is too pessimistic for 25G designs

SuggestedRemedy

Change 1.8x10-4 to 1.3x10-4

Proposed Response *Response Status* **O**

Cl **110** *SC* **10** *P* **154** *L* **24** # 93
Palkert, Thomas Molex

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

Modifications of clause 92 COM parameters needed to achieve 3m no FEC operation

SuggestedRemedy

Add the following lines in Table 110-7:
CTLE gain: 16 dB Max
Nb (DFE taps) = 16 max
Package Z_c = 85 ohms

Proposed Response *Response Status* **O**

Cl **110** *SC* **8** *P* **149** *L* **19** # 94
Palkert, Thomas Molex

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

COM requirement is too stringent

SuggestedRemedy

Change COM value from 3.0 to 2.8

Proposed Response *Response Status* **O**

Cl **110** *SC* **10** *P* **154** *L* **13** # 95
Palkert, Thomas Molex

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

Package capacitance is pessimistic for packages that will be used for 25G designs

SuggestedRemedy

Change 2.5x10-4 to 2.0x10-4

Proposed Response *Response Status* **O**

Cl **110** *SC* **10** *P* **154** *L* **24** # 96
Palkert, Thomas Molex

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

Need to modify clause 92 COM parameters to correct errors. The recommended changes are required to meet TP2 specifications in 100G CR4.

SuggestedRemedy

Add lines for SNR_tx = 28.4, Afe = .43, Av = .43, Ane = .645

Proposed Response *Response Status* **O**

Cl **110** *SC* **10** *P* **152** *L* **32** # 97
Palkert, Thomas Molex

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

2m no FEC is insufficient reach for data center applications

SuggestedRemedy

Change no FEC (CA-N) distance from 2m to 3m

Proposed Response *Response Status* **O**

Cl **110** *SC* **10** *P* **153** *L* **5** # 98
Palkert, Thomas Molex

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

Insertion loss of 12.98 dB for CA-N is insufficient to achieve 3m

SuggestedRemedy

Change 12.98 dB to 16.0 dB

Proposed Response *Response Status* **O**

Cl **000** *SC* **0** *P* **7** *L* **18** # 99
Booth, Brad Microsoft

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

Add the working group voters list.

SuggestedRemedy

Per comment.

Proposed Response *Response Status* **O**

Cl **000** *SC* **0** *P* **11** *L* **1** # 100
Booth, Brad Microsoft

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

IEEE-SA style guide only requires a maximum of three levels need to be shown in the table of contents.

SuggestedRemedy

Change to match IEEE-SA style guide to simplify readability.

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.102.1** *P* **43** *L* **51** # 101
Booth, Brad Microsoft

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

missing an "a"

Same error occurs in 45.2.1.102.2 on page 44, line 12.

SuggestedRemedy

Change to read:
"When read as a one, this bit..."

Proposed Response *Response Status* **O**

Cl **105** *SC* **105.2** *P* **81** *L* **34** # 102
Booth, Brad Microsoft

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

Table 105-2 is missing a key to define what M and O mean.

SuggestedRemedy

Add a footnote to indicate the meaning of M and O.

Proposed Response *Response Status* **O**

Cl **105** *SC* **105.3.7** *P* **82** *L* **40** # 103
Booth, Brad Microsoft

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

Declaration of acronyms are not required as they're not used in this clause.

SuggestedRemedy

Remove "(MMD)" and "(STA)".

Proposed Response *Response Status* **O**

Cl **107** *SC* **107.1.1** *P* **97** *L* **9** # 104

Booth, Brad Microsoft

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

Extra comma not required.

SuggestedRemedy

Change to read as: "... Physical Layer implementations known as 25GBASE-R."

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.6** *P* **37** *L* **3** # 105

Booth, Brad Microsoft

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

Considering there is a huge bank of register bits (1 1 0 x x x) shown as reserved, it might be good to provide an editor's note (to be removed prior to publication) to explain the gap to prevent sponsor ballot reviewers from suggesting changes to optimize.

SuggestedRemedy

Add an Editor's note stating something along the lines of:
"1 1 0 x x x is reserved for other IEEE 802.3 amendments that are planning to use these bits but will be published after this amendment."

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.3.6** *P* **46** *L* **10** # 106

Booth, Brad Microsoft

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

The editing instruction doesn't read correctly as it references .3bq.

Same applies to editing instructions for 45.2.3.7.

SuggestedRemedy

Strike "(as modified by IEEE Std. 802.3bq-201x)"

Proposed Response *Response Status* **O**

Cl **106** *SC* **106.4** *P* **94** *L* **13** # 107

Booth, Brad Microsoft

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

Sentence is ambiguous. All the 25G PHYs may support EEE. Also, reference to the table in Clause 105 would be helpful.

SuggestedRemedy

Change sentence to read:
"25 Gb/s PHYs may support Clause 78 Energy-Efficient Ethernet (see Table 105-2)."

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.3.6** *P* **46** *L* **18** # 108

Booth, Brad Microsoft

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

Bit range in first column of Table 45-123 is wrong.

SuggestedRemedy

Change to read "3.7.2:0".

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.7.13** *P* **49** *L* **13** # 109

Booth, Brad Microsoft

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

Advertising deep sleep ability for KR/CR and KR-S/CR-S in two separate bits is overkill.

Same applies to the link partner ability.

SuggestedRemedy

Change Table 45-210 and 45-211 to leave bit 15 as reserved and bit 14 to be 25G EEE support. Update register descriptions.
Delete 42.3.7.13a and change 45.2.7.13b to read:
If set to a one, it indicates that the technologies advertised in bits A9 and A10 of Table 73-4 are capable of supporting EEE deep sleep operation. If set to a zero, EEE deep sleep operation is not supported for 25G.

Proposed Response *Response Status* **O**

Cl **107** *SC* **107.2** *P* **98** *L* **49** # 110

Booth, Brad Microsoft

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

The conformance requirements for this clause are very light and poorly captured in the PICS.

SuggestedRemedy

Change the paragraph to read:
"The 25GBASE-R PCS shall support all the functionality of the 10GBASE-R PCS specified in Clause 49. In addition, the PCS shall support the scrambled idle test pattern generator specified in 82.2.11."

In 107.6.3, for the MD entry, add 49.2.14 to the subclause list.

Change 107.6.4 to be 25G PCS and delete table in 107.6.4.

Change 107.6.4.1 to be Clause 49 Functionality
Use the following entries into the table:
PCS1; Supports Clause 49 functionality; 107.2; ; M; Yes[] No[]

Add 107.6.4.2 Test Pattern Generator
Use the following entries in the table:
TP1; Scrambled idle test pattern; 107.2, 82.2.11; ; M; Yes[] No[]
TP2; Scrambled idle ability; 107.2.3; ; M; Yes[] No[]

Change 107.6.4.2 LPI to be 107.6.4.3 LPI
Change LP1 in table to be LP2 and change LPI:M to be LPI:O (deep sleep is optional) and add N/A[] to Support
Insert LP1 with the following entries in the table:
LP1; EEE deep sleep; 107.3, 49; PHY configured for deep sleep operation; LPI:O; Yes[] No[] N/A[]
Add LP3 with the following entries:
LP3; EEE fast wake; 107.3; Fast wake operation; LPI:M; Yes[] No[]

Proposed Response *Response Status* **O**

Cl **108** *SC* **108.7.4.2** *P* **123** *L* **10** # 111

Booth, Brad Microsoft

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

The wording in the PICS entry for RF3 and RF4 does not match the text in 108.5.3.2. Bypass is an optional mode of operation, and does not impact the requirement of RS-FEC.

SuggestedRemedy

Combine RF3 and RF4 into one PICS entry that has the following entries:
RF3; Reed-Solomon decoder; 108.5.3.2; Corrects any combination of up to 7 symbol erros in a codeword; M; Yes[]

Proposed Response *Response Status* **O**

Cl **108** *SC* **108.7.4.2** *P* **123** *L* **17** # 112

Booth, Brad Microsoft

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

RF5 is confusing. Error correction bypass is optional, but it's mandatory that SR not support it. I'm concerned that this could be incorrectly interpreted.

SuggestedRemedy

Change RF5 to read:
RF5; Error correction bypass; 108.5.3.2; Error correction bypass not supported by 25GBASE-SR; BEC*!SR:M; Yes[] No[] N/A[]

Proposed Response *Response Status* **O**

Cl **108** *SC* **108.5.3.2** *P* **111** *L* **1** # 113

Booth, Brad Microsoft

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

RF7 in the PICS table talks about the corruption of the header. The text in 108.5.3.2 actually has two shall statements associated with it which have different requirements. This could be greatly simplified by editing the text to result in one shall statement to cover the operation.

SuggestedRemedy

Change the first sentence of the paragraph to read:
"The Reed-Solomon decoder shall indicate errors to the PCS sublayer by intentionally corrupting 66-bit block synchronization headers."
Change the next two occurrences of "it shall ensure" to be "it ensures".

Proposed Response *Response Status* **O**

Cl **108** *SC* **108.5.3.2** *P* **110** *L* **42** # 114

Booth, Brad Microsoft

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

The shall statement talks more about capability than a requirement. The requirements are handled by other shalls.

SuggestedRemedy

Change the second sentence of the paragraph to read:
The 25GBASE-R RS-FEC sublayer is also capable of indicating when a codeword contains errors that were not corrected.
Delete RF6 from 108.7.4.2.

Proposed Response *Response Status* **O**

Cl **108** *SC* **108.7.4.2** *P* **123** *L* **22** # 115

Booth, Brad Microsoft

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

RF7and RF8 are really confusing and incorrect. Need to make this better match the entries to the capabilities to prevent misinterpretation.

SuggestedRemedy

Change RF7 to read:
RF7; Error indication function; 108.5.3.2; ; BEC:M or !BEI:M; Yes[] No[]
Change RF8 to read:
RF8; Error indication bypass; 108.5.3.2; ; !BEC*BEI:M; Yes[] N/A[]

Proposed Response *Response Status* **O**

Cl **108** *SC* **108.5.3.2** *P* **111** *L* **32** # 116

Booth, Brad Microsoft

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

There are two shalls associated with deep sleep that don't have PICS entries.

SuggestedRemedy

Add EEE capability to the major capabilities/options table.

Add two new PICS entries for error monitor while entering and exiting deep sleep. Use the Status BEI*EEE:M for each entry.

Proposed Response *Response Status* **O**

Cl **000** *SC* **0** *P* **1** *L* **5** # 117

Booth, Brad Microsoft

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

Redundant uses of trademarks

SuggestedRemedy

Remove TM from:
page 1, line 5: IEEE P802.3by
page 2, line 10: IEEE P802.3by
Page 9, line 7: IEEE Std. 802.3

Proposed Response *Response Status* **O**

Cl **110** *SC* **10** *P* **152** *L* **24** # 118

Joel Goergen Cisco Systems, Inc.

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

The current solution does not support 3m with no fec. The 2m no fec solution set is not long
enough for top of rack applications as demonstrated in presentations by goergen and andrewartha. The 3m solution only supports single rack switching applications. The 5m solution uses RS FEC with a penalty of almost 400ns.

SuggestedRemedy

Suggest two possible remedies.

One:
remove the 2m solution; make the 3m solution KR FEC optional.
Modify the following:
Table 110-10 Av- 0.43V / Afe- 0.43V / Ane- 0.63V [Afe cannot exceed Av since they are coming from the same
source on the cable]
Table 110-7 Com change for nofec from 3dB to 2.70
SNDR change to 28.4dB
CTLE from 12dB to 16dB

Two
Clause 110.10 line 25 thru line 33
Change the 3m KR FEC solution to 4m KR FEC
Change the 2m no FEC solution to 3m no FEC
Table 110-9 modify the loss table to 22.48 / 18.?? / 15.48 - (RS / KR / noFEC)
Modify the following:
Table 110-10 Av- 0.43V / Afe- 0.43V / Ane- 0.63V [Afe cannot exceed Av since they are coming from the same
source on the cable]
Table 110-7 Com change for nofec from 3dB to 2.70
SNDR change to 28.4dB
CTLE from 12dB to 16dB

Proposed Response *Response Status* **O**

Cl **110** *SC* **10** *P* **152** *L* **24** # 119

Vineet Salunke Cisco Systems, Inc.

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

Same as submitted by Joel Goergen on supporting 3m with No FEC.

SuggestedRemedy

Same as submitted by Joel Goergen on supporting 3m with No FEC.

Proposed Response *Response Status* **O**

Cl **073** *SC* **73.6.5.1** *P* **57** *L* **23** # 120

Slavick, Jeff Avago Technologies

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

The First sentence of 73.6.5.1 is overview and belongs as part of the introduction section 73.6.5.

SuggestedRemedy

Move "Bits F2 and F3 are used for resolving FEC operation for 25G PHYs while bits F0 and F1 are used for 10 Gb/s per lane operation. Bits F0 and F1 are not used for 25G PHYs." to be the last paragraph of 73.6.5

Proposed Response *Response Status* **O**

Cl **108** *SC* **108.5.2.4** *P* **108** *L* **3** # 121

Slavick, Jeff Avago Technologies

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

Extra words "at predfined locations," make the sentence a little confusing.

SuggestedRemedy

Remove the words "at predfined locations," so the sentence reads

In order to support codeword alignment in the receive direction, the 25GBASE-R RS-FEC shall periodically insert codeword markers into the stream of transcoded blocks as the first 257 bits of every 1024th RS-FEC codeword.

Proposed Response *Response Status* **O**

Cl **108** *SC* **108.5.2.2** *P* **106** *L* **33** # 122

Slavick, Jeff — Avago Technologies

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

The /I/ means Idle control character so it's unnecessary to include the word character in b). However this is also the first usage of /I/ and /LI/ in clause 108 so.

SuggestedRemedy

Delete "characters," from 108.5.3.6 item b)

In 108.5.2.2 change b) to read:
b) Delete /I/, /LI/ and ordered sets, according to the rules in 49.2.4.7 and 49.2.4.10, to create room as necessary for the periodically occurring codeword markers

or

b) Delete Idle control characters (/I/), Low Power Idle control characters (/LI/) and ordered sets, according to the rules in 49.2.4.7 and 49.2.4.10, to create room as necessary for the periodically occurring codeword markers

Proposed Response *Response Status* **O**

Cl **108** *SC* **180.5.4.5** *P* **116** *L* **15** # 123

Slavick, Jeff — Avago Technologies

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

With a Clause 49 LPI state diagram you can exit LPI state without ever going to sleep (path from SLEEP -> ACTIVE exists).

lpi_rapid_align is set to true whenever rx_lpi_active is set to true, which occurs when /LI/ are seen. So if the Tx sends some /LI/ but doesn't actually go to sleep lpi_rapid_align could be set. The only way to clear lpi_rapid_align is to successfully achieve alignment with rapid CWMs.

Addiitionally while in the 2_GOOD state you would reset the lpi_rapid_align setting baed on rx_lpi_active being TRUE, if it changes to FALSE (transition from /I/ to /LI/ during WAKE) then you'd also end up stuck trying to frame to rapid CWMs

SuggestedRemedy

Add the assignment of lpi_rapid_align <= rx_lpi_active in the 2_GOOD state of Figure 108-6

Change the definition for lpi_rapid_align to be:
Boolean variable that is set according to the FEC synchronization state diagram in Figure 108 6.

Add a WAKE_FAIL state to Figure 108-6 which is entered if the hold-off timer defined in 108.5.3.7 expires and sets lpi_rapid_align <= false and transitions to the LOCK_INIT state via a UCT transition

Create a definition for the Rx EEE hold_timer in 108.5.4 to be referenced by Figure 108-6 and 108.5.3.7

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.80** *P* **0** *L* **0** # 124

Slavick, Jeff — Avago Technologies

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

PMD Training control and status registers sections need to be brought in and have 110 and 111 added the list of clauses.

SuggestedRemedy

Add clause 110 and 111 to the list of clauses supported in subsections
45.2.1.80
45.2.1.81
45.2.1.82
45.2.1.83
45.2.1.84
45.2.1.85

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.3.17.2** *P* **0** *L* **0** # 125

Slavick, Jeff — Avago Technologies

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

Clause 107 is Clause 49, so test patterns are defined for 25G as well

SuggestedRemedy

Retitle sections 45.2.3.17.2, 45.2.3.17.3, 45.2.3.17.4 to be Single Lane PHY BASE-R instead of 10GBASE-R

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.3.13.1** *P* **0** *L* **0** # 126

Slavick, Jeff — Avago Technologies

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

25G missing from list of MAC rates in several places

SuggestedRemedy

Change 10/40/100 BASE-R to 10/25/40/100 BASE-R in sections
45.2.3.2.7
45.2.3.14.1
45.2.3.14.2
45.2.3.14.3

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.3.13.4** *P* **0** *L* **0** # 127

Slavick, Jeff — Avago Technologies

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

clause 107 missing from several PCS status registers

SuggestedRemedy

Add ", and in 107.2 for 25GBASE-R" into the lists valid clauses in sections
45.2.3.13.1
45.2.3.13.4
45.2.3.13.5

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.7.12** *P* **48** *L* **4** # 128

Slavick, Jeff — Avago Technologies

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

RS-FEC negotiated bit was added but no definition for the bit

SuggestedRemedy

Create new subsection to define 7.48.7

When the Auto-Negotiation process has completed as indicated by the AN complete bit (7.1.5), bit 7.48.7 indicates that RS-FEC operation has been negotiated. This bit is set only if RS-FEC operation has been negotiated for a BASE-R PHY supporting negotiation of RS-FEC operation.

Proposed Response *Response Status* **O**

Cl **074** *SC* **74.9** *P* **0** *L* **0** # 129

Slavick, Jeff — Avago Technologies

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

Text of 74.9 talks about 10GBASE-R test pattern abilities, 107 also has these abilities for 25G.

SuggestedRemedy

The 10GBASE-R and 25GBASE-R PCS provides test-pattern functionality and the PCS transmit channel and receive channel can each operate in normal mode or test-pattern mode (see 49.2.2). When the 10GBASE-R or 25GBASE-R PHY is configured for test-pattern mode, the FEC function may be disabled by setting the FEC Enable variable to zero, so the test-pattern from the PCS can be sent to the PMA service interface, bypassing the FEC Encode and Decode functions.

The Clause 82 and 107 PCS can also operate in test pattern mode (see 82.2.11 and 107.2.3); however, the scrambled idle test pattern does not require bypassing FEC encode and decode.

Proposed Response *Response Status* **O**

Cl **108** *SC* **108.5.2.4** *P* **108** *L* **11** # 130

Slavick, Jeff — Avago Technologies

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

Paragraph describing how tx_cwm is built is a little cryptic

SuggestedRemedy

Change the paragraph
The transmitted codeword marker is a 257-bit block, tx_cwm, constructed from the eight octets M0, M1, M2, BIP3, M4, M5, M6, and BIP7 (bits 65 to 2) of the alignment markers with the bit order shown in Figure 82 9, with BIP3 set to the constant value 0x33 and BIP7 set to the constant value 0xCC, as follows:

to read

The transmitted codeword marker is a 257-bit block, tx_cwm, constructed of four alignment markers. Each alignment marker is built from eight octets M0, M1, M2, BIP3, M4, M5, M6, and BIP7 with the bit order shown in Figure 82 9. Since 25GBASE-R does not perform Bit Interleaved Parity (BIP) monitoring the BIP3 field is set to the constant value 0x33 and BIP7 set to the constant value 0xCC.

tx_cwm is constructed as follows:

Proposed Response *Response Status* **O**

Cl **108** *SC* **108.5.4.5** *P* **116** *L* **30** # 131

Slavick, Jeff — Avago Technologies

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

States required only for EEE support are traditionally marked as such.

SuggestedRemedy

Add a dotted box around the WAKE_NEXT_COUNT and WAKE_GOOD states in Figure 108-6
Add a Note indicating that these state are optional states only required to support EEE capability

Proposed Response *Response Status* **O**

Cl **108** *SC* **108.5.4.2** *P* **113** *L* **34** # 132

Slavick, Jeff — Avago Technologies

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

No definition for how many bits are part of nibble exists in the cwm_valid definition.

SuggestedRemedy

After "on a nibble wide basis" add "(12 comparisons)". Since 2 sets of 24b are compared and we do 12 comparisons each nibble is 4b in size.

Proposed Response *Response Status* **O**

Cl **110** *SC* **110.10** *P* **152** *L* **31** # 133

Andrewartha, Mike — Microsoft

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

The specification does not define a method of achieving no-FEC operation at lengths up to 3m.

SuggestedRemedy

Adopt one of the proposals for achieving 3m no-FEC operation that are being developed by Goergen, et al.

OR

If no acceptable solution for achieving 3m no-FEC operation exists, create an informative annex that provides guidance on relaxations of other spec parameters that can be made to achieve 3m no-FEC operation.

Proposed Response *Response Status* **O**

Cl **073** *SC* **73.6.5.1** *P* **57** *L* **33** # 134

Trowbridge, Steve Alcatel-Lucent

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

Clause title starting with a preposition seems odd. Same ussye with 73.6.5.2.

SuggestedRemedy

Either just use "25G PHYs" and "10 Gb/s per lane PHYs", or spell it out "FEC capability for 25G PHYs" or "FEC capability for 10 Gb/s per lane PHYs".

Proposed Response *Response Status* **O**

Cl **078** *SC* **78.5.2** *P* **77** *L* **23** # 135

Trowbridge, Steve Alcatel-Lucent

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

This won't be generically true for 25 Gb/s and greater PHYs since 400GBASE-R based on currently adopted baselines will implement "Fast Wake" only. So CDAUI-8 and CDAUI-16 will not specify deep sleep capability, nor will there be a 400G PMA Egress AUI stop enable or 400G PMA Ingress AUI Stop Enable.

SuggestedRemedy

Spell out 25 Gb/s, 40 Gb/s and 100 Gb/s PHY extension using 25GAUI, XLAUI, or CAUI-n in the title of 78.5.2

Proposed Response *Response Status* **O**

Cl **108** *SC* **108.5.2.2** *P* **106** *L* **25** # 136

Trowbridge, Steve Alcatel-Lucent

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

Doing rate compensation below the PCS precludes developing an OTN mapping for 25GbE which is PCS codeword transparent.

SuggestedRemedy

See trowbridge_3by_01_0915.pdf for proposed remedy. The problem can be solved if all of the PMDs have CWMs, none of the PMDs have CWMs, or if no rate compensation is done to insert CWMs (i.e., overclock to insert CWM). Propose to move the rate compensation to the PCS. Rate compensation should similarly be removed from Figure 108-2.

Proposed Response *Response Status* **O**

Cl **108** *SC* **108.5.2.4** *P* **108** *L* **1** # 137

Trowbridge, Steve Alcatel-Lucent

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

Some PMDs having CWMs and others not prevents creating a PCS codeword transparent mapping for 25GbE into OTN which can interconnect any pair of 25GbE PMDs.

SuggestedRemedy

Propose to move CWM insertion to the PCS. See trowbridge_3by_01_0915.pdf for details. If CWM insertion is moved to the PCS, Figure 108-3 needs to transcode the CWM from four 66B blocks to the 257B format.

Proposed Response *Response Status* **O**

Cl **108** *SC* **108.5.3.3** *P* **111** *L* **47** # 138

Trowbridge, Steve Alcatel-Lucent

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

Some PMDs having CWMs and others not prevents developing a PCS codeword transparent mapping into OTN which can interconnect any pair of 25GbE PMDs.

SuggestedRemedy

See trowbridge_3by_01_0915.pdf for details. Move CWM removal to the PCS, and replace this text with how to transcode CWM from the 257B format back to four 66B blocks.

Proposed Response *Response Status* **O**

Cl **108** *SC* **108.5.3.6** *P* **112** *L* **15** # 139

Trowbridge, Steve Alcatel-Lucent

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

Having rate compensation below the PCS prevents creating a PCS codeword transparent mapping into OTN which can interconnect any pair of 25GbE PMDs.

SuggestedRemedy

Move this rate compensation to the PCS and add CWM to all PMDs. See trowbridge_3by_01_0915.pdf.

Proposed Response *Response Status* **O**

Cl **105** *SC* **105.5** *P* **89** *L* **31** # 140

Hidaka, Yasuo Fujitsu Lab. of Americ

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

There is a pointer to clause 80.4, but cleause 80.4 does not have the description of the calculation of bit term per meter of fiber or electrical cable.
Clause 80.4 has just a pointer to clause 44.3.
Clause 44.3 has the description.
Indirect pointer is not good.

SuggestedRemedy

Change the pointer to clause 80.4 with a pointer to clause 44.3.

Proposed Response *Response Status* **O**

Cl **111** *SC* **111.9** *P* **175** *L* **22** # 141

Hidaka, Yasuo Fujitsu Lab. of Americ

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

It is written as 93.9.1 through 93.8.4.

Clause 93.8.4 is prior to 93.9.1.

SuggestedRemedy

Change the pointer to "93.9.1 through 93.8.4" to "93.9.1 through 93.9.4".

Proposed Response *Response Status* **O**

Cl **110C** *SC* **110C.3.3** *P* **233** *L* **1** # 142

Hidaka, Yasuo Fujitsu Lab. of Americ

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

"an QSFP28 plug" should be "a QSFP28 plug".

SuggestedRemedy

Change "an QSFP28 plug" with "a QSFP28 plug".

Proposed Response *Response Status* **O**

Cl **073** *SC* **73.5.3** *P* **55** *L* **54** # 143

Hidaka, Yasuo Fujitsu Lab. of Americ

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

In Table 73-2, DME page timing summary, T1 is specified as 3.2ns +/- 0.01%.
3.2ns is 82.5 UI at 25.78125 Gbaud.
It is not an integer multiple of bit time, and it is not easy to satisfy the tolerance of +/-0.01%.
The tolerance of +/-0.01% is unnecessarily tight in comparison to the tolerance of T2 that is +/-3.125% and T3 that is +/-6.25%.

SuggestedRemedy

Relax the tolerance of T1 to +/-0.7% so that implementing T1 by 82UI or 83UI becomes acceptable.

Proposed Response *Response Status* **O**

Cl **073** *SC* **73.6.4** *P* **56** *L* **51** # 144

Hidaka, Yasuo Fujitsu Lab. of Americ

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

It is not clear if 25GBASE-KR or 25GBASE-CR advertise both of A9 and A10 or only A10.
Since they have all the capabilities of 25GBASE-KR-S or 25GBASE-CR-S, I suppose they should always advertise A9 and A10.

SuggestedRemedy

State clearly like this:

A device that supports 25GBASE-KR or 25GBASE-CR always advertises both of A9 and A10, because all the abilities of 25GBASE-KR-S or 25GBASE-CR-S are covered by 25GBASE-KR and 25GBASE-CR as well.

Proposed Response *Response Status* **O**

Cl **108** *SC* **108.5.2.4** *P* **108** *L* **3** # 145

Hidaka, Yasuo Fujitsu Lab. of Americ

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

A brief description of what is an RS-FEC codeword is helpful to read this paragraph. It is not clearly described until 108.5.4.4.

SuggestedRemedy

Add the following sentence in the paragraph:

An RS-FEC codeword for 25GBASE-R is 528 10-bit symbols or 5280 bits.

Proposed Response *Response Status* **O**

Cl **110** *SC* **110.10.7** *P* **154** *L* **5** # 146

Hidaka, Yasuo — Fujitsu Lab. of Americ

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

The current COM parameter does not include Low-Frequency CTLE (LF-CTLE) which is a state-of-the-art analog equalizer. LF-CTLE has a pair of pole and zero in much lower frequency than the CTLE of the current COM parameter. The LF-CTLE significantly reduces BER, and is already in some implementations in the market. The LF-CTLE is also known as a long-tail equalizer. The LF-CTLE is particularly effective for skin effect, and hence for cable appliations. With LF-CTLE, we can easily support 3m cable without FEC with solid high confidence, still maintaining 3dB COM margin in the same way as before without any compromise.

However, since the current COM parameter does not include LF-CTLE, there are no 3m cable assembly that passes 3dB COM test, although there are many good-enough 3m cable assembly, unless we make some compromise such as lowering 3dB COM criteria.

SuggestedRemedy

Add the following changes to COM parameter values in Table 110-10:

Continuous time filter, DC gain gDC
Minimum value -6 dB
Maximum value 0 dB
Step size 0.5 dB

Continuous time filter, zero frequency
fz fb / 60 GHz

Continuous time filter, pole frequencies
fp1 fb / 60 GHz
fp2 fb

I have a plan to submit a supporting presentation.

Proposed Response *Response Status* **O**

Cl **110** *SC* **110.10.7** *P* **154** *L* **21** # 147

Hidaka, Yasuo — Fujitsu Lab. of Americ

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

bmax(n) is specified as 0.5 for CA-N.
This is to prevent error propagation caused by DFE.

However, a burst error does not matter for CA-N, because FEC is not used. Once there is an error, no matter whether a single-bit error or a burst error, the entire frame is dropped by a check sum error.

SuggestedRemedy

Change bmax(n) value for CA-N to 1.

Proposed Response *Response Status* **O**

Cl **069** *SC* **69.2** *P* **54** *L* **20** # 148

Dudek, Mike — QLogic

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

The superscript note "a" applies to all the items in the table. Why is it placed just on the items in the middle of the row rather than on the first two items (top left) as is done for table 69-1 and 69-2.

SuggestedRemedy

Move the superscript to the first M and first O in the top left of the table.

Proposed Response *Response Status* **O**

Cl **109** *SC* **109.4.5** *P* **133** *L* **18** # 149

Dudek, Mike — QLogic

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

The sentence reads poorly.

SuggestedRemedy

Replace "PMA EEE operation for 25GAUI is specified in 83.5.11 with respect to lane 0 only and except for considerations related to multiple lanes." with
"PMA EEE operation for 25GAUI is specified in 83.5.11 with respect to lane 0 only. Considerations related to multiple lanes do not apply."

Proposed Response *Response Status* **O**

Cl **111** *SC* **111.8.3.2** *P* **173** *L* **46** # 150
Dudek, Mike QLogic

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

Tables 111-5 and 111-6 are breaking up the flow of sub-clause 111.8.3.2

SuggestedRemedy

Force 111.8.3.2 to start after table 111-6

Proposed Response *Response Status* **O**

Cl **110C** *SC* **110C.3.1** *P* **231** *L* **32** # 151
Dudek, Mike QLogic

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

Poor grammar.

SuggestedRemedy

Change "characteristics a cable assembly" to "characteristics of a cable assembly"

Make the equivalent changes in 110C.3.2 and 110C.3.3

Proposed Response *Response Status* **O**

Cl **001** *SC* **1.1.3.2** *P* **25** *L* **21** # 152
Dudek, Mike QLogic

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

25GAUI is different for chip to module and chip to chip. Calling it a single interface that can be used for chip-to-chip or chip-to-module is not helpful

SuggestedRemedy

Replace "The 25GAUI is intended for use as a chip-to-chip or a chip-to-module interface". with "Two versions of 25GAUI are specified one intended for use as a chip-to-chip interface and one intended for use as a chip-to-module interface."

Proposed Response *Response Status* **O**

Cl **108** *SC* **108.5.3.2** *P* **110** *L* **46** # 153
Dudek, Mike QLogic

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

With the options to turn off the RS-FEC encoding that are included in this project (no FEC and base-R FEC modes of operation) the additional option to turn off the error correction or error indication is not necessary. My understanding is that the performance for false packet acceptance and latency with error correction bypassed is worse than when the RS-FEC encoding is turned off (no FEC option) and there is therefore no advantage to this mode. (Negotiating to RS-FEC and then not correcting). This mode should be removed from the standard.

SuggestedRemedy

Delete the paragraph starting at line 46 and the NOTE below it. On page 111 line 2 replace "contains errors (when the bypass correction feature is enabled) or contains errors that were not corrected (when the bypass correction feature
is not supported or not enabled)" with "contains errors that were not corrected "

Delete the paragraphs on page 111 starting at lines 13 to the end of 108.5.3.2.

Delete the two rows in Table 108-1 on page 118 lines 6 and 7. and the two rows in table 108-2 on lines 17 and 18

Delete sections 108.6.1, 108.6.2, 108.6.4 and 108.6.5

On page 119 line 42 replace the paragraph "An uncorrected FEC codeword is a codeword that contains errors (when the bypass correction feature is supported
and enabled) or contains errors that were not corrected (when the bypass orrection feature is not supported or not enabled)." with "An uncorrected FEC codeword is a codeword that contains errors"

Remove BEC and BEI from the PICS table in 108.7.3. and RF6, RF8 and RF(in 108.7.4.2

Also delete Sections 45.2.1.101.1, 45.2.1.101.2, 45.2.1.102.8, 45.2.1.102.9

Also delete "and the RS-FEC decoder does not bypass error correction
(see 108.5.3.2)" on page 139 line 49 and "or in the RS-FEC mode with error correction bypassed," on page 140 line 1. and similarily on page 166 lines 42 and 47.

Proposed Response *Response Status* **O**

Cl **109** *SC* **109.1.3** *P* **126** *L* **6** # 154

Dudek, Mike QLogic

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

This PMA is serial in to serial out there so clock generation is never required.

SuggestedRemedy

Delete item b (Provide Clock Generation).

Proposed Response *Response Status* **O**

Cl **110** *SC* **110.7.5** *P* **145** *L* **36** # 155

Dudek, Mike QLogic

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

There is a line in Table 92-6 labeled "differential peak-to-peak voltage" that does not apply here. We should be more precise.

SuggestedRemedy

Change "the maximum differential peak-to-peak output voltage in Table 92–6." to "the differential peak-to-peak output voltage (max) with Tx disabled in Table 92–6."

Proposed Response *Response Status* **O**

Cl **110** *SC* **110.8.4.2** *P* **147** *L* **47** # 156

Dudek, Mike QLogic

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

The standard should be more precise about which cable assembly COM is used for which test.

SuggestedRemedy

Add to the end of the sentence. "with CA-L COM being used for RS FEC mode, CA-S COM being used for Base-R FEC mode and CA-N COM being used for no-FEC mode"

Proposed Response *Response Status* **O**

Cl **110** *SC* **110.10.7** *P* **153** *L* **39** # 157

Dudek, Mike QLogic

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

COM for a cable is not really related to a receive lane it is the complete path in the cable.

SuggestedRemedy

Delete "receive". ie Change "(COM) for each receive lane is derived from" to "(COM) for each lane is derived from"

Proposed Response *Response Status* **O**

Cl **110** *SC* **110.11.1** *P* **157** *L* **9** # 158

Dudek, Mike QLogic

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

Incorrect cross references. The signal quality and electrical requirements of the connector (which is mounted on the host board) need to be adequate to meet the host electrical characteristics and the cable characterics.

SuggestedRemedy

Change from "110.9 and 110.10" to "110.8 and 110.9"

Proposed Response *Response Status* **O**

Cl **112** *SC* **112.7.1** *P* **189** *L* **25** # 159

Dudek, Mike QLogic

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

Table 95-10 includes the valid 100GBASE-SR4 pattern which isn't applicable to 25GBASE-SR. It also references the pattern 5 with clause 91 RS-FEC.

SuggestedRemedy

Create a table in this clause which is identical to table 95-10 except that "valid 100GBASE-SR4 signal" is replaced by valid 25GBASE-SR signal" Replace all references to table 95-10 in this clause with references to this new table. Place the table immediately above 112.7.2

Proposed Response *Response Status* **O**

Cl **112** *SC* **112.6.1** *P* **188** *L* **53** # 160

Dudek, Mike QLogic

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

The sentence as stated implies the use of the 100GBASE-SR4 test patterns as these are references in 95.7.1

SuggestedRemedy

Add to the sentence. "with the exception that the test patterns are modified as stated in 112.7.1"

Proposed Response *Response Status* **O**

Cl **112** *SC* **112.6.2** *P* **189** *L* **4** # 161

Dudek, Mike QLogic

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

The sentence as stated implies the use of the 100GBASE-SR4 test patterns as these are references in 95.7.2

SuggestedRemedy

Change "exception" to "exceptions" and add to the end of the sentence "and the test patterns are modified as stated in 112.7.1"

Proposed Response *Response Status* **O**

Cl **093A** *SC* **93A.1** *P* **p203** *L* **23** # 162

Dudek, Mike QLogic

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

The Parameter values used for 25GBASE-KR-S are modified by the clause.

SuggestedRemedy

Add a footnote to Table 93-8 on the KR-S row only. Footnote to say "As modified by 111.9

Proposed Response *Response Status* **O**

Cl **109A** *SC* **109A.3.1** *P* **205** *L* **35** # 163

Dudek, Mike QLogic

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

This is a single lane specification and parts of 83D.3.1 refer to 4 lanes (including references to 4 sets of MDIO registers).

SuggestedRemedy

Add "with the exception that this is a single lane and lanes 1 through 3 are not used".

Add this also to the end of the sentence on line 40.

Proposed Response *Response Status* **O**

Cl **109C** *SC* **109C** *P* **220** *L* **36** # 164

Dudek, Mike QLogic

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

An example is not shown of what will probably be the most common implementation of the system. ie With FEC co-located with the PCS.

SuggestedRemedy

Take figures 109C-4 and 109C-3 and insert a box between PCS and PMA labeled FEC. Add a footnote to that box. NOTE- FEC is conditional based on PHY type.

Proposed Response *Response Status* **O**

Cl **110B** *SC* **110B.1.3.6** *P* **226** *L* **45** # 165

Dudek, Mike QLogic

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

The integrated crosstalk noise specified here for the mated test fixture is more stringent than is needed. All the budgets have been set up to enable QSFP to QSFP operation using the QSFP test fixture allowed NEXT of 1.8mV. Note also that the NEXT aggressor is physically closer to the victim in an SFP connector than in the QSFP connector.

SuggestedRemedy

Relax the value of the integrated NEXT from 1.2mV to 1.8mV in Table 110B-1 (matching the QSFP NEXT value).

Proposed Response *Response Status* **O**

Cl **110B** SC **110B.1.3.6** P **226** L **48** # 166
Dudek, Mike QLogic

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

There aren't any FEXT agressors in the SFP test fixture, and therefore discussing ICN isn't very helpful and in fact in this subclause how to calculate it is not defined and a specification for it isn't provided.

SuggestedRemedy

Delete "ICN is calculated from NEXT" On page 227 line 24 change "The total integrated crosstalk noise for the mated" to "The near end crosstalk noise for the mated"

Consider changing the title of this section and the titles of tables 110B-1 and 110B-2, and the PICS TF6 feature by inserting "near end" between "integrated" and "crosstalk"

Proposed Response *Response Status* **O**

Cl **110B** SC **110B.2.4** P **229** L **32** # 167
Dudek, Mike QLogic

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

The TF6 PICS for crosstalk is incorrectly pointing to the QSFP test fixture specifications which include FEXT and currently a different value for NEXT.

SuggestedRemedy

Change the PICS TF6 to refer to 11B.1.3.6 instead of 92.11.3.6

Proposed Response *Response Status* **O**

Cl **110C** SC **110C.3.1** P **231** L **29** # 168
Dudek, Mike QLogic

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

The usage of the cable is not illustrated in Figure 110C-1, and it's structure isn't explicit in the figure either.

SuggestedRemedy

Change "The structure and usage of this cable assembly are illustrated in Figure 110C–1" to "This cable assembly is illustrated in Figure 110C–1"

Make the equivalent changes in 110C.3.2 and 110C.3.3

Proposed Response *Response Status* **O**

Cl **110** SC **110.10.7** P **154** L **21** # 169
Dudek, Mike QLogic

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

It has been shown in sun_061015_25GE_adhoc that with the existing COM parameters and coding the mean time to false packet acceptance in the no-fec case can be shorter than the age of the universe. It has also been shown that changing bmax to 0.35 will solve this issue and will not significantly alter the worst case COM (test case 2)

SuggestedRemedy

Change bmax to 0.35 in the CA-N column of table 110-10
Also change bmax to 0.35 in table 110-7.

Proposed Response *Response Status* **O**

Cl **111** SC **111.8.3.1** P **173** L **46** # 170
Dudek, Mike QLogic

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

It has been shown in sun_061015_25GE_adhoc that with the existing COM parameters and coding the mean time to false packet acceptance in the no-fec case can be shorter than the age of the universe. It has also been shown that changing bmax to 0.35 will solve this issue and will not significantly alter the worst case COM (test case 2).

SuggestedRemedy

change bmax to 0.35 in table 111-6.

Proposed Response *Response Status* **O**

Cl **045** SC **45.2.7.13** P **49** L **7** # 171
Jones, Peter Cisco Systems

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

In "Table 45–210—EEE advertisement register (Register 7.60) bit definitions", two bits are being used to signal EEE for KR/CR and KR-S/CR-S.

SuggestedRemedy

Combine the two bits(7.60:15 and 7.60:14), only use one bit to advertise deep sleep for both KR/CR and KR-S/CR-S

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.7.14** *P* **50** *L* **7** # 172

Jones, Peter — Cisco Systems

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

In "Table 45–211—EEE link partner ability (Register 7.61) bit definitions", two bits are being used to signal EEE for KR/CR and KR-S/CR-S.

SuggestedRemedy

Combine the two bits(7.60:15 and 7.60:14), only use one bit to advertise deep sleep for both KR/CR and KR-S/CR-S.

Proposed Response *Response Status* **O**

Cl **110** *SC* **110.10** *P* **152** *L* **29** # 173

Jones, Peter — Cisco Systems

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

As per goergen_3by_01_0715.pdf, goergen_3by_02a_0715.pdf, tracy_3by_01_0715.pdf and andrewartha_3by_adhoc_081215-v2.pdf, there is significant concensus to support an option for 3M no-FEC to address a number of Top Of Rack applications

SuggestedRemedy

Evaluate proposals and select one.

Proposed Response *Response Status* **O**

Cl **110** *SC* **110.10.7** *P* **154** *L* **5** # 174

Hidaka, Yasuo — Fujitsu Lab. of Americ

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

This is a follow-up comment to my prior comment regarding to Low-Frequency CTLE of COM parameter.

I revised my suggested remedy.

SuggestedRemedy

Add the following changes to COM parameter values in Table 110-10:

Continuous time filter, DC gain gDC
Minimum value -12 dB
Maximum value 0 dB
Step size 1 dB

Continuous time filter, zero frequency
fz fb / 15 GHz

Continuous time filter, pole frequencies
fp1 fb / 15 GHz
fp2 fb

Proposed Response *Response Status* **O**

Cl **110** *SC* **10** *P* **152** *L* **24** # 175

Amrik Bains
Cisco Systems, Inc.

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

The current solution does not support 3m with no fec. The 2m no fec solution set is not long
enough for top of rack applications as demonstrated in presentations by goergen and andrewartha. The 3m solution only supports single rack switching applications. The 5m solution uses RS FEC with a penalty of almost 400ns.

SuggestedRemedy

Suggest possible remedies.

remove the 2m solution; make the 3m solution KR FEC optional.
Modify the following:
Table 110-10 Av- 0.43V / Afe- 0.43V / Ane- 0.63V [Afe cannot exceed Av since they are coming from the same
source on the cable]
Table 110-7 Com change for nofec from 3dB to 2.70
SNDR change to 28.4dB
CTLE from 12dB to 16dB

Proposed Response *Response Status* **O**

Cl **110** *SC* **10** *P* **152** *L* **24** # 176

Gary Nicholl
Cisco Systems, Inc.

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

The current solution does not support 3m with no fec. The 2m no fec solution set is not long
enough for top of rack applications as demonstrated in presentations by goergen and andrewartha. The 3m solution only supports single rack switching applications. The 5m solution uses RS FEC with a penalty of almost 400ns.

SuggestedRemedy

Suggest two possible remedies.

One:
remove the 2m solution; make the 3m solution KR FEC optional.
Modify the following:
Table 110-10 Av- 0.43V / Afe- 0.43V / Ane- 0.63V [Afe cannot exceed Av since they are coming from the same
source on the cable]
Table 110-7 Com change for nofec from 3dB to 2.70
SNDR change to 28.4dB
CTLE from 12dB to 16dB

Two
Clause 110.10 line 25 thru line 33
Change the 3m KR FEC solution to 4m KR FEC
Change the 2m no FEC solution to 3m no FEC
Table 110-9 modify the loss table to 22.48 / 18.?? / 15.48 - (RS / KR / noFEC)
Modify the following:
Table 110-10 Av- 0.43V / Afe- 0.43V / Ane- 0.63V [Afe cannot exceed Av since they are coming from the same
source on the cable]
Table 110-7 Com change for nofec from 3dB to 2.70
SNDR change to 28.4dB
CTLE from 12dB to 16dB

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.5.1.1.2** *P* **29** *L* **17** # 177

Zimmerman, George CME Consulting, Inc.

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

"shielded copper balanced cabling" is usually "shielded balanced copper cabling" (see 40GBASE-CR4 for example).
Additionally, this description "shielded balanced copper cabling" is nowhere in clause 110 which defines the PMDs.

SuggestedRemedy

Replace "shielded copper balanced cabling" with "shielded balanced copper cabling" (2 instances, lines 17 & 20)

Proposed Response *Response Status* **O**

Cl **078** *SC* **78.1.3.3.1** *P* **73** *L* **37** # 178

Zimmerman, George CME Consulting, Inc.

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

"For PHYs with an operating speed of 25 Gb/s or greater that implement the optional EEE capability, two modes of LPI operation may be supported: deep sleep and fast wake."
802.3bq is also modifying this text, exempting BASE-T PHYs, to read "Except for BASE-T PHYs, for PHYs...".

[Same issue on line 46]

SuggestedRemedy

Align text with 802.3bq draft 2.2, adding editor's note.

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.2.1.5** *P* **28** *L* **48** # 179

Zimmerman, George CME Consulting, Inc.

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

"For operation at 10 Gb/s (insert 'or greater speed') (strikeout '40 Gb/s, and 100 Gb/s')" presumes choices made at other speeds under development or yet to be balloted (400Gb/s, possible 50 Gb/s, 200 Gb/s, etc.). adding in 25Gb/s speed only remains within the scope of this project.
(note that edits on line 52 to genericize the media independent interface are still OK if the change below is made)

[also: page 30 line 30, page 35, line 39,]

SuggestedRemedy

Delete inserted 'or greater speed', reverse strikeout, and add in 25 Gb/s speed to read as a specific list:
"For operation at 10 Gb/s, (insert 25 Gb/s), 40 Gb/s, and 100 Gb/s, ..."

Editor to search for similar instances of "or greater speed" and correct the same.

Proposed Response *Response Status* **O**

Cl **105** *SC* **105.1.3** *P* **80** *L* **40** # 180

Zimmerman, George CME Consulting, Inc.

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

Table 105-1 doesn't call out PCS and PMA clauses in PHY descriptions, only the PMD clauses. descriptions should reference the PCS 107 and PMA 109 clauses on each BASE-R PHY type, not just the PMD, for example:
"25 Gb/s PHY using 25GBASE-R encoding over one lane of twinaxial copper cable (see 1.4.407 and Clause 110)." should read:
"25 Gb/s PHY using 25GBASE-R (Clause 107 PCS and Clause 109 PMA) encoding over one lane of twinaxial copper cable (see 1.4.407 and Clause 110)."

SuggestedRemedy

See comment, modify all entries in Table as shown.

Proposed Response *Response Status* **O**

Cl **000** *SC* **0** *P* **24** *L* **46** # 181

Zimmerman, George — CME Consulting, Inc.

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

802.3bq already modifies some of the same text and precedes this document in WG ballot. needs to be added to the identified standards in progress to avoid confusion.

SuggestedRemedy

Add IEEE 802.3bq to IEEE 802.3bn and IEEE 802.3 in the note.

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.5.1.1.2** *P* **29** *L* **17** # 182

Zimmerman, George — CME Consulting, Inc.

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

The PMA for 25GBASE-R is not "unspecified", but is the 25GBASE-R PMA in clause 109. 25GBASE-CR, 25GBASE-CR-S, 25GBASE-KR, and 25GBASE-KR-S are not "PMA/PMD" but are "PMD" per their describing clauses (110, 111, 112), paired with a 25GBASE-R PMA (Clause 109). Text in lines 17 through 25 incorrectly identifies these as "PMA/PMD" types. (note line 26, 25GBASE-SR is written correctly)

(there is also a potential naming problem that both the PCS and the PMA are called "25GBASE-R")

SuggestedRemedy

Change "unspecified PMA" to be "25GBASE-R PMA specified in clause 109 with undefined PMD" in line 16
Change "PMA/PMD" to read "PCS/PMA" and insert "PMD" before "as specified" in lines 17, 19, 21, 23, and 25 to make them read as, for example:
"25GBASE-R PCS/PMA over shielded copper balanced cable PMD as specified in Clause 110" (similar to entry for 25GBASE-SR)

Proposed Response *Response Status* **O**

Cl **109B** *SC* **109B.1** *P* **211** *L* **4** # 183

Maki, Jeffery — Juniper Networks

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

No mension is made in the text that an adaptive receiver can be used. Note that Clause 109A.1 does include the use of adaptive: "The adaptive or adjustable receiver performs the remainder of the equalization."

SuggestedRemedy

Add text: "The adaptive or adjustable receiver performs the equalization."

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.94** *P* **41** *L* **31** # 184

Anslow, Pete — Ciena

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

Only the first sentence of 45.2.1.94 is being changed, so the editing instruction should say "in the first sentence of 45.2.1.94".
Only the title of Table 45-74 is being changed, so the editing instruction should say "and the title of Table 45-74".
Same issues for 45.2.1.95.

SuggestedRemedy

Change "in 45.2.1.94 and Table 45-74 as follows:" to "in the first sentence of 45.2.1.94 and the title of Table 45-74 as follows:"

For the editing instruction for 45.2.1.95 change "in 45.2.1.95 and Table 45–75 as follows:" to "in the first sentence of 45.2.1.95 and the title of Table 45-75 as follows:"

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.94** *P* **41** *L* **36** # 185

Anslow, Pete — Ciena

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

There is no need for a capital S in "bits in the Single-lane PHY"

SuggestedRemedy

Change "bits in the Single-lane PHY" to "bits in the single-lane PHY"

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.94** *P* **41** *L* **37** # 186

Anslow, Pete Ciena

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

The first sentence of 45.2.1.94 is shown as ending with an italic colon rather than the "." that it actually ends with.
Same issue in 45.2.1.95

SuggestedRemedy

Replace the italic colon with "." at the end of the first sentence of 45.2.1.94 and 45.2.1.95

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.94** *P* **41** *L* **40** # 187

Anslow, Pete Ciena

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

The title of Table 45-74 in the base standard is: "10GBASE-R FEC corrected blocks counter register bit definitions". However, the word "register" is not there in the draft.
Same issue in Table 45-75.

SuggestedRemedy

insert the word "register" in normal font in the titles of Table 45-74 and Table 45-75.

Proposed Response *Response Status* **O**

Cl **108** *SC* **108.5.4.1** *P* **113** *L* **17** # 188

Anslow, Pete Ciena

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

"is comprised of" is considered poor English and has been replaced with "is composed of" in the frontmatter.

SuggestedRemedy

Change "is comprised of" to "is composed of"

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.96.1** *P* **42** *L* **44** # 189

Anslow, Pete Ciena

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

The modified text reads: "the optional CAUI-4 C2M and 25GAUI C2M interface defined in Annex 83E (see 83E.3.1.6).", but the 25GAUI C2M interface is not defined in Annex 83E.

SuggestedRemedy

Change: "the optional CAUI-4 C2M and 25GAUI C2M interface defined in Annex 83E (see 83E.3.1.6)." to "the optional CAUI-4 C2M and 25GAUI C2M interface defined in Annex 83E and Annex 109B, respectively (see 83E.3.1.6)."

Proposed Response *Response Status* **O**

Cl **000** *SC* **0** *P* *L* # 190

Anslow, Pete Ciena

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

The current draft contains two different variants of 25 Gb/s Ethernet where idle insertion/deletion has to be performed in order to convert from one type to the other (at the OTN will have to do) due to one containing CWMs and the other not.
While the exact requirements of the objective: "Provide appropriate support for OTN" are somewhat vague, I do not consider that this has been met.

SuggestedRemedy

Add CWMs to all 25 Gb/s Ethernet PHYs as per the proposal in http://www.ieee802.org/3/by/public/Sep15/trowbridge_3by_01_0915.pdf

Proposed Response *Response Status* **O**

Cl **107** *SC* **107.2** *P* **98** *L* **54** # 191

Ran, Adee Intel

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

A PHY operating in no-FEC mode can have unexpected bad performance and higher than desired BER. The BER of an active no-FEC link is not readily observable, so this situation may be difficult to detect and handle.

When a PHY operates in either BASE-R FEC or RS-FEC mode, performance of an active link can be reliably monitored by periodically reading information available within the PHY - either directly using the uncorrectable codeword counters, or indirectly reading the corrected block/symbol error counters, and estimating the underlying PMD BER.

In contrast, in no-FEC mode, the only error information available in the PHY is the PCS errored block counter (49.2.14.2). This counter advances only for errors that occur on control blocks (corrupted start or end of frame or IPG), and does not advance when errors occur in data blocks (these errors are expected to be detected in the MAC by corrupted CRC).

Therefore, in no-FEC mode, the BER cannot be calculated from PHY information without knowing the link utilization level (relative portion of data blocks out of the total received blocks). Similarly, it cannot be precisely calculated by counting the MAC CRC error counters, since these counters count frames and the frame lengths are missing from the calculation. Also, the MAC error counting functionality or even the MAC itself may not exist.

In order to enable more accurate performance estimation, a counter of PCS control blocks is required. Given such a counter, the PCS block error ratio can be calculated simply by reading and dividing the values of the errored block counter and the control block counter.

Such a counter should be wide enough to enable infrequent monitoring without clipping. At 25 Gb/s, a 48-bit counter of PCS blocks can count for more than 8 days; its least significant 16-bit part would wrap around in less than 1 second, so reading obly its most significant 32 bits provides sufficient information.

Implemenation of this counter can be optional.

SuggestedRemedy

Add a counter definition (in a new subclause as necessary) with definition:

control_block_count - 48-bit counter. When the receiver is in normal mode, control_block_count counts once for each time either RX_C or RX_T states are entered. Implementation of this counter is optional.

Insert new subclause 45.2.3.51, and define two new MDIO registers 3.1809, 3.1810 (or other addresses) for accessing the most significant 32 bits of the counter (multi-word, self-clear).

Proposed Response *Response Status* **O**

Cl **073** *SC* **73.3** *P* **55** *L* **50** # 192

Ran, Adee Intel

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

The base document includes the following requirement, which may cause incorrect AN functionality with break-out cables or when multiple single-lanes are desired by the partner:

"When the MDI supports multiple lanes, then lane 0 of the MDI shall be used for Auto-Negotiation and for connection of any single-lane PHYs (e.g., 1000BASE-KX or 10GBASE-KR)."

With a break-out cable, and in some cases with QSFP-QSFP too, four separate links should be created. If AN is not programmed specifically to create this configuration, AN would only be used (transmitted and received) in lane 0, and other lanes would have to be forced to the desired mode, which defeats the purpose of AN. Requiring AN to be re-programmed according to the detected cable type also defeats the purpose of AN, and furthermore, this won't help for the case of creating four single-lane links over a quad-lane cable.

A simple solution would be to allow AN to look for incoming AN communication on every lane that can create a single-lane link. when AN is detected on a lane other than lane 0, this could create a single-lane link using that lane. behavior following this event can ensure that multiple single-lane links are created, without a need to re-program the AN registers.

SuggestedRemedy

The sentence quoted should be changed. A detailed presentation will be supplied.

Proposed Response *Response Status* **O**

Cl **073** *SC* **73.6.5.1** *P* **57** *L* **26** # 193

Ran, Adee Intel

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

The 25G FEC operation as specified here and in clauses 110, 111 is symmetric. This forces the link to have FEC in both directions when one PHY requests FEC even if the other PHY does not.

There are cases where this symmetry is a burden:
- Some applications may prefer low BER in one direction and low latency in another direction.
- It is possible that one of the PHYs has a better receiver or a better channel quality for its receiver, and can operate without FEC, but is forced to use FEC because of the other PHY which has a minimally complant receiver or worse channel quality.

In these cases the symmetry requirement doubles the round-trip latency and possibly imposes a larger performance impact than using FEC only in the direction where it's needed.

Technically there is no problem in having a link with one direction operating with one FEC mode, and the other direction operating in another, since the TX and TX data paths are independent. Asymmrtrical FEC can be accomplished with the existing AN FEC request bits, and the existing FEC mode definitions in clauses 110 and 111, by separating the FEC modes to transmit and receive directions.

SuggestedRemedy

Detailed presentation to be supplied.

Proposed Response *Response Status* **O**

Cl **073** *SC* **73.6.4** *P* **56** *L* **52** # 194

Ran, Adee Intel

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

We should allow advertisement of 10GBASE-KR along with copper cable assemblies such as 40GBASE-CR4 and 100GBASE-CR4.

Although 802.3 has no specification of a 10 Gb/s PHY for copper cable assembly, in practice, 10GBASE-KR can be advertised and can operate over this medium as well.

This project has removed the distinction between 25G for backplane and for copper cable asssemblies in AN. As a result, a 4-lane device that supports 25G and 10G on each lane could practically advertise 100GBASE-CR4 (A8), 40GBASE-CR4 (A4), 25GBASE-CR/KR (A10) and 10GBASE-KR (A2) so that it could link with various partners over various cable types, enabling wider interoperability and applicability (e.g. 4 to 1 breakout at either 25G and 10G on each lane).

However the current text in 73.6.4 specfically prohibits this kind of adertisement, since 10GBASE-KR is specified for backplanes while 100GBASE-CR4 and 40GBASE-CR4 are specified for copper cable assemblies.

There seems to be no reason for this limitation. Removing it as suggested below would enable using 10GBASE-KR over copper cable assmblies with full AN support, and partly rectify the unfortunate lack of an 802.3 standard for 10G Ethernet over this medium.

A minimal change that would have the desired effect is to limit the restriction to apply only for backplane and CCA PHYs of the same data rate. If that is done, then 10G PHYs and below, which have no copper cable assembly counterparts, should not be listed.

The two lists of PHYs are comprehensive and should not be preceded by "e.g.".

SuggestedRemedy

Change "with a PHY for operation over a copper cable assembly"
To "with a PHY for operation over a copper cable assembly of the same data rate".

Delete "e.g., 1000BASE-KX, 10GBASE-KX4, 10GBASE-KR" from the first parentheses.

Delete "e.g., " from the list of copper cable assembly PHYs.

Alternatively, completely delete the third paragraph.

Proposed Response *Response Status* **O**

Cl **110** *SC* **110.1** *P* **139** *L* **42** # 195

Dawe, Piers — Mellanox

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

Calling the cable types just CA-N, CA-S and CA-L will cause trouble when we want to have named cable types at another rate e.g. 50G, and will probably cause confusion anyway: which CA type do I use with a 40GBASE-CR4 port??

SuggestedRemedy

Indicate in the name that these are 25GE cable types, e.g. 25GCA-N, 25GCA-S, 25GCA-L.

Proposed Response *Response Status* **O**

Cl **110** *SC* **110.1** *P* **139** *L* **49** # 196

Dawe, Piers — Mellanox

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

There is a mapping between three cable types, given in 110.10:
CA-N, CA-S and CA-L
and three FEC modes:
no-FEC mode, BASE-R FEC mode, RS-FEC mode
which is obscured by the very different names. Harder to understand, more to learn and remember.

SuggestedRemedy

Would it help to call the FEC modes:
FEC mode 25G-N, FEC mode 25G-S, FEC mode 25G-L?

Proposed Response *Response Status* **O**

Cl **109B** *SC* **109B.3.2.1.1** *P* **212** *L* **17** # 197

Dawe, Piers — Mellanox

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

This and the next subclause would be easier to follow if re-ordered.

SuggestedRemedy

Move the third paragraphs before the second in each case. Then, the three paragraphs could be combined into two or one.

Proposed Response *Response Status* **O**

Cl **110** *SC* **110.1** *P* **139** *L* **42** # 198

Dawe, Piers — Mellanox

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

It's hard to remember how CA-N compares with the others. Is it normal? nominal? It can't be the shortest, because another one is called S, right?

SuggestedRemedy

Consider changing N to XS (like OIF names).

Proposed Response *Response Status* **O**

Cl **110** *SC* **110** *P* **139** *L* **2** # 199

Dawe, Piers — Mellanox

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

10GBASE-LRM
40GBASE-CR4
25GBASE-CR-S
Why the hyphen before the S?

SuggestedRemedy

Consider changing to 25GBASE-CRS.

Proposed Response *Response Status* **O**

Cl **110** *SC* **110.1** *P* **139** *L* **43** # 200

Dawe, Piers — Mellanox

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

Two PHY types, three cable types, and three FEC modes, as well as singles/quads/splitters - this needs clear exposition. Table 110C-1, Host and cable assembly combinations, does a good job for cables, but it's right at the back of the document, in an annex that's only informative. Also, the overview says "with a single lane" but the clause includes 4-lane (QSFP) specifications.

SuggestedRemedy

Add a table in the style of Table 105-2, Nomenclature and clause correlation, 25GBASE-R, but addressing just copper PHY types, cable types, FEC modes and, if it fits in the table, 1/4/split options. At the end of the first paragraph, add e.g. "Specifications are provided for single and four-port host and cable form factors, including four-to-one cables."
(There may be a preferred term for four-to-one cables.)

Proposed Response *Response Status* **O**

Cl **110C** *SC* **110C.1** *P* **230** *L* **36** # 201

Dawe, Piers — Mellanox

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

Table 110C lists a "reach" for each cable type as if it were normative, but it isn't, so we need softer wording. In P802.3by, only this annex uses "reach": e.g. 110.10 says "cable length up to 5 m"

SuggestedRemedy

In the table, change "Reach" to "Example length" or "Indicative length".
Consider similar changes for "reach" in text above.

Proposed Response *Response Status* **O**

Cl **110** *SC* **110.8.4.2.1** *P* **149** *L* **44** # 202

Dawe, Piers — Mellanox

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

This shows an interference tolerance test for a one-lane scenario. I understand that it is intended to be equivalent to the test in 92.8.4.4.1 - this means that a dual mode 100GBASE-CR4/25GBASE-CR port would have to be tested in two different tests for the same purpose, which is a waste of money.

SuggestedRemedy

Decide which is the preferable method for testing 4-lane hosts: applying crosstalk to the other lanes/directions or adding noise to the victim. If the former, use it for 4-lane hosts in this clause. If the latter, change Clause 92 to make it the preferred method there. If we can't decide, allow both for both.

Proposed Response *Response Status* **O**

Cl **105** *SC* **105.3.3** *P* **82** *L* **2** # 203

D'Ambrosia, John — Dell

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

Text notes
An FEC sublayer is available for all 25GBASE-R PHYs. The FEC sublayer can be placed in between the
PCS and PMA sublayers or between two PMA sublayers.
The BASE-R FEC (see Clause 74) may be used by some 25GBASE-R PHYs.
The RS-FEC (see Clause 108) may be used by some 25GBASE-R PHYs.

This can be confusing.
Plus text does not reflect what is in Table 105-2.

SuggestedRemedy

Suggested rewording.
An FEC sublayer is available for all 25GBASE-R PHYs. The FEC sublayer can be placed in between the PCS and PMA sublayers or between two PMA sublayers. THere are two types of FEC that may be implemented, dependent upon the PHY being implemented. See Table 105-2.

The BASE-R FEC (see Clause 74) SHALL be used by some 25GBASE-R PHYs.
The RS-FEC (see Clause 108) SHALL be used by ALL 25GBASE-R PHYs.

Proposed Response *Response Status* **O**

Cl **110c** *SC* **110c.1** *P* **230** *L* **13** # 204

D'Ambrosia, John — Dell

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

Hyperscale data centers have driven the need for this proejct. and therefore, we need to address 3m no FEC.

SuggestedRemedy

Presentation to be submitted with relevant data.

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.3.2.1.2** *P* **28** *L* **10** # 205

Law, David HP

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

The IEEE P802.3bw amendment, which is likely to publish before this draft, is also modifying this subclause which should be noted in the editing instructions.

SuggestedRemedy

Suggest the editing instruction for 30.3.2.1.2 'aPhyType' and 30.3.2.1.3 'aPhyTypeList' be changed to read 'Insert the following new entry in "APPROPRIATE SYNTAX" (as modified by IEEE Std 802.3bw-201X) before the entry for 40GBASE-R:'.

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.5.1.1.2** *P* **29** *L* **11** # 206

Law, David HP

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

The IEEE P802.3bw amendment, which is likely to publish before this draft, is also modifying the "APPROPRIATE SYNTAX" section of this attribute which should be noted in the editing instructions.

SuggestedRemedy

Suggest the editing instruction for aMAUType "APPROPRIATE SYNTAX" section be changed to read 'Insert the following new entries in "APPROPRIATE SYNTAX" (as modified by IEEE Std 802.3bw-201X) before the entry for 40GBASE-R:'.

Proposed Response *Response Status* **O**

Cl **001** *SC* **1.4.64a** *P* **25** *L* **46** # 207

Law, David HP

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

Should this item be placee after 1.4.77 '10 Gigabit Sixteen-Bit Interface (XSBI)' rather than 1.4.64 '10/10G-EPON'.

SuggestedRemedy

Change subclause number 1.4.64a to read 1.4.77a and 1.4.64b to read 1.4.77b. Change 1.4.64c to read 1.4.64a and 1.4.64d to read 1.4.64b.

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.5.1.1.4** *P* **29** *L* **52** # 208

Law, David HP

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

The IEEE P802.3bw amendment, which is likely to publish before this draft, is also modifying the "BEHAVIOUR DEFINED AS" section of this attribute which should be noted in the editing instructions. In addition to avoid the potential misunderstanding that this change undoes the IEEE P802.3bw change, suggest that only the changed text of the "BEHAVIOUR DEFINED AS" section be included in the draft.

SuggestedRemedy

[1] Change the editing instructions to read 'Change the first sentence of the sixth paragraph in the "BEHAVIOUR DEFINED AS" section of 30.5.1.1.4 as follows:'
[2] Delete all the text shown for the 'BEHAVIOUR DEFINED AS' section with the exception of the first sentence of the sixth paragraph.

Proposed Response *Response Status* **O**

Cl **109** *SC* **109.2** *P* **128** *L* **31** # 209

Law, David HP

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

Being pernickety, since '25GAUI' is defined as '25 Gigabit Attachment Unit Interface' (see 1.4.64a) the text '... over a 25GAUI interface, clock and data ...' expands to '... over a 25 Gigabit Attachment Unit Interface interface, clock and data ...'.

SuggestedRemedy

Suggest that '... over a 25GAUI interface, clock and data ...' be changed to read '... over a 25GAUI, clock and data ...'.

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.7.13** *P* **49** *L* **13** # 210

Law, David HP

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

Typo.

SuggestedRemedy

Suggest that '7.60:15' and '7.60:14' should read '7.60.15' and '7.60.14'.

Proposed Response *Response Status* **O**

Cl **111** *SC* **111.5** *P* **169** *L* **12** # 211

Law, David HP

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

Register 1.1450 is called 'PMD training pattern lane 0' based on subclause 45.2.1.122 of IEEE P802.3 (IEEE 802.3bx) draft D3.2.

SuggestedRemedy

Suggest that 'PMD training pattern 0' should read 'PMD training pattern lane 0' for 'Polynomial identifier 0' and 'Seed 0' entries of Table 111-2.

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **7** *L* **17** # 212

Law, David HP

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

Now that the IEEE P802.3by balloting group has been established, please complete the list of officers and members of the IEEE 802.3 working group.

SuggestedRemedy

Please include the list of officers and members of the IEEE 802.3 working group.

Proposed Response *Response Status* **O**

[Editor changed Clause number form 99 to FM]

Cl **045** *SC* **45.2.1.94** *P* **41** *L* **34** # 213

Law, David HP

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

The editing instructions for this subclause be updated to be more similar to normal instructions, making it clear for example that only the first sentence of the first paragraph is shown. In addition the empty table should be deleted, and only the changed title shown.

SuggestedRemedy

Suggest that:

[1] The editing instructions be changed to read 'Change the subclause title, and the first sentences of 45.2.1.94, and the title of Table 45-74, as follows:'.
[2] Remove the blank table.
[3] Make similar changes to subclauses 45.2.1.95 and 45.2.1.96.

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.3.2.1.5** *P* **28** *L* **52** # 214

Law, David HP

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

Not sure why the references to the encoding for "Receive Error" in Table 46-4 and Table 81-3 is been removed by this draft.

SuggestedRemedy

Suggest that '... to indicate "Receive Error" on the media independent interface.' be changed to read '... to indicate "Receive Error" on the media independent interface (see Table 46-4 and Table 81-3).'

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.5.1.1.2** *P* **29** *L* **17** # 215

Law, David HP

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

I believe the idea behind this attribute is to report the enumeration '25GBASE-R' when the PMD type is unknown, for example when there is no pluggable module inserted, and then one of the other enumerations when a pluggable module inserted and the PDM type can be identified. Based on this the enumeration '25GBASE-SR' is described as '25GBASE-R PCS/PMA over multimode fiber PMD as specified in Clause 112'. Other enumerations however, such as '25GBASE-KR', are described as a '25GBASE-R PMA/PMD' over a media with the PMD Clause referenced. Suggest that these be reworded to match the enumeration '25GBASE-SR', which would also match existing enumeration such as '40GBASE-R', and its associated PMDs.

SuggestedRemedy

Change the enumeration '25GBASE-CR' to read '25GBASE-R PCS/PMA over shielded copper balanced cable PMD as specified in Clause 110'.
Change the enumeration '25GBASE-CR-S' to read '25GBASE-R PCS/PMA over shielded copper balanced cable PMD as specified in Clause 110 without support for RS-FEC'.
Change the enumeration '25GBASE-KR' to read '25GBASE-R PCS/PMA over an electrical backplane PMD as specified in Clause 111'.
Change the enumeration '25GBASE-KR-S' to read '25GBASE-R PCS/PMA over an electrical backplane PMD as specified in Clause 111 without support for RS-FEC'.

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.5.1.1.2** *P* **29** *L* **39** # 216

Law, David HP

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

To support the enumerations '25GBASE-CR', '25GBASE-CR-S', '25GBASE-KR' and '25GBASE-KR-S' when a Clause 45 MDIO interface is present, the new RS-FEC control register defined in subclause 45.2.1.101 needs to be accessed to determine if RS-FEC is enabled or not. Based on this a reference to subclause 45.2.1.101 'RS-FEC control register' should be added to the list of register.

SuggestedRemedy

Change the text '... the PMA/PMD control 1 register specified in 45.2.1.1, and the PCS control 1 register ...' to read '... the PMA/PMD control 1 register specified in 45.2.1.1, the 25G RS-FEC Enable bit in the RS-FEC control register, and the PCS control 1 register ...'.

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.5.1.1.4** *P* **30** *L* **30** # 217

Law, David HP

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

Since IEEE P802.3by uses the 10Gb/s RS (see subclause 106.1 'Overview') suggest it would be better to modify the 10Gb/s text to add 25Gb/s rather than the 40Gb/s and 100Gb/s text. As an aside, I think the reference to Figure 46-11 in the currently 40Gb/s and 100Gb/s text should be to Figure 81-9 since Clause 81 is the 'Reconciliation Sublayer (RS) and Media Independent Interface for 40 Gb/s and 100 Gb/s operation (XLGMII and CGMII)' and since subclause 81.3.4, which is also referenced, states 'The RS shall implement the link fault signaling state diagram (see Figure 81-9).'.

SuggestedRemedy

Suggest that:

[1] The change on line 30 is removed so the text reads 'For 40 Gb/s and 100 Gb/s the enumerations ...'.
[2] The text on line 42 is changed to read 'For 10 Gb/s the enumerations ...' to read 'For 10 Gb/s and 25 Gb/s the enumerations ...'.

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.3.14.1** *P* **47** *L* **33** # 218

Law, David HP

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

Subclause 45.2.3.14.1 'Latched block lock (3.33.15)' states that 'When read as a one, bit 3.33.15 indicates that the 10/40/100GBASE-R or the 10GBASE-T PCS has achieved block lock.'. Subclause 45.2.3.14.2 'Latched high BER (3.33.14)' states that 'When read as a one, bit 3.33.14 indicates that the 10/40/100GBASE-R or the 10GBASE-T PCS has detected a high BER.'. Subclause 45.2.3.14.3 'BER(3.33.13:8)' states that 'The BER counter is a six bit count as defined by the ber_count variable in 49.2.14.2 and 82.2.19.2.4 for 10/40/100GBASE-R ...'.

Since the 25GBASE-R PCS uses the 10GBASE-R PCS (see subclause 107.1.2) it would seem that these bits should also support 25GBASE-R, and hence the description of these bits updated to reflect this.

SuggestedRemedy

Suggest instances of the text '10/40/100GBASE-R' be changed to read '10/25/40/100GBASE-R' or simply 'BASE-R'.

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.3.13.1** *P* **41** *L* **34** # 219

Law, David HP

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

Subclause 45.2.3.13.1 'BASE-R and 10GBASE-T receive link status (3.32.12)' states that 'This bit is a reflection of the PCS_status variable defined in 49.2.14.1 for 10GBASE-R ...'. Subclause 45.2.3.13.4 'BASE-R and 10GBASE-T PCS high BER (3.32.1)' states that 'This bit is a direct reflection of the state of the hi_ber variable in the 64B/66B state diagram and is defined in 49.2.13.2.2 for 10GBASE-R'. Subclause 45.2.3.13.5 'BASE-R and 10GBASE-T PCS block lock (3.32.0)' states ' This bit is a direct reflection of the state of the block_lock variable in the 64B/66B state diagram and is defined in 49.2.13.2.2 for 10GBASE-R ...'. Subclause 45.2.3.14.4 'Errored blocks (3.33.7:0)' states 'The errored blocks counter is an eight bit count defined by the errored_block_count counter specified in 49.2.14.2 for 10GBASE-R ...'.

Since the 25GBASE-R PCS uses the 10GBASE-R PCS (see subclause 107.1.2) it would seem that these bits should also support 25GBASE-R, and hence the description of these bits updated to reflect this.

SuggestedRemedy

Suggest '... for 10GBASE-R ...' be change to read '... for 10GBASE-R and 25GBASE-R ...'.

Proposed Response *Response Status* **O**

Cl **111** *SC* **111.1** *P* **166** *L* **41** # 220

Law, David HP

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

Since this overview is for 25GBASE-KR and 25GBASE-KR-S shouldn't the FEC mode cross reference be to 111.6 rather than 110.6.

SuggestedRemedy

Suggest that '(see 110.6)' should read '(see 111.6)'.

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.7.13** *P* **49** *L* **9** # 221

Law, David HP

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

IEEE P802.3 (IEEE 802.3bx) draft D3.2 Table 45-210 'EEE advertisement register (Register 7.60) bit definitions' includes an additional column titled 'Clause reference; Next Page bit number' which is not shown in this draft.

SuggestedRemedy

Add the column titled 'Clause reference; Next Page bit number' to table 45-210. For bit 7.60.14 suggest the entry reads '73.7.7.1; U14', for bit 7.60.15 suggest the entry reads '73.7.7.1; U15'.

Proposed Response *Response Status* **O**

Cl **110** *SC* **110.7.4** *P* **145** *L* **20** # 222

Law, David HP

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

Suggest that for clarity it should be indicated in its first use that rx_mode discussed in this subclause is the rx_mode parameter of the PMD:IS_RX_MODE.request primitive.

SuggestedRemedy

Suggest that '... when rx_mode is first set to QUIET.' be changed to read '... when the rx_mode parameter of the PMD:IS_RX_MODE.request primitive is first set to QUIET.'.

Suggest that the same change be made to subclause 111.7.4 (page 171, line 12).

Proposed Response *Response Status* **O**

Cl **110** *SC* **110.7.2** *P* **144** *L* **51** # 223

Law, David HP

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

Suggest that for clarity it should be indicated in its first use that tx_mode discussed in this subclause is the rx_mode parameter of the PMD:IS_TX_MODE.request primitive.

SuggestedRemedy

Suggest that 'When tx_mode is set to ALERT ...' be changed to read 'When the tx_mode parameter of the PMD:IS_TX_MODE.request primitive is set to ALERT ...'.

Suggest that the same change be made to subclause 111.7.2 (page 170, line 43).

Proposed Response *Response Status* **O**

Cl **074** *SC* **74.1** *P* **61** *L* **21** # 224

Law, David HP

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

Subclause 74.1 'Overview' states that 'This clause specifies an optional Forward Error Correction (FEC) sublayer for 10GBASE-R and other BASE-R PHYs.' however the same subclause then states ' The 25GBASE-CR, 25GBASE-CR-S, 25GBASE-KR, and 25GBASE-KR-S PHYs described in Clause 110 and Clause 111 are required to implement the FEC sublayer ...'.

SuggestedRemedy

Suggest that '... an optional Forward Error Correction (FEC) ...' be changed to read '... a Forward Error Correction (FEC) ...' as the following paragraphs describe where the this subclause is optional or not. Suggest also that in Figure 74-1 (page 62, line 17) the text 'FEC (OPTIONAL)' be changed to read 'FEC' with a footnote attached that reads 'NOTE 1- OPTIONAL OR CONDITIONAL BASED ON PHY TYPE'.

Proposed Response *Response Status* **O**

Cl **111** *SC* **111.1** *P* **166** *L* **39** # 225

Law, David HP

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

Suggest that the 25GBASE-KR and 25GBASE-KR-S overview provide similar text to the third paragraph of the 25GBASE-CR and 25GBASE-CR-S overview (see 110.1), that is a summary of which channels 25GBASE-KR and 25GBASE-KR-S operate over, as well as a statement that a 25GBASE-KR PHY can interoperate with a 25GBASE-KR-S PHY. The latter is implied, but not stated, in the second paragraph of subclause 111.9 'Channel characteristics' since it discusses links that comprise of one 25GBASE-KR-S PHY.

SuggestedRemedy

Suggest that:

[1] A new subclause heading of 111.9.1 'Two 25GBASE-KR PHY channel' be added above the first paragraph of 111.9 (page 175, line 21).

[2] A new subclause heading of 111.9.2 '25GBASE-KR-S PHY channel' be added above the second paragraph of 111.9 (page 175, line 25).

[3] A new third paragraph be inserted in 111.1 'Overview' below the table (page 166, line 39) that reads 'A 25GBASE-KR PHY supports operation over a channel meeting the requirements of 111.9.1 or 111.9.2. A 25GBASE-KR-S PHY only supports operation over a channel meeting the requirements of 111.9.2. A 25GBASE-KR-S PHY interoperates with a 25GBASE-KR PHY.'.

[4] Change the text '... the requirements of 111.9.' to read '... the requirements of 111.9.1 or 111.9.2.' in subclause 111.1 (page 166, line 51).

[5] Change the subclause entry for PICS item CC1 (page 181, line 41) from 111.9 to 111.9.1.

[6] Change the subclause entry for PICS item CC2 (page 181, line 44) from 111.9 to 111.9.2.

Proposed Response *Response Status* **O**

Cl **073** *SC* **73.6.4** *P* **56** *L* **44** # 226

Law, David HP

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

The third paragraph of subclause 110.1 'Overview' states that 'A 25GBASE-CR-S PHY interoperates with a 25GBASE-CR PHY'. Further, subclause 111.9 'Channel characteristics' implies that a 25GBASE-KR PHY can interoperate with a 25GBASE-KR-S PHY since it discusses links that comprise of one 25GBASE-KR-S PHY. The changes to Table 73-4 'Technology Ability Field encoding' however defines separate bits for 25GBASE-KR-S or 25GBASE-CR-S (bit A9) and 25GBASE-KR or 25GBASE-CR (A10).

IEEE P802.3 (IEEE 802.3bx) draft D3.2 subclause 73.7.6 'Priority Resolution function' states that 'The single PHY enabled to connect to the MDI by Auto-Negotiation shall be the technology corresponding to the bit in the Technology Ability Field common to the local device and link partner that has the highest priority as defined in Table 73-5 (listed from highest priority to lowest priority).' and that 'In the event that there is no common technology, HCD shall have a value of "NULL", indicating that no PHY receives link_control=ENABLE and link_status[HCD]=FAIL.'

Based on above, if the local device is a 25GBASE-CR-S PHY, and its link partner is a 25GBASE-CR PHY, there will be no bit in the Technology Ability Field common to the local device and link partner, and as there is no common technology I don't believe the link will come up.

SuggestedRemedy

Either add text to subclause 73.7.6 'Priority Resolution function' to cover the cases of 25GBASE-KR/25GBASE-KR-S and 25GBASE-CR/25GBASE-CR-S interoperability. Alternatively, define a single bit for 25GBASE-KR-S, 25GBASE-CR-S, 25GBASE-KR and 25GBASE-CR since there is only one variable defined for all four in the subclause 73.10.1 'State diagram variables' changes (page 59, line 39).

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.5.1.1.15** *P* **31** *L* **7** # 227

Law, David HP

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

Subclause 110.6 'FEC mode' and 111.6 'FEC mode' both list three FEC modes, 'RS-FEC Mode', 'BASE-R FEC mode' and 'no-FEC mode' and then state 'Each FEC sublayer can be either enabled or disabled, according to AN resolution or management control.'. Based on this it would seem that the 'aFECAbility' attribute defined in subclause 30.5.1.1.15 and the 'aFECmode' attribute define in subclause 30.5.1.1.16 need to be updated.

SuggestedRemedy

[1] Suggest that the aFECAbility behaviour be updated to read:

A read-only value that indicates if the PHY supports an optional (see 65.2 and Clause 74) or mandatory (see Clause 74, 91 and 108) FEC sublayer for forward error correction.

[2] Suggest that the aFECmode enumerations be updated to read:

unknown initializing, true state not yet known
disabled FEC disabled
BASE-R enabled BASE-R FEC enabled
RS-FEC enabled RS-FEC enabled
enabled FEC enabled

[3] Suggest that the aFECmode behaviour be updated to read:

A read-write value that indicates the mode of operation of the FEC sublayer for forward error correction (see 65.2 and Clause 74, 91 and 108).

A GET operation returns the current mode of operation of the PHY. A SET operation changes the mode of operation of the PHY to the indicated value. The enumerations 'BASE-R enabled' and 'RS-FEC enabled' are only used for 25GBASE-CR, 25GBASE-CR-S, 25GBASE-KR and 25GBASE-KR-S PHYs where operation in the no-FEC mode maps to the enumerations 'disabled', operation in the BASE-R FEC mode maps to the enumerations 'BASE-R enabled', and operation in the RS-FEC mode maps to the enumerations 'RS-FEC enabled' (see 110.6 and 111.6).

When Clause 73 Auto-Negotiation is enabled for a 25GBASE-R PHY, a SET operation is not allowed and a GET operation maps to the variables FEC_enable in Clause 74 and FEC_enable in Clause 108. When Clause 73 Auto-Negotiation is enabled for a non-25GBASE-R PHY supporting Clause 74 FEC a SET operation is not allowed and a GET operation maps to the variable FEC_enable in Clause 74.

If a Clause 45 MDIO Interface is present, then this attribute maps to the FEC control register (see 45.2.8.3) for 1000BASE-PX, to the BASE-R FEC control register (see 45.2.1.93) and the 25G RS-FEC Enable bit in the RS-FEC control register (see 45.2.1.101) for 25GBASE-R, or the FEC enable bit in the BASE-R FEC control register (see 45.2.1.93).;

Proposed Response *Response Status* **O**

Cl **110C** *SC* **1** *P* **230** *L* **52** # 228

Donahue, Curtis UNH-IOL

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

"n" in "Auto-negotiation" should be capitalized.

SuggestedRemedy

Change "Auto-negotiation" to "Auto-Negotiation"

Proposed Response *Response Status* **O**

Cl **112** *SC* **10.2.1** *P* **192** *L* **52** # 229

Donahue, Curtis UNH-IOL

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

Should "3" be "three"? Style guide states numbers less than 11 should be spelt... or something like that.

SuggestedRemedy

See comment.

Proposed Response *Response Status* **O**

Cl **112** *SC* **5.1** *P* **186** *L* **6** # 230

Donahue, Curtis UNH-IOL

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

Clauses 110 and 111 have a "Link block diagram", but 112 has "PMD block diagram". Is this difference intentional?

SuggestedRemedy

Change "PMD block diagram" to "Link block diagram".

Proposed Response *Response Status* **O**

Cl **112** *SC* **5.4** *P* **187** *L* **11** # 231

Donahue, Curtis UNH-IOL

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

Clauses 110 and 111 have a "Global PMD signal detect function", but 112 has "PMD global signal detect function". Is this difference intentional?

SuggestedRemedy

Change "PMD global signal detect function" to "Global PMD signal detect function".

Proposed Response *Response Status* **O**

Cl **112** *SC* **5.2** *P* **186** *L* **49** # 232

Donahue, Curtis UNH-IOL

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

Clauses 110 and 111 have a "PMD Transmit function", but 112 has "PMD transmit function".

SuggestedRemedy

Make consistent throughtout draft. Either capitalize the "t" or make "T" lowercase.

Proposed Response *Response Status* **O**

Cl **000** *SC* **0** *P* *L* # 233

Donahue, Curtis UNH-IOL

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

There are only two instances (that I found) in text (not including subclause title or in PICS) of "PMD Transmit function" (note the captial "T").

112.5, pg 185, ln 50
112.5.2, pg 186, ln 51

Same goes for "PMD Receive function"

112.5, pg 185, ln 50
112.5.3, pg 187, ln 6

All other instances are lowercase.

SuggestedRemedy

Make consistent throughtout draft. Either capitalize the "t"/"r" or make "T"/"R" lowercase.

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.3.2.1.5** *P* **29** *L* **1** # 234

Geoff Thompson GraCaSI S.A.

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

This line discusses "collisions" unconditionally whereas collisions are only present in half-duplex mode.

SuggestedRemedy

CHANGE THE TEXT THAT READS: "At all speeds this counter shall be incremented only once per valid CarrierEvent and if a collision is present this counter shall not increment.;"
TO READ:"At all speeds this counter shall be incremented only once per valid CarrierEvent and if a collision is present in half-duplex mode, this counter shall not increment.;"

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.6.1.1.5** *P* **32** *L* **22** # 235

Geoff Thompson GraCaSI S.A.

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

In this clause the coding/appearance of the reference links is not consistent. Not all of them are shown in green.

SuggestedRemedy

Modify to be in accordance with 802.3 practice for drafts.

Proposed Response *Response Status* **O**

Cl **112** *SC* **112.9** *P* **191** *L* **34** # 236

Geoff Thompson GraCaSI S.A.

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

The term "channel" used to specify the media is an undefined term within the 802.3 standard.

SuggestedRemedy

Please rewrite using the term "link segment" which is precisely defined within 802.3 for precisely this use. (also all other uses within the draft)

Proposed Response *Response Status* **O**

Cl **112** *SC* **112.10.3** *P* **193** *L* **5** # 237

Geoff Thompson GraCaSI S.A.

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

This sub-clause purports to define the MDI but does not do that. It defines the MDI device or MDI connector but not the INTERFACE. It is the interface, not the interface connector which is the MDI.

SuggestedRemedy

Change either the title of the sub-clause or the contents so that the title and contents match.

Proposed Response *Response Status* **O**

Cl **110** *SC* **110.10.7** *P* **154** *L* **9** # 238

Omer Sella Mellanox

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

This comment refers to table 110-10.
While there is no conflict here, some of the parameters in table 110-10 are the same as in Table 93-8.
It may be confusing for a reader trying to find a change in these parameters when there is none.
Only the “Alien far-end aggressor”, “Near-end aggressor:, “Normalized DFE coefficient …” and “Target
detector error ratio” are different.

SuggestedRemedy

Leave only the differences from table 93-8, delete the rest.
We may still want to leave in remark ‘a’ just below the table, maybe incorporate it into the body of the
text.

Proposed Response *Response Status* **O**

Cl **109B** *SC* **109B.3.2.1.1** *P* **212** *L* **13** # 239

Omer Sella Mellanox

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

Both measurement types A and B rely on definition and explanations listed on: “83E.4.2 Eye width and
eye …”, but there is no reference to that section.
While it is true that you could find the origin of these if you travel through pointers, but that’s quite
clumsy.

SuggestedRemedy

Prior to both methods, add a reference to 83.E.4.2 and preferably some words, for example: “Measurement methods A and B rely on definitions and explanations given in 83E.4.2. The reader is
advised to consult 83E.4.2 for more details.”

Proposed Response *Response Status* **O**

Cl **110** *SC* **110.8.4.2** *P* **147** *L* **37** # 240

Omer Sella Mellanox

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

The receiver test does not seem to address the QSFP form factor case (or at least separately from
SFP).
Figure 110-3 depicts the setup for what seems to be only the SFP-SFP case, but I don’t see in either
words or figures a test setup for the QSFP-QSFP case.

SuggestedRemedy

I think it should at least say in words that a host with a QSFP port should be tested as stated in
100GBASE-CR-4 (clause 92.8.4.4 and the test setup at 92.8.4.4.1).

Proposed Response *Response Status* **O**

Cl **110** *SC* **110.10.7** *P* **154** *L* **2** # 241

Hidaka, Yasuo — Fujitsu Lab. of Americ

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

The criteria of COM value to be 3dB reserves too high margin.

Simulation result indicates the following:
When COM is 3dB with DER0=1E-12, BER is < 1E-66.
When COM is 3dB with DER0=1E-6, BER is < 1E-18.
When COM is 3dB with DER0=1E-5, BER is < 1E-13.
When COM is 3dB with DER0=3E-4, BER is < 1E-8.

We should not reserve so high margin for COM.

SuggestedRemedy

Change the COM criteria for the channel as "greater than or equal to 1dB".

Proposed Response *Response Status* **O**

This comment was received after the close of ballot.

Cl **109** *SC* **109.4.5** *P* **133** *L* **14** # 242

Butter, Adrian — IBM

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

In 109.4.5 Energy Efficient Ethernet for 25GAUI, the first sentence states: "When the optional Energy Efficient Ethernet (EEE) deep sleep capability is supported and the PMA service interface is physically instantiated as 25GAUI, the additional functions listed in this subclause are required."

It is noted that since the "additional functions" do not directly appear in subclause 109.4.5, the current wording lacks clarity.

SuggestedRemedy

Update the sentence to directly reference these additional functions:

"When the optional Energy Efficient Ethernet (EEE) deep sleep capability is supported and the PMA service interface is physically instantiated as 25GAUI, the additional functions listed in 83.5.11 are required."

Proposed Response *Response Status* **O**

Cl **107** *SC* **107.2.3** *P* **99** *L* **49** # 243

Butter, Adrian — IBM

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

According to Clause 107.2, the scope of test pattern support includes those specified in Clause 49 (for generation and checking), plus scrambled idle (for generation only). In 107.2.3, the following sentence appears:
"The PCS shall have the ability to generate a scrambled idle test pattern."

To reinforce inclusion of the generated test patterns specified in Clause 49, it is suggested to broaden the scope of the current statement in Clause 107.2.3.

SuggestedRemedy

The following editorial update is suggested:
"In addition to those patterns specified in 49.2.8, the PCS shall have the ability to generate a scrambled idle test pattern."

Proposed Response *Response Status* **O**

Cl **107** *SC* **New** *P* **100** *L* **34** # 244

Butter, Adrian — IBM

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

According to Clause 107.2, the scope of test pattern support includes those specified in Clause 49 (for generation and checking), plus scrambled idle (for generation only). To reinforce inclusion of the checked test patterns specified in Clause 49, it is suggested to include a test patern checking subclause.

SuggestedRemedy

Add the following subclause and associated text:

"107.2.4 Test-pattern checker

The PCS shall provide test pattern checking abilities in accordance with 49.2.12."

Proposed Response *Response Status* **O**

Cl **078** *SC* **78.2** *P* **75** *L* **3741** # 245

Butter, Adrian IBM

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

For EEE mode, in Table 78-2, while the Tq and Tr timing parameters match the values for 10GBASE-KR (listed on lines 34 to 35), the Ts timing parameter does not currently match the values for 10GBASE-KR. Instead, Ts matches the 40BASE and 100GBASE values. Furthermore, the Table 78-2 Ts value does not match that contained in Section 107.3, p. 100, Table 107-1 for the Tsl (Tx side Local Sleep Time parameter).

SuggestedRemedy

To resolve both discrepancies, the Table 78-2 Ts value must be changed from 0.9-1.1 us to 4.9-5.1 us (to match the 10GBASE-KR values).

Proposed Response *Response Status* **O**

Cl **110c** *SC* **110c.1** *P* **230** *L* **35** # 246

Mellitz, Richard Intel Corporation

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

Table 110c-1 uses the term "reach". The description in the lines 12 through 30 are clear. The term reach in the table 100c-1 could be construed in a number of different ways. Clarity the term reach.

SuggestedRemedy

Replace the term "Reach" with "Potential reach up to at least"

Proposed Response *Response Status* **W**

This comment was received after the close of ballot.