Cl **FM** *SC* **FM** *P* **15** *L* **2** # 69

Hidaka, Yasuo — Fujitsu Lab of America

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

In the table of contents, there is no space between clause number and clause title for 45.2.14.b1 through 45.2.1.14b1.6.

SuggestedRemedy

Increase the space after clause number in the format of table of contents.

Proposed Response *Response Status* **O**

Cl **000** *SC* **0** *P* *L* # 163

Anslow, Pete — Ciena

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

Precoding for 50GBASE-CR, 50GBASE-KR, 100GBASE-CR2, 100GBASE-KR2, 200GBASE-CR4, and 200GBASE-KR4 PHYs is enabled as described in 136.8.12.7.5. However, 50G and 100G optical PHYs using a PAM4 C2C AUI also require precoding to be enabled on the AUI part of the link when long bursts are present or the FLR requirements will not be met.

SuggestedRemedy

Add the capability to enable precoding and its removal in the PMAs on either side of 50G and 100G C2C AUIs when they use PAM4 encoding when they are used with optical PMDs.

Proposed Response *Response Status* **O**

Cl **000** *SC* **0** *P* *L* # 164

Anslow, Pete — Ciena

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

The BER requirements for all of the PMD clauses need tweaking.
See anslow_102616_3cd_01_adhoc for discussion.

SuggestedRemedy

Implement the proposals in:
http://www.ieee802.org/3/cd/public/adhoc/archive/anslow_102616_3cd_01_adhoc.pdf
with the following exceptions:
Slide 9: change “200GBASE-CR” to “200GBASE-CR4” in the second paragraph
Slide 10: change “200GBASE-KR” to “200GBASE-KR4” in the second paragraph

Proposed Response *Response Status* **O**

Cl **000** *SC* **0** *P* **0** *L* **0** # 17

Ran, Adee — Intel

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

Many comments against 802.3bs D2.1 may be relevant for 802.3cd too (if accepted).

After comment resolution of 802.3bs D2.1 we may want to apply some of the changes in D1.1 too.

SuggestedRemedy

Pending comment resolution of 802.3bs D2.1, a detailed list will be prepared.

Proposed Response *Response Status* **O**

Cl **000** *SC* **0** *P* **0** *L* **0** # 16

Ran, Adee — Intel

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

Several parts of D1.0 are based on text from 802.3bs D2.0. Changes in 802.3bs D2.1 should be applied.

SuggestedRemedy

A detailed list will be prepared for comment resolution.

Proposed Response *Response Status* **O**

Cl **000** *SC* **0** *P* **293** *L* **1** # 71

Hidaka, Yasuo — Fujitsu Lab of America

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

For all Annexes, the title texts of the top-level bookmarks in the PDF file include only the clause number and do not include the title of the clause. It is not convenient, because we have to expand the bookmark to see the title of the annex.

SuggestedRemedy

Include the title text in the top-level of the bookmark. For example, "Annex 135A (informative) 50Gb/s PMA sublayer partitioning examples", not only "Annex 135A". Apply the change to all the Annexes.

Proposed Response *Response Status* **O**

Cl **001** *SC* **1.1.3.2** *P* **34** *L* **17** # 124

Ghiasi, Ali — Ghiasi Quantum LLC

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

There is no mention of value of n for 50GAUI-n

SuggestedRemedy

Add text to say where n=1 or 2.

Proposed Response *Response Status* **O**

Cl **001** *SC* **1.1.3.2** *P* **34** *L* **27** # 125

Ghiasi, Ali — Ghiasi Quantum LLC

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

There is no mention of value of n for 100GAUI-n

SuggestedRemedy

Add text to say where n=2 or 4.

Proposed Response *Response Status* **O**

Cl **001** *SC* **1.4.54a** *P* **35** *L* **10** # 8

Lusted, Kent — Intel

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

The definition of 100GBASE-DR does not quite align with 200GBASE-DR2 and 400GBASE-DR4 in P802.3bs.

SuggestedRemedy

Change to: "IEEE 802.3 Physical Layer specification for 100 Gb/s serial transmission using 100GBASE-R encoding and 4-level pulse amplitude modulation over one wavelength on single-mode fiber, with reach up to at least 500 m. (See IEEE Std 802.3, Clause 140.)"

Proposed Response *Response Status* **O**

Cl **001** *SC* **1.4.58a2** *P* **35** *L* **29** # 10

Lusted, Kent — Intel

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

The definition of 50GBASE-FR does not quite align with 200GBASE-FR4 and 400GBASE-FR8 in P802.3bs.

SuggestedRemedy

Change to: "IEEE 802.3 Physical Layer specification for 50 Gb/s serial transmission using 50GBASE-R encoding and 4-level pulse amplitude modulation over one wavelength on single-mode fiber, with reach up to at least 2 km. (See IEEE Std 802.3, Clause 139.)"

Proposed Response *Response Status* **O**

Cl **001** *SC* **1.4.58a4** *P* **35** *L* **36** # 11

Lusted, Kent — Intel

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

The definition of 50GBASE-LR does not quite align with 200GBASE-LR4 and 400GBASE-LR8 in P802.3bs.

SuggestedRemedy

Change to: "IEEE 802.3 Physical Layer specification for 50 Gb/s serial transmission using 50GBASE-R encoding and 4-level pulse amplitude modulation over one wavelength on single-mode fiber, with reach up to at least 10 km. (See IEEE Std 802.3, Clause 139.)"

Proposed Response *Response Status* **O**

Cl **001** *SC* **1.4.58a6** *P* **35** *L* **44** # 64

Maguire, Valerie — Siemon

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

50GBASE-SR will run over one transmit and one receive fiber; not "a" fiber.

SuggestedRemedy

Replace, "using 50GBASE-R encoding over a multimode fiber" with, "using 50GBASE-R encoding over one lane of multimode fiber"

Proposed Response *Response Status* **O**

Cl **030** *SC* **30** *P* **38** *L* **2** # 137

Slavick, Jeff — Broadcom Limited

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

Need to bring in aBIPErrorCount, aFECAbilty, aLaneMapping, aRSFECBIPErrorCount, and aRSFECLaneMapping and add 50G to their defnitions

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.3.2.1.2** *P* **38** *L* **16** # 18

Ran, Adee — Intel

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

In the base document 100GBASE-R appears as "multi-lane PCS", but here it is missing from 50GBASE-R.

Similarly in 30.5.1.1.2.

SuggestedRemedy

Insert "multi-lane PCS" after "Clause 133" in both places.

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.5.1.1.2** *P* **38** *L* **50** # 19

Ran, Adee — Intel

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

The placement of new entries is not specifed in the instruction. The exact location is difficult to describe now, but may be easier when other projects are finished and possibly after a revision project.

Also applies in 30.6.1.1.5.

SuggestedRemedy

Add editor's notes (to be removed prior to publication) stating that the exact locations for insertion should be indicated.

Apply in all relevant subclauses.

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.5.1.1.2** *P* **38** *L* **50** # 2

Marris, Arthur — Cadence Design Syste

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

Say explicitly where the new entries should be inserted

SuggestedRemedy

Say explicitly where the new entries should be inserted in 30.5.1.1.2

Also 50GBASE-FR is defined im lause 139 (not 138)

Also say explicitly where the entires should be inserted in 30.6.1.1.5

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.5.1.1.2** *P* **39** *L* **3** # 20

Ran, Adee — Intel

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

Base docuemnt uses "copper balanced" instead of "balanced copper".

Appears 3 times

SuggestedRemedy

Change "balanced copper" to "copper balanced" 3 times

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.5.1.1.2** *P* **39** *L* **13** # 21

Ran, Adee — Intel

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

Base document includes number of lanes for all multi-lane copper cable and optical PHYs.

SuggestedRemedy

Insert "2 lane" and "4 lane" as necessary.

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.5.1.1.17** *P* **40** *L* **7** # 23

Ran, Adee Intel

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

The last occurrence of "and" in this line (preceding "2 500 000") should be deleted as it is not the last item.

SuggestedRemedy

per comment.

Proposed Response *Response Status* **O**

Cl **030** *SC* **30.5.1.1.17** *P* **40** *L* **7** # 22

Ran, Adee Intel

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

It is unclear why 25G, has the same maximum rate as 10G/40G. This does not align with the scaled bit time (assuming all operate in BASE-R FEC which has the smallest FEC block size).

Anyway, 50G does not have BASE-R FEC so it should not have the same corrected block rate as these PHYs.

The maximum increment rate occurs when every FEC codeword is corrected (which is close to the expectation with an uncorrelated BER close to 2e-4). Since for 50G the codeword size is 5440 bits and the duration is 2720 UI = 105 ns, the maximum rate is approximately 10 million increments per second.

Calculations for the 200G/400G should also be corrected - due to the codeword interleave the rates are 2x and 4x, not 4x and 8x. This will be commented for 802.3bs.

Also applies to 30.5.1.1.18 for similar reasoning.

SuggestedRemedy

Change text to indicate that for 50 Gb/s the maximum rate is 10 000 000, in both subclauses.

Proposed Response *Response Status* **O**

Cl **045** *SC* **45** *P* **42** *L* **0** # 153

Slavick, Jeff Broadcom Limited

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

MDIO for C2C and C2M AUI controls I think are using the 200/400G versions. Current 802.3bs lists the register names and 200GAUI-n and 400GAUI-n.

SuggestedRemedy

Add 50G and 100GAUI-2 to 802.3bs 45.2.1.116d, 45.2.1.116e, 45.2.1.116f. May want to pull the sections in and add editors note to bring in in future draft in case 802.3bs changes the text.

Proposed Response *Response Status* **O**

Cl **045** *SC* **45** *P* **42** *L* **0** # 151

Slavick, Jeff Broadcom Limited

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

MDIO RS-FEC registers need to include 134

SuggestedRemedy

Add clause 134 to the description of 45.2.1.102.5, 45.2.1.102.6, 45.2.1.102.2, 45.2.1.102.1, 45.2.1.108

Proposed Response *Response Status* **O**

Cl **045** *SC* **45** *P* **42** *L* **0** # 152

Slavick, Jeff Broadcom Limited

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

BS has changed text in 45.2.1.124 that specifies the behavior of PRBS enables for 200 & 400G.

SuggestedRemedy

Add 50G, 100G PAM4 into the new text since the "all others" text is wrong for 802.3cd. May want to just add the sub-section for D1.1 with an editors note to copy the text for 802.3bs into D1.2 since I believe it maybe changing for 802.3bs D2.2.

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.4.6a** *P* **43** *L* **47** # 3

Marris, Arthur Cadence Design Syste

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

Change:
Insert 45.2.1.4.6a after 45.2.1.6 as follows:
To:
Insert 45.2.1.4.6a after 45.2.1.4.6 as follows:

SuggestedRemedy

Change:
Insert 45.2.1.4.6a after 45.2.1.6 as follows:
To:
Insert 45.2.1.4.6a after 45.2.1.4.6 as follows:

Also add space in 45.2.1.14b150G on line 12 of page 50

Change 45.2.1.14da.2 to 45.2.1.14b1.2 on line 48 page 50

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.10** *P* **49** *L* **30** # 7

Marris, Arthur Cadence Design Syste

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

Bit 1.11.14 is unavailable for 50G extended abilities

SuggestedRemedy

With editorial licence do the following:
Create new register "PMA/PMD extended ability 2" at location 1.25
Define bit 0 of this register to be "50G extended abilities"
Add new subclause 45.2.1.14f1 and Table 45-17f1 to describe this and also include in Table 45-3.

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.14b** *P* **50** *L* **12** # 24

Ran, Adee Intel

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

No white space between number and title

SuggestedRemedy

Add some spacing

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.14b** *P* **50** *L* **27** # 25

Ran, Adee Intel

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

The description for "0" incorrectly states 400G PMDs, in 5 cases

SuggestedRemedy

Change 400G to 50G in last 5 rows

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.1.101** *P* **51** *L* **39** # 150

Slavick, Jeff Broadcom Limited

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

The MDIO register for 4 lane pmd is inverse sense of what's defined in clause 91. It's also using negative true logic.

SuggestedRemedy

Change the description in Table 45-79 for 1.200.3 to be "1 = FEC is being used with a four lane PMD
0 = FEC is not being used with a four lane PMD"

Change 45.2.1.101aa to be "This bit controls the alignment marker mapping function in the RS-FEC to either substitute the fixed bytes of the alignment markers corresponding to PCS lanes 17, 18, and 19 with the fixed bytes for the alignment marker corresponding to PCS lane 16 (see 91.5.2.6) or to pass PCS lanes 17, 18, and 19 through unmodified. The default value of this bit is one."

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.3.4.5a** *P* **53** *L* **39** # 181

Pete Anslow

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

Bit address is incorrect.

SuggestedRemedy

Change 3.4.10 to 3.4.5, twice.

Proposed Response *Response Status* **O**

Cl **045** *SC* **45.2.3.13** *P* **55** *L* **40** # 26

Ran, Adee Intel

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

"10GBASE-T" was changed to "MultiGBASE-T" in 802.3bq.

Also applies in subsequent clauses.

SuggestedRemedy

Change "10GBASE-T" to "MultiGBASE-T" in the following

- titles of 45.2.3.13, 45.2.3.13.1, 45.2.3.13.4, 45.2.3.13.5, and 45.2.3.14
- body of 45.2.3.14.1 and 45.2.3.14.2 (two times each), 45.2.3.14.3, and 45.2.3.14.4

Proposed Response *Response Status* **O**

Cl **069** *SC* **69.2.3** *P* **62** *L* **39** # 27

Ran, Adee Intel

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

The insertion location in the editorial instruction is ambiguous. A better instruction here would be "change 69.2.3 as follows (some unchanged paragraphs not shown)" and add the preceding paragraph to clarify the location.

Alternatively, place it at the end of the list, since order is not siginficant.

SuggestedRemedy

Change the instruction to "Insert the following new paragraph after the last paragraph in 69.2.3 (as modified by IEEE Std 802.3cb-201x):"

Proposed Response *Response Status* **O**

Cl **069** *SC* **69.2.3** *P* **62** *L* **42** # 28

Ran, Adee Intel

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

In the base document, KR4 and KP4 include the modulation type. The newly added types use PAM4 modulation.

Consistency is preferable and in this clause the modulation type is not obvious if not stated.

SuggestedRemedy

Change "50 Gb/s operation" to "50 Gb/s operation using 4-level PAM" for 50GBASE-KR, and similarly for the new 100GBASE-KR2 and 200GBASE-KR4.

Proposed Response *Response Status* **O**

Cl **069** *SC* **69.2.3** *P* **62** *L* **45** # 29

Ran, Adee Intel

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

100GBASE-KR is not defined in this project.

SuggestedRemedy

Change to 100GBASE-KR2.

Proposed Response *Response Status* **O**

Cl **069** *SC* **69.2.3** *P* **62** *L* **45** # 4

Marris, Arthur Cadence Design Syste

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

Change 100GBASE-KR to 100GBASE-KR-2
Change 200GBASE-KR to 200GBASE-KR-4

SuggestedRemedy

Change 100GBASE-KR to 100GBASE-KR-2
Change 200GBASE-KR to 200GBASE-KR-4

also on line 49 make Clause 119 a link

Change 802.3by-201x to 802.3by-2016 on next page

Proposed Response *Response Status* **O**

Cl **073** *SC* **73.3** *P* **65** *L* **49** # 139

Slavick, Jeff — Broadcom Limited

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

We're just creating the laundry list of PHY types supported by AN.

SuggestedRemedy

Change "Technology-Dependent PHYs include 100BASE-X, …. And 200GBASE-CR4" to: "Technology-Dependedent PHYs are those supported by the Auto-Negotiation process (see Table 73-4)

Proposed Response *Response Status* **O**

Cl **073** *SC* **73.5** *P* **66** *L* **11** # 5

Marris, Arthur — Cadence Design Syste

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

Change 136.8.6 to 136.8.7
Change 137.8.5 to 137.8.7

SuggestedRemedy

Change 136.8.6 to 136.8.7
Change 137.8.5 to 137.8.7

Proposed Response *Response Status* **O**

Cl **073** *SC* **73.6.4** *P* **67** *L* **1** # 30

Ran, Adee — Intel

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

We should change the third and fifth paragraphs, not third and fourth (the fourth was added by 802.3by and is not included in this draft)

SuggestedRemedy

Consider bringing in the fourth paragraph. Change the instruction as required (possibly separate to two instructions).

Proposed Response *Response Status* **O**

Cl **073** *SC* **73.6.4** *P* **67** *L* **9** # 9

Lusted, Kent — Intel

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

Typo

SuggestedRemedy

In the last sentence of the revised third paragraph of 73.6.4, change "1000BASE-X" to "1000BASE-KX"

Proposed Response *Response Status* **O**

Cl **073** *SC* **73.6.4** *P* **67** *L* **10** # 31

Ran, Adee — Intel

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

The phrase "as the MDI and physical medium are different" was removed in 802.3by. The removal should have been maintained in 802.3cb as well (comment will be submitted). There is no need to re-insert it.

SuggestedRemedy

Delete the quoted phrase.

Proposed Response *Response Status* **O**

Cl **073** *SC* **73.7.1** *P* **67** *L* **26** # 32

Ran, Adee — Intel

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

The deleted text should also include 25G PHYs, added in 802.3by. See 802.3cb.

SuggestedRemedy

Insert "25GBASE-KR, 25GBASE-KR-S, 25GBASE-CR, 25GBASE-CR-S" after "10GBASE-KR", in strikeout font.

Proposed Response *Response Status* **O**

Cl **073** *SC* **73.7.6** *P* **67** *L* **41** # 138

Slavick, Jeff — Broadcom Limited

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

Remove Priority column from Table 73-5. We already state what is highest and lowest, the numbers just provide editorial busy work.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **073** *SC* **73.10.2** *P* **69** *L* **26** # 141

Slavick, Jeff — Broadcom Limited

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

Missing the CR PHYs for the new link_fail_inhibit_timer list

SuggestedRemedy

Add 50GBASE-CR, 100GBASE-CR2 and 200GBASE-CR4 to the link_fail_inhibit_timer with a min duration of 1.6s

Proposed Response *Response Status* **O**

Cl **073** *SC* **73.10.2** *P* **69** *L* **30** # 142

Slavick, Jeff — Broadcom Limited

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

Missing 10GBASE-KR from the 500ms link_fail_inhibit_timer list

SuggestedRemedy

Add 10GBASE-KR to the list of PHYs that use 500ms link_fail_inhibit_timer

Proposed Response *Response Status* **O**

Cl **078** *SC* **78.1** *P* **71** *L* **7** # 33

Ran, Adee — Intel

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

It is not clear why the new AUIs should be listed here. According to note a) of table 78-1, the AUI shutdown is supported only with deep sleep, but unlike previous projects, we don't have that mode, and the AUIs don't care or know about fast wake.

802.3bs shouldn't have added AUIs either.

Listing the long list of AUIs in the overview of the EEE clause is misleading the reader who might wonder how exactly EEE supports these electrical interfaces (or vice versa)... and there is nothing anywhere in the standard to answer that.

(Note that XLPPI and CPPI are not listed even though fast wake LPI can be transmitted over these interfaces - because there is no "support" for EEE in these interfaces. We don't state that fast wake LPI signaling works in loopback or across OTN, even though it is possible... because there is no special support of EEE in these cases; LPI signaling just works transparently)

SuggestedRemedy

Delete the added text in this subclause (and practically remove it from the amendment).

Proposed Response *Response Status* **O**

Cl **078** *SC* **78.5.2** *P* **72** *L* **40** # 34

Ran, Adee — Intel

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

The deletion in the title removes the essential part releant for this subclause. Also, it does not need any modification since the new AUIs do not have specific support for EEE (see another comment).

SuggestedRemedy

Delete the modifications in this subclause (and practically remove it from the amendment).

Proposed Response *Response Status* **O**

Cl **080** *SC* **80.1.4** *P* **74** *L* **16** # 35

Ran, Adee Intel

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

We should make the specified frequency for loss consistent. 13.28 GHz is used in many cases and there is no need for higher resolution.

SuggestedRemedy

Change "13.28125" to "13.28" across the draft.

Proposed Response *Response Status* **O**

Cl **080** *SC* **80.1.5** *P* **76** *L* **17** # 182

Matt Brown

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

The column for Clause 83 is incomplete and incorrect.

SuggestedRemedy

For the Clause 83 column...
Change sublayer name to "100GBASE-R PMA".
For 100GBASE-SR2 and 100GBASE-DR rows insert "O".

Proposed Response *Response Status* **O**

Cl **080** *SC* **80.2.1** *P* **76** *L* **34** # 36

Ran, Adee Intel

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

Missing comma after "Clause 83"

SuggestedRemedy

Insert a comma

Proposed Response *Response Status* **O**

Cl **080** *SC* **80.4** *P* **78** *L* **13** # 77

Brown, Matt Applied Micro

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

In Table 80-5, the sublayer delay constraints for the new 100G PMA and PMDs are in magenta (TBD).

SuggestedRemedy

Update with acceptable values and change to black text.

Proposed Response *Response Status* **O**

Cl **082** *SC* **82.7.4** *P* **82** *L* **24** # 37

Ran, Adee Intel

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

Does the change in PICS heading numbers result from a maintenance request? if so please add an editor's note, and clarify what should be done with the lower level subclauses... Otherwise it is out of scope and should not be done in this project (leave for maintenance)

SuggestedRemedy

per comment.

Proposed Response *Response Status* **O**

Cl **091** *SC* **91.5.4.3** *P* **85** *L* **1** # 75

Gustlin, Mark Xilinx

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

This is a comment against a subclause that is not currently part of the amendment. Currently the alignement marker lock SM does not continously monitor the AMs after reaching the locked state, instead lock is restarted only when 3 FEC codewords in a row are not correctable. This leaves the SM vulnerable to a case where the Ethernet signal is transported by an OTN network, and under some fault conditions on the far end of the network the AM location might change and not be detected by the reciver. This can lead to continously corrupted data being received.

SuggestedRemedy

The changes to figure 119-13 are included in gustlin_3bs_01_0916 (these changes are now included in 802.3bs D2.1). We now look for correct AMs on all lanes after lock, and if 5 are found to not match expectations (pre FEC correction) on a given lane, then lock is restarted. Make equivalent changes to figure 91-8 FEC synchronization state diagram. Also make equivalent changes to Clause 134 for the 50GE PCS. The changes include the addition of a new variable and some other descriptive changes.
Note that proposed maintenance change has also been submmitted against 802.3-2015.

Proposed Response *Response Status* **O**

Cl **091** *SC* **91.6** *P* **85** *L* **50** # 143

Slavick, Jeff Broadcom Limited

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

Table 91-2 points to the wrong MDIO register bit for the new Four lane PMD.

SuggestedRemedy

Change 1.200.2 to 1.200.3

Proposed Response *Response Status* **O**

Cl **091** *SC* **91.6.2a** *P* **85** *L* **9** # 145

Slavick, Jeff Broadcom Limited

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

There is a shall for the setting four_lane_pmd when a PAM4 link, but not for legacy links. I'm not sure we need a shall statement.

SuggestedRemedy

Change "This variable shall be set to zero for the 100GBASE-CR2, 100GBASE-KR2, 100GBASE-SR2, and 100GBASE-DR PMDs. This variable is mapped to the bit defined in 45.2.1.101 (1.200.2)."
To "This variable is set to zero for the 100GBASE-CR2, 100GBASE-KR2, 100GBASE-SR2, and 100GBASE-DR PMDs. This variable is mapped to the bit defined in 45.2.1.101 (1.200.2)."
If shall is necessary "This variable shall be set to zero for the 100GBASE-CR2, 100GBASE-KR2, 100GBASE-SR2, and 100GBASE-DR PMDs. This variable is mapped to the bit defined in 45.2.1.101 (1.200.2) and shall be set appropriately for the PHY type."

Proposed Response *Response Status* **O**

Cl **091** *SC* **91.6.2a** *P* **85** *L* **9** # 146

Slavick, Jeff Broadcom Limited

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

"This variable shall…." appears to be in different font then the rest of the paragraph.

SuggestedRemedy

Fix the font used in 91.6.2a

Proposed Response *Response Status* **O**

Cl **091** *SC* **91.6.2a** *P* **85** *L* **11** # 144

Slavick, Jeff Broadcom Limited

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

Points to the wrong MDIO register bit for the new Four lane PMD.

SuggestedRemedy

Change 1.200.2 to 1.200.3

Proposed Response *Response Status* **O**

Cl **091** *SC* **91.6.2a** *P* **86** *L* **11** # 1

Marris, Arthur — Cadence Design Syste

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

It should be bit 1.200.3 rather than 1.200.2

SuggestedRemedy

Change to 1.200.3

Proposed Response *Response Status* **O**

Cl **116** *SC* **116.1.4** *P* **87** *L* **44** # 38

Ran, Adee — Intel

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

We should align with 802.3bs D2.1 changes, changing "nomenclature" to "PHY type" twice in this paragraph.

SuggestedRemedy

Change per 802.3bs D2.1.

Proposed Response *Response Status* **O**

Cl **116** *SC* **116.4** *P* **89** *L* **25** # 78

Brown, Matt — Applied Micro

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

In Table 116-5, the sublayer delay constraints for the new 200G PMDs are in magenta (TBD).

SuggestedRemedy

Update with acceptable values and change to black text.

Proposed Response *Response Status* **O**

Cl **131** *SC* **131.1.2** *P* **91** *L* **16** # 128

Ghiasi, Ali — Ghiasi Quantum LLC

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

Missing "The"

SuggestedRemedy

Add "The" 50 Gigabit

Proposed Response *Response Status* **O**

Cl **131** *SC* **131.1.2** *P* **92** *L* **3** # 39

Ran, Adee — Intel

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

Item is a) not required, as 50GMII is not expected to have a physical instantiation (as stated explicitly in 131.2.1) and thus any width can be chosen "for implementaiton convenience". Compare to 105.1.2 which does not list 25GMII.

SuggestedRemedy

Delete item a).

Proposed Response *Response Status* **O**

Cl **131** *SC* **131.1.2** *P* **92** *L* **18** # 129

Ghiasi, Ali — Ghiasi Quantum LLC

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

Missing reference to CL 135 A optional AUI

SuggestedRemedy

Add reference to CL 135A

Proposed Response *Response Status* **O**

Cl **131** *SC* **131.1.3** *P* **92** *L* **39** # 70

Hidaka, Yasuo — Fujitsu Lab of America

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

In Table 131-1, 50GBASE-SR is written as 50GBASES-SR.

SuggestedRemedy

Change 50GBASES-SR to 50GBASE-SR.

Proposed Response *Response Status* **O**

Cl **131** *SC* **131.1.4** *P* **93** *L* **1** # 97

Nicholl, Gary — Cisco Systems

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

Table 131-2. The title for Clause 134 is "50GBASE-R FEC". Is there possibility for confusion with BASE-R FEC at 100G. Same comment for Table 131-3.

SuggestedRemedy

Perhaps it would be better to use "RS-FEC" rather than "50GBASE-R FEC" to be consistent with what we did for 100G and with the title of Clause 134.

Proposed Response *Response Status* **O**

Cl **131** *SC* **131.2** *P* **93** *L* **42** # 130

Ghiasi, Ali — Ghiasi Quantum LLC

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

Missing couple of "The"

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **131** *SC* **131.2.1** *P* **94** *L* **1** # 72

Hidaka, Yasuo — Fujitsu Lab of America

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

A grammer error.

SuggestedRemedy

Change "it are used" to "it is used".

Proposed Response *Response Status* **O**

Cl **131** *SC* **131.4** *P* **97** *L* **18** # 79

Brown, Matt — Applied Micro

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

In Table 131-4, the sublayer delay constraints for the 50G sublayers are "TBD" in magenta.

SuggestedRemedy

Update with acceptable values and change to black text.

Proposed Response *Response Status* **O**

Cl **131** *SC* **131.5** *P* **99** *L* **22** # 80

Brown, Matt — Applied Micro

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

In Table 131-5, the Skew constraints for the 50G sublayers are "TBD" in magenta.

SuggestedRemedy

Update with acceptable values and change to black text.

Proposed Response *Response Status* **O**

Cl **131** *SC* **131.5** *P* **100** *L* **8** # 81

Brown, Matt — Applied Micro

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

In Table 131-6, the Skew Variation constraints for the 50G sublayers are "TBD" in magenta.

SuggestedRemedy

Update with acceptable values and change to black text.

Proposed Response *Response Status* **O**

Cl **132** *SC* **132.1.4** *P* **103** *L* **39** # 40
Ran, Adee Intel

Comment Type **E** *Comment Status* **X**
We have specific definitions for this project, in 131.4

SuggestedRemedy
Change "80.4" to "131.4", active cross reference.

Proposed Response *Response Status* **O**

Cl **132** *SC* **132.1.7** *P* **104** *L* **31** # 41
Ran, Adee Intel

Comment Type **E** *Comment Status* **X**
Annex 4a is included in this amendment.

SuggestedRemedy
Make it an active cross reference.

Proposed Response *Response Status* **O**

Cl **132** *SC* **132.2** *P* **96** *L* **34** # 131
Ghiasi, Ali Ghiasi Quantum LLC

Comment Type **ER** *Comment Status* **X**
Missing more "the" before 50xx

SuggestedRemedy
Add "the"

Proposed Response *Response Status* **O**

Cl **132** *SC* **132.4** *P* **104** *L* **45** # 42
Ran, Adee Intel

Comment Type **E** *Comment Status* **X**
Align with 802.3bs D2.1 changes in 117.4.

SuggestedRemedy
Remove period after "81.4" and add "described in 81.4.4" after "stop signaling".

Proposed Response *Response Status* **O**

Cl **133** *SC* **133.1.2** *P* **107** *L* **26** # 43
Ran, Adee Intel

Comment Type **T** *Comment Status* **X**
There is another exception…

(also in the similar list in 133.2.1)

SuggestedRemedy
(add a period at the end of item 3)

Add item 4: The nominal rate at the FEC or PMA service interface is 12.890625 Gb/s per PCS lane, rather than 10.3125 Gb/s per PCS lane.

Proposed Response *Response Status* **O**

Cl **133** *SC* **133.1.4** *P* **107** *L* **42** # 132
Ghiasi, Ali Ghiasi Quantum LLC

Comment Type **TR** *Comment Status* **X**
2nd Paragraph describes Fig 133-1 but is not referenced

SuggestedRemedy
Add reference to Fig 133-1

Proposed Response *Response Status* **O**

Cl **133** *SC* **133.1.4** *P* **107** *L* **43** # 133
Ghiasi, Ali Ghiasi Quantum LLC

Comment Type **TR** *Comment Status* **X**
Need to also reference partioning example of CL 135A

SuggestedRemedy
…FEC sublayer. If the optional LAUI-2 interface instantiated see the PMA sublayer partitioning examples in 135A with physical instantation in CL135B.1 and CL135C.1, then …

Proposed Response *Response Status* **O**

Cl **133** *SC* **133.2.3** *P* **111** *L* **9** # 82
Brown, Matt Applied Micro

Comment Type **T** *Comment Status* **X**
The maximum Skew and Skew Variation are "TBD" in magenta.

SuggestedRemedy
Update with acceptable values and change to black text.

Proposed Response *Response Status* **O**

Cl **133** *SC* **133.2.4** *P* **111** *L* **16** # 98
Nicholl, Gary Cisco Systems

Comment Type **E** *Comment Status* **X**
Unnecessary comma after "defined in 82.2.19"

SuggestedRemedy
Remove the comma after "defined in 82.2.19"

Proposed Response *Response Status* **O**

Cl **133** *SC* **133.3** *P* **111** *L* **36** # 83
Brown, Matt Applied Micro

Comment Type **T** *Comment Status* **X**
The delay contraints are "TBD" in magenta.

SuggestedRemedy
Update with acceptable values and change to black text.

Proposed Response *Response Status* **O**

Cl **133** *SC* **133.5** *P* **112** *L* **1** # 99
Nicholl, Gary Cisco Systems

Comment Type **T** *Comment Status* **X**
Update PICS as required with editorial licence

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.1.1** *P* **117** *L* **12** # 44
Ran, Adee Intel

Comment Type **T** *Comment Status* **X**
There is another exception… a major one

SuggestedRemedy
Add an item at the beginning (or after the first item): "The service interface has 4 lanes instead of 20 lanes".

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.1.1** *P* **117** *L* **14** # 45
Ran, Adee Intel

Comment Type **E** *Comment Status* **X**
Multiple instances of the numbers "2" and "4" appear in the text.

Per style manual, "In general text, isolated numbers less than 10 should be spelled out".

(In these cases it would also be easier to read)

SuggestedRemedy
Change instances of "2" and "4" (isolated) in the text to "two" and "four" respectively (unless they are adjacent to higher numbers or in equations, etc.). Repeat across clause 134 per style manual.

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.1.1** *P* **117** *L* **17** # 46
Ran, Adee Intel

Comment Type **E** *Comment Status* **X**
Improve style

SuggestedRemedy
Change "that" to "for the fact that", twice in this paragraph

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.1.2** *P* **117** *L* **27** # 47

Ran, Adee Intel

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

Missing space after "Figure 134-1"

SuggestedRemedy

Add space

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.3** *P* **118** *L* **40** # 134

Ghiasi, Ali Ghiasi Quantum LLC

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

Clause is not clear add refernece to 135A

SuggestedRemedy

…is set to 2. Examples of 50 Gb/s PMA sublayer are illustrated in Clause 135A.

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.4** *P* **118** *L* **50** # 84

Brown, Matt Applied Micro

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

The delay contraints are "TBD" in magenta.

SuggestedRemedy

Update with acceptable values and change to black text.

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.5.1** *P* **119** *L* **5** # 135

Ghiasi, Ali Ghiasi Quantum LLC

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

Fig 134-1 shows a diagram having integrated PCS with FEC without a PMA, but instatiation of Fig 134-2 assumes PMA services interface not consistent with Fig 134-1

SuggestedRemedy

Suggest adding to the digram 134-1 the case with PMA service interface which will reflect current Fig 134-2, then Fig 134-2 should be modfied with doted block covering alignment removal-transcode-Alignment insert as optional.
See ghiasi_cd_01_1116.pdf

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.5.2.1** *P* **120** *L* **7** # 171

Nicholl, Gary Cisco Systems

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

The sentence starting "Block lock is obtained …." is technically correct but the wording is a little clumsy and specifically the bit "when viewed in the context of the 50GBASE-R PCS state diagrams defined in 133.2.4".

SuggestedRemedy

Improve wording.

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.5.2.2** *P* **120** *L* **13** # 172

Nicholl, Gary Cisco Systems

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

The sentence starting "Once the RS-FEC …." is technically correct but the wording is a little clumsy and specifically the bit "when viewed in the context of the 50GBASE-R PCS state diagrams defined in 133.2.4."

SuggestedRemedy

Improve wording.

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.5.2.2** *P* **120** *L* **19** # 85

Brown, Matt — Applied Micro

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

The maximum Skew and Skew Variation are "TBD" in magenta.

SuggestedRemedy

Update with acceptable values and change to black text.

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.5.2.6** *P* **121** *L* **15** # 114

Ghiasi, Ali — Ghiasi Quantum LLC

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

item 3 is BIP3 field, is there a reason we are changing it?

SuggestedRemedy

this should be amp_tx_x<33:26>=am_tx_x<33:26>

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.5.2.6** *P* **121** *L* **16** # 115

Ghiasi, Ali — Ghiasi Quantum LLC

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

Why are we changing bit position for M4, M5, and M6 from CL82

SuggestedRemedy

Shouldn't be amp_tx_x<57,34>?

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.5.2.6** *P* **121** *L* **28** # 48

Ran, Adee — Intel

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

Per style manual, multiple lists in the same subclause need separate labels. See 91.5.2.5 as an example

SuggestedRemedy

per comment.

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.5.2.6** *P* **121** *L* **41** # 49

Ran, Adee — Intel

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

Equation variables should be set in italic font. This is usually done, but is inconsistent.

SuggestedRemedy

Change "y", "i", "k" here to style "Equation Variables".

Go over clause 134 and apply to all variables. Also, apply in Figure 134–4 and Figure 134–5, using clause 91 figures as reference.

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.5.2.6** *P* **121** *L* **45** # 50

Ran, Adee — Intel

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

The pad bit is am_txmapped<256>

SuggestedRemedy

Delete ":255"

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.5.2.6** *P* **121** *L* **45** # 51

Ran, Adee — Intel

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

Two values, 0 and 1

SuggestedRemedy

change "value" to "values"

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.5.3.1** *P* **122** *L* **45** # 173

Nicholl, Gary — Cisco Systems

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

The sentence starting "It obtains lock …." is technically correct but the wording is a little clumsy and specifically the bit "when viewed in the context of the 50GBASE-R RS-FEC state diagrams defined in 134.5.4."

SuggestedRemedy

Improve wording.

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.5.3.6** *P* **124** *L* **30** # 52

Ran, Adee — Intel

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

The number of lanes is known, so it can be stated.

SuggestedRemedy

Change "multiple" to "four".

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.5.3.7** *P* **124** *L* **45** # 53

Ran, Adee — Intel

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

stray character "(" before "255"

SuggestedRemedy

Delete it

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.5.3.8** *P* **125** *L* **21** # 100

Nicholl, Gary — Cisco Systems

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

Remove unnecessary period in front of "Receive"

SuggestedRemedy

Remove period.

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.5.4** *P* **125** *L* **26** # 174

Nicholl, Gary — Cisco Systems

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

Currently the alignement marker lock SM referenced in Clause 91 does not continously monitor the AMs after reaching the locked state, instead lock is restarted only when 3 FEC codewords in a row are not correctable. This leaves the SM vulnerable to some fault conditions where the AM location might change and not be detected by the reciver. This can lead to continously corrupted data being received. A similar comments has been submitted against Clause 91.

SuggestedRemedy

This issues was disuccsed during the Oct 26, 802.3cd task force ad-hoc call. The recommended changes to the FEC synchronization state diagram (Figure 91-8) are included in gustlin_102616_3cd_adhoc_v2, as presented during the Oct 26 ad-hoc conference call. We now look for correct AMs, and AM spacing, on all lanes after lock, and if 5 are found to not match expectations (pre FEC correction) on a given lane, then lock is restarted. Note a proposed maintenance change has also been submmitted against 802.3-2015.

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.5.4.2.1** *P* **127** *L* **13** # 165

Shrikhande, Kapil — Innovium

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

Reference to Clause 134.1 seems incorrect, 134.1 is Overview.

SuggestedRemedy

Reference sub-clause 134.5.3.7 rather than 134.1

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.5.4.2.1** *P* **127** *L* **21** # 166

Shrikhande, Kapil Innovium

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

I believe variable amps_lock should be amps_lock<x>

SuggestedRemedy

Change amps_lock to amps_lock<x>

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.5.4.2.1** *P* **127** *L* **22** # 54

Ran, Adee Intel

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

amps_lock is per lane. In clause 91 it has <x>, and without it the description is confusing.

SuggestedRemedy

Change to "amps_lock<x>"

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.5.4.2.1** *P* **127** *L* **33** # 55

Ran, Adee Intel

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

fec_lpi_fw should also be redefined.

SuggestedRemedy

Add the definition: "fec_lpi_fw: always set to true"

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.6.1** *P* **129** *L* **3** # 167

Shrikhande, Kapil Innovium

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

Are we including FEC_bypass_correction for 50GE when all PHYs being defined require correction to achieve the target BER? We removed the option in CL119.

SuggestedRemedy

Suggest removing 134.6.1 entirely if this feature has been unintentionally copied over from Clause 91. If editors agree to this, there will be other changes related to FEC_bypass_correction feature that will have to removed throughout this Clause.

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.6.3** *P* **129** *L* **17** # 168

Shrikhande, Kapil Innovium

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

Are we including FEC_bypass_correction for 50GE? We removed the option in CL119.

SuggestedRemedy

Suggest removing 134.6.3 entirely if this feature has been unintentionally copied over from Clause 91.

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.6.5** *P* **129** *L* **32** # 116

Ghiasi, Ali Ghiasi Quantum LLC

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

hi_ser not defined

SuggestedRemedy

Defin the variable, "The hi_ser variable is define .."

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.7** *P* **131** *L* **1** # 101
Nicholl, Gary Cisco Systems

Comment Type **T** *Comment Status* **X**
Update PICS as required with editorial licence

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.7.4.1** *P* **132** *L* **38** # 117
Ghiasi, Ali Ghiasi Quantum LLC

Comment Type **TR** *Comment Status* **X**
In an integrated PCS/FEC one may do direct 256/257B encoding

SuggestedRemedy
The funtion should be optional

Proposed Response *Response Status* **O**

Cl **134** *SC* **134.7.4.2** *P* **133** *L* **54** # 118
Ghiasi, Ali Ghiasi Quantum LLC

Comment Type **TR** *Comment Status* **X**
In an integrated PCS/FEC one may do direct 256/257B decoding

SuggestedRemedy
The funtion should be optional

Proposed Response *Response Status* **O**

Cl **135** *SC* **135.1.1** *P* **135** *L* **11** # 102
Nicholl, Gary Cisco Systems

Comment Type **T** *Comment Status* **X**
Incorrect reference to Clause 135.

SuggestedRemedy
I believe the reference should be to Clause 133, i.e. the 50GBASE-R PCS clause.

Proposed Response *Response Status* **O**

Cl **135** *SC* **135.1.1** *P* **135** *L* **11** # 169
Shrikhande, Kapil Innovium

Comment Type **ER** *Comment Status* **X**
Incorrect reference to Clause 135 from within Clause 135.

SuggestedRemedy
Change reference from Clause 135 to Clause 133 if the intent was to reference the 50GE PCS Clause

Proposed Response *Response Status* **O**

Cl **135** *SC* **135.1.1** *P* **135** *L* **13** # 170
Shrikhande, Kapil Innovium

Comment Type **E** *Comment Status* **X**
I believe it is not sufficient to say "… 100 Gb/s PAM4 PMDs ..." because the PMA is not meant to be used with 100G-KP4 which is also a 100Gb/s PMD that uses PAM4.

SuggestedRemedy
Maybe list all the 100Gb/s PMDs that are supported by 100GBASE-P PMA, in addition to pointing to Table 80-1.

Proposed Response *Response Status* **O**

Cl **135** *SC* **135.1.2** *P* **136** *L* **27** # 105
Nicholl, Gary Cisco Systems

Comment Type **E** *Comment Status* **X**
The AN ssublayer is missing in Figure 135-1.

SuggestedRemedy
Add AN sublayer to Figure 135-1.

Proposed Response *Response Status* **O**

Cl **135** *SC* **135.1.3** *P* **135** *L* **34** # 103

Nicholl, Gary — Cisco Systems

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

Where is the term "FECL" defined ? I do not see it defined or used in the 50GBASE-R RS-FEC Clause (i.e. Clause 134).

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **135** *SC* **135.1.3** *P* **135** *L* **45** # 104

Nicholl, Gary — Cisco Systems

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

An additional entry should be made in the summary list to include the optional pre-coding function as captured in slide 17 nicholl_3cd_01a_0716.

SuggestedRemedy

Add an entry into the summary list to include the optional pre-coding function.

Proposed Response *Response Status* **O**

Cl **135** *SC* **135.1.4** *P* **137** *L* **9** # 6

Marris, Arthur — Cadence Design Syste

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

There are 2 FEC lanes not 4 for 50G and 4-lanes for 100G

SuggestedRemedy

Change
PMA (4:2)
to:
PMA (2:2)

Change
PMA (20:4)
to:
PMA (4:4)

Proposed Response *Response Status* **O**

Cl **135** *SC* **135.1.4** *P* **137** *L* **28** # 106

Nicholl, Gary — Cisco Systems

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

Figure 135-2. The PMA (4-2) below the 50G FEC should be PMA (2-2), and the PMA (20-4) below the 100G FEC should be PMA (4-4).

SuggestedRemedy

Change the PMA (4-2) below the 50G FEC to PMA (2-2), and the PMA (20-4) below the 100G FEC to PMA (4-4).

Proposed Response *Response Status* **O**

Cl **135** *SC* **135.5.2** *P* **144** *L* **18** # 73

Hidaka, Yasuo — Fujitsu Lab of America

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

It seems the order of the sequence is reversed between the input and the output. The convention in clause 83 and clause 120 were the same order of the sequence between the input and the output.

SuggestedRemedy

Revert the order of the output sequence so that the order of the sequence becomes same between the input and the output.

Proposed Response *Response Status* **O**

Cl **135** *SC* **135.5.3** *P* **144** *L* **5** # 86

Brown, Matt — Applied Micro

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

The Skew and Skew Variation are "TBD" in magenta.

SuggestedRemedy

Update with acceptable values and change to black text.

Proposed Response *Response Status* **O**

Cl **135** *SC* **135.5.4** *P* **118** *L* **33** # 87

Brown, Matt — Applied Micro

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

In table, 135-1, the delay contraints are "TBD" in magenta.

SuggestedRemedy

Update with acceptable values and change to black text.

Proposed Response *Response Status* **O**

Cl **136** *SC* **136.2** *P* **162** *L* **42** # 154

Healey, Adam — Broadcom Ltd.

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

"L" may not be the best label for this parameter since it also corresponds to the number of signal levels used in the COM calculation. It also appears to have a 1:1 correspondence to the number of PMA output lanes "n" (see 136.3).

SuggestedRemedy

Consider using "n" as a the variable for the number of lanes throughout.

Proposed Response *Response Status* **O**

Cl **136** *SC* **136.5** *P* **164** *L* **22** # 88

Brown, Matt — Applied Micro

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

In Table 136-4, the delay contraints for 50G, 100G, and 200G are in magenta (TBD).

SuggestedRemedy

Update with acceptable values and change to black text.

Proposed Response *Response Status* **O**

Cl **136** *SC* **136.6** *P* **164** *L* **52** # 89

Brown, Matt — Applied Micro

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

The Skew and Skew Variation contraints for 50G, 100G, and 200G are "TBD" in magenta.

SuggestedRemedy

Update with acceptable values and change to black text.

Proposed Response *Response Status* **O**

Cl **136** *SC* **136.8.12** *P* **170** *L* **42** # 155

Healey, Adam — Broadcom Ltd.

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

It is stated that "there shall be an independent instance of the PMD control function for each lane of a multi-lane PMD." This appears to require that there be an independent instances of the function but it puts no constraints on the behavior of these instances.

SuggestedRemedy

Replace the requirement with the following. "The PMD shall implement one instance of the PMD control function described in this subclause for each lane. The PMD control functions operate independently on each lane."

Proposed Response *Response Status* **O**

Cl **136** *SC* **136.8.12.1.1** *P* **171** *L* **33** # 12

Lusted, Kent — Intel

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

The text describing the construction of the Frame Marker does not explicitly give the transmission order of the frame marker symbols.

SuggestedRemedy

Consider changing "The training frame marker is a run
of 16 consecutive “3” symbols followed by a run of 16 consecutive “0” symbols."

to be:
"The training frame marker shall be a run
of 16 consecutive “3” symbols followed by a run of 16 consecutive “0” symbols."

Proposed Response *Response Status* **O**

Cl **136** *SC* **136.8.12.1.2** *P* **171** *L* **39** # 13

Lusted, Kent — Intel

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

As a reader, it is a bit confusing to have the control and status field encoding details in another section (i.e. 136.8.12.2 and 136.8.12.3). This sections decribes the cell encoding rules but the cell details are elsewhere.

There are two immediately obvious solutions:
Option 1: move Clauses 136.8.12.2 and 136.8.12.3 to be subclauses of 136.8.12.1.2
Option 2: add a new paragraph that has references to Clauses 136.8.12.2 and 136.8.12.3

SuggestedRemedy

Implement Option 2 by adding a new paragraph:

"Control and status field structure is defined in Clause 136.8.12.2 and Clause 136.8.12.3."

Proposed Response *Response Status* **O**

Cl **136** *SC* **136.8.12.1.3** *P* **172** *L* **32** # 14

Lusted, Kent — Intel

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

It is a bit confusing to have identifier_i = 1 listed here when the first lane is 0. Especially since the previous sentence references identifier 0.

SuggestedRemedy

Consider changing Figure 136-5 to represent identifier_i = 0.

Proposed Response *Response Status* **O**

Cl **136** *SC* **136.8.12.3** *P* **175** *L* **37** # 147

Slavick, Jeff — Broadcom Limited

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

The PMD has a limit on the amount of Eq that can be applied. There is no differentiation in the response of "Coeff at limit" is due to actual limitation of that coefficient, or lack of available Eq to allocate, or you've applied so much Eq you'll go below the minimum transmit amplitude.

SuggestedRemedy

Change the Coefficient status field to be 3b (shifting the select echo to be bits 5:3).
Encode the status as
111 Coefficient not supported
110 Reserved
101 Reserved
011 At Minimum Transmit Threshold
010 Coefficient at limit
001 Updated
000 Not updated

In 136.8.12.5 change line 17 to be
if total_eq = max_allowed_eq
  coef_sts = at_min_transmit_threshold
else if ck_ask > ck_max

Add variable definitions to 136.8.12.5
total_eq - Variable that contains the sum of the total Transmit Eq
max_allowed_eq - Variable that contains the limit of the total Transmit Eq that would cause the differntial pk-pk output voltage to drop below 30mV

Proposed Response *Response Status* **O**

Cl **136** *SC* **136.8.12.3** *P* **175** *L* **38** # 76

Brown, Matt — Applied Micro

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

The coefficient status field has been updated to include new information compared to Clause 72, but is still deficient in reporting some cases. There also exists a case where a tap is not updated due voltage being at the maximum or minimum value, rather than the tap being at its maximum. It is help to differentiate the two cases.

SuggestedRemedy

Expand the coefficient status field to 3 bits and redefine as follows:
111 = reserved
110 = reserved
101 = min./max. voltage and coeff. at Limit
100 = min./max. voltage
011 = coefficient not supported
010 = coefficient at limit
001 = updated
000 = not updated

Proposed Response *Response Status* **O**

Cl **136** *SC* **136.8.12.5** *P* **177** *L* **48** # 136

Slavick, Jeff — Broadcom Limited

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

k_list should be left as a generic indices and instead set the reference for valid indices to be defined by the PMD. Future proof this section and push the definition of support indicies into the PMD definitions

SuggestedRemedy

Create a table near 136-12 that lists the valid Equalizer indices to be -2, -1, 0 1

Proposed Response *Response Status* **O**

Cl **136** *SC* **136.8.12.7.3** *P* **181** *L* **7** # 148

Slavick, Jeff — Broadcom Limited

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

AN has a time limit of 1.6s (min), swap to link train is upto 20ms, FEC frame is <10ms, PCS frame is < 1ms. So if you allocate 40ms to the swap to Link Train and PCS assert PCS_STATUS, then another 20ms to allow for software to handshake the AN. That leaves 1600 - 40 - 20 = 1540ms for max LinkTrain timer.

SuggestedRemedy

Change the TBD for max_wait_timer to be 2%

Proposed Response *Response Status* **O**

Cl **136** *SC* **136.8.12.7.3** *P* **181** *L* **13** # 149

Slavick, Jeff — Broadcom Limited

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

The wait_timer has a TBD duration. 10GE wall clock the 100->300 frames spans 42->127us, while at 25GE it 17 -> 51us. For the new frame length the 100 to 300 frames would be 62 -> 188us. Designs may use wall clock timers to control the duration of frames sent, so providing a range that spans the previous generations would be useful

SuggestedRemedy

Set duration to be 40 and 200 training frames.
Or set duration to be 40us and 125us

Proposed Response *Response Status* **O**

Cl **136** *SC* **136.8.12.7.5** *P* **182** *L* **8** # 140

Slavick, Jeff — Broadcom Limited

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

With a slight tweak to the Link Train FSM we could enable the ability to run LinkTrain in a non-AN operating mode.

SuggestedRemedy

See presentation slavick_3cd_01_1116.pdf

Proposed Response *Response Status* **O**

Cl **136** *SC* **136.9.3** *P* **186** *L* **13** # 62

Mellitz, Richard — Samtec

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

Since SNDR is computed with Np=200. Host maximum ISI is not limited, Considering manufacturing choices and variations, return loss magnitude is not sufficient.

SuggestedRemedy

The host ISI should be no greater than for the reference package, the reference board, and the mated fixture, both for compensable and uncompensable ISI. Add 2 new parameter which are derived from p(k), ISI_SNR and DFE4_RSS

Proposed Response *Response Status* **O**

Cl **136** *SC* **136.9.3.1.1** *P* **187** *L* **15** # 61

Mellitz, Richard — Samtec

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

10 dB of loss is like to make it very difficult to pattern lock trigger the transmitter on thee PRBS31Q transmitter waveform.

SuggestedRemedy

Add exception line suggesting that the scope may precondition with linear equalization to pattern lock trigger.

Proposed Response *Response Status* **O**

Cl **136** *SC* **136.9.3.1.3** *P* **188** *L* # 156

Healey, Adam — Broadcom Ltd.

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

The procedure defined in 136.9.3.1.2 provides normalized coefficient values that can be specified directly. It is not clear what value these additional manipulations add and they obfuscate the relationship between the transmitter requirements and the parameters of the COM model. Furthermore, these ratios are different from the ratios specified in 120D.3.1.5. It is not clear why we need to another definition for what is essentially the same thing.

SuggestedRemedy

For the present coefficients, consider specifying the normalized coefficient values with appropriate tolerance range(s) on each coefficient. For the coefficient ranges, consider specifying the smallest maximum value and the largest minimum value for each coeffcient. An acceptable alternative would be to use ratio definitions similar to those in 120D.3.1.5.

Proposed Response *Response Status* **O**

Cl **136** *SC* **136.9.3.1.5** *P* **188** *L* **42** # 65

Mike Li — Intel

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

It is unclear how exactly the C(-2), C(-1), C(1) coefficients (min, max, step size) defined in Table 136-15 be converted to Rpre2, Rpre1, and Rpost values described in this section.

SuggestedRemedy

A presentation referenceable explaining the details would be helpful.

Proposed Response *Response Status* **O**

Cl **136** *SC* **136.9.4.3.2** *P* **192** *L* **2** # 66

Mike Li — Intel

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

TX is not right, it should be RX

SuggestedRemedy

Change TX to RX

Proposed Response *Response Status* **O**

Cl **136** *SC* **136.11.7** *P* **194** *L* **33** # 59

Mellitz, Richard — Samtec

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

Although it was show that a 90 ohm package give the optimum performance, it does not represent the realistic package design considerations.

SuggestedRemedy

Base the package impedance on a target package impedance of 96 ohm +/- 15%. Given for the cable assemblies boards are 109 ohms in COM make this impedance, Zc 80.75 ohms,

Proposed Response *Response Status* **O**

Cl **136** *SC* **136.11.7** *P* **194** *L* **44** # 56

Ran, Adee Intel

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

COM parameter values include c(-2), based on the transmitter specifications and training protocol. But the procedure in Annex 93A does not use this parameter.

SuggestedRemedy

With editorial license, make the necessary changes in Annex 93A to accommodate scanning 4-tap FFE settings as specified for the transmitter.

Proposed Response *Response Status* **O**

Cl **136** *SC* **136.11.7** *P* **195** *L* **18** # 60

Mellitz, Richard Samtec

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

The does not appear to be and equation reference for FzHP or FpHP. It is closely related to eq. 93A–22. One could deduce the meaning. However we should be more explicit.

SuggestedRemedy

Add equation proposed for COM in mellitz_3bs_01_0815_elect.pdf or explicitly specified in Healey_02_0115.pdf

Proposed Response *Response Status* **O**

Cl **136** *SC* **136.12** *P* **198** *L* **38** # 119

Ghiasi, Ali Ghiasi Quantum LLC

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

In 802.3bs we increased low Freq cut off to 100 kHz

SuggestedRemedy

repalce 50 kHz with 100 kHz

Proposed Response *Response Status* **O**

Cl **136** *SC* **136.12** *P* **198** *L* **39** # 120

Ghiasi, Ali Ghiasi Quantum LLC

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

We should not specify the AC coupling cap value

SuggestedRemedy

Having low frequency cut off is sufficent, remove Cap value of 100 nF.

Proposed Response *Response Status* **O**

Cl **136A** *SC* **136A.2** *P* **334** *L* **22** # 162

Healey, Adam Broadcom Ltd.

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

Why is "the value of linear fit pulse peak (min.) is 0.75 × vf" listed as an exception. This the value proposed in 137.9.2 and it is unclear what the motiviation would be to make the requirement different for copper cable applications.

SuggestedRemedy

Remove the exception.

Proposed Response *Response Status* **O**

Cl **136A** *SC* **136A.5** *P* **335** *L* **1246** # 15

MATOGLU, ERDEM AMPHENOL

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

Clause 136A.5 Line 12 states that the mated test fixtures insertion loss shall be calculated by Equation 92A-4. This results in 4.3dB at 13.28GHz.
However, Table 136A-1 has 3.65dB for this field. Figure 136A-1 also has 3.65dB for the mated insertion loss.

Clasue 136B, Section 136B.1.1.1 states that the differential insertion loss of the mated test fixtures shall meet the requirements of 92.11.3.1.
The Equation 92.36 for mated test fixtures insertion loss computes 4.79dB at 13.28GHz. Figure 92.19 also illustrates this.

SuggestedRemedy

It is recommended that the mated insertion loss of the test fixture refers to Clause 92, Equation 92.36. Thereby, modify Clause 136A, Table 136A-1 and Figure 136A-1 Mated Test Fixture insertion loss fields from 3.65dB to 4.79dB.
In order to make the HCB loss consistent in Figure 136A-1, it is recommended to change the HCB reference loss number from 1.38dB to 2.52dB.

Proposed Response *Response Status* **O**

Cl **136A** *SC* **136A.5** *P* **336** *L* **336** # 126

Ghiasi, Ali — Ghiasi Quantum LLC

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

Fig 136A-1 loss breakdown is not consistent with definition of Fig 135G-3, given QSFP optical module or QSFP Cu cables plugs into the same host

SuggestedRemedy

To make the CRx clause consistent with C2M please make the following changes
Increase host PCB loss from 7 dB to 7.5 dB
Increase connector loss from 1.07 to 1.2 dB
Increase TP3 to TP5 loss from 10.07 to 10.2 dB
Increase mated cable assembly test fixtrue from 3.65 dB to 3.78 dB
Adjust TP0 to TP5 loss from 28.9 dB to 29.9 dB or just rounded to 30 dB to be consistent with the backplane
Also increase the ILchannel in table 136A-1 to 29.9 dB.

Proposed Response *Response Status* **O**

Cl **136C** *SC* **136C** *P* **341** *L* **1** # 127

Ghiasi, Ali — Ghiasi Quantum LLC

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

SFP28 and QSFP28 are the wrong designation

SuggestedRemedy

Please change SFP28 with SFP56 and QSFP28 with QSFP56

Proposed Response *Response Status* **O**

Cl **137** *SC* **137.1** *P* **215** *L* **14** # 57

Mellitz, Richard — Samtec

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

The original package impedance was set to 78.2ohms base on simple worst case analysis. PAM-4 appears to more sensitive to reflection the similar signaling rates in NRZ PHYs. Also more analysis in the ad-hoc meetings suggest this also may not be the worst case or the impedance is too stringent causing a "Hole in the standard"

SuggestedRemedy

Choose package impedance based on the channel TDR driving point impedance. Base the package impedance on a target package impedance of 95 ohm +/- 15%. See presentation on details on how to this.

Proposed Response *Response Status* **O**

Cl **137** *SC* **137.1** *P* **215** *L* **41** # 58

Mellitz, Richard — Samtec

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

The does not appear to be and equation reference for FzHP or FpHP. It is closely related to eq. 93A–22. One could deduce the meaning. However we should be more explicit.

SuggestedRemedy

Add equation proposed for COM in mellitz_3bs_01_0815_elect.pdf or explicitly specified in Healey_02_0115.pdf

Proposed Response *Response Status* **O**

Cl **137** *SC* **137.5** *P* **209** *L* **45** # 90

Brown, Matt — Applied Micro

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

In first paragraph and in Table 137-4, the delay contraints for 50G, 100G, and 200G medium and PMD are in magenta (TBD).

SuggestedRemedy

Update with acceptable values and change to black text.

Proposed Response *Response Status* **O**

Cl **137** *SC* **137.5** *P* **209** *L* **46** # 121

Ghiasi, Ali — Ghiasi Quantum LLC

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

With the delay through 40" of FR4 ~6.5 ns the 8 ns is sufficent, but what if someone wants to build a cermaic backpalne which has DF of 10.0 or what about if someone is buidling a cable backplane that might be 3 m long?

SuggestedRemedy

A reasonable value will be 1/4 of delay constraints in Table 137-4 or 20.48 ns.

Proposed Response *Response Status* **O**

Cl **137** *SC* **137.6** *P* **210** *L* **33** # 91

Brown, Matt — Applied Micro

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

The Skew and Skew Variation contraints for 50G, 100G, and 200G are "TBD" in magenta.

SuggestedRemedy

Update with acceptable values and change to black text.

Proposed Response *Response Status* **O**

Cl **137** *SC* **137.8.12** *P* **212** *L* **44** # 157

Healey, Adam — Broadcom Ltd.

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

"The PMD fault function…" should be "The PMD control function…".

SuggestedRemedy

Correct the text as stated in the comment.

Proposed Response *Response Status* **O**

Cl **137** *SC* **137.9.2** *P* **213** *L* **9** # 63

Mellitz, Richard — Samtec

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

Since SNDR is computed with Np=200. package maximum ISI is not limited, Considering manufacturing choices and variations, return loss magnitude is not sufficient.

SuggestedRemedy

The package ISI should be no greater than for the reference package the test fixture, both for compensable and uncompensable ISI. Add 2 new parameter which are derived from p(k), ISI_SNR and DFE4_RSS

Proposed Response *Response Status* **O**

Cl **137** *SC* **137.9.2** *P* **213** *L* **12** # 161

Healey, Adam — Broadcom Ltd.

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

The editor's note suggests that the Task Force "consider referring to 136.9.3 instead" of Annex 120D. The compliance points and application space for this clause are more consistent with Annex 120D and therefore the current references seem appropriate.

SuggestedRemedy

Delete the editor's note.

Proposed Response *Response Status* **O**

Cl **137** *SC* **137.9.2** *P* **213** *L* **14** # 158

Healey, Adam — Broadcom Ltd.

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

Items 1) and 2) are not exceptions. The vf (max.) and vf (min.) values are as stated in Table 120D-1.

SuggestedRemedy

Remove items 1 and 2 from the list of exceptions.

Proposed Response *Response Status* **O**

Cl **137** *SC* **137.9.2** *P* **213** *L* **19** # 159

Healey, Adam — Broadcom Ltd.

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

Exception 4 is stated incorrectly. In IEEE P802.3bs/D2.1, Annex 120D specifies J4 (max) and not J5 (max).

SuggestedRemedy

Change the exception to state "the parameter J4 (max) is replaced by J3 (max) with value TBD." If J4 is preferred to J3, remove the exception.

Proposed Response *Response Status* **O**

Cl **137** *SC* **137.9.2** *P* **213** *L* **22** # 160

Healey, Adam — Broadcom Ltd.

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

It seems likely that signal-to-noise and distortion ratio may end up being an exception given that Annex 120D uses SNR_TX = 31 dB in the COM calculation but this clause currently proposes SNR_TX = 32.5 dB

SuggestedRemedy

Since the COM parameter in question is still under consideration, an editor's note highlighting the possibility that this might be an exception seems appropriate.

Proposed Response *Response Status* **O**

Cl **137** *SC* **137.9.3** *P* **213** *L* **31** # 67

Mike Li — Intel

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

Receiver jitter tolerance test requirement should not be part of insertion loss requirements

SuggestedRemedy

Make a new 4) be Receiver jitter tolerance
(see 120D.3.2.2) is tested using a test channel with 2) and 3) insertion loss requirements., and change the current 4) to 5)

Proposed Response *Response Status* **O**

Cl **137** *SC* **137.10** *P* **215** *L* **14** # 74

Hidaka, Yasuo — Fujitsu Lab of America

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

As shown in hidaka_100516_3cd_adhoc.pdf, the combination of COM parameters of low Zc (90ohms) and high Rd (55ohms) is not always the worst case. In particular, when the channel has large spike-like capacitive discontinuities, high Zc (110ohms) with low Rd (45ohms) or high Rd (55ohms) is worse than low Zc (90ohms) with high Rd(55ohms) by up to 1dB of COM value. Since compliant channels should work with various devices with various Zc and Rd values, we need to revise COM parameters to cover corner cases sufficiently.

SuggestedRemedy

Add a new table of COM parameter values for corner cases, and define 6 or 3 test cases as option A or B in hidaka_100516_3cd_adhoc.pdf slide 13.

Replace the specific values of zp, Rd, and Zc in Table 137-5 with references to the new table.

Proposed Response *Response Status* **O**

Cl **137** *SC* **137.10** *P* **215** *L* **25** # 68

Mike Li — Intel

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

Pre-cursor 2 should be C(-2), not C(-1)

SuggestedRemedy

Change it to C(-2)

Proposed Response *Response Status* **O**

Cl **137** *SC* **137.10.1** *P* **216** *L* **24** # 122

Ghiasi, Ali — Ghiasi Quantum LLC

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

Equation 137.10.1 has loss of 30.52 dB exceeding the agreed 30 dB loss, equation has disconnect, and loss from 0.05 to Fb/2 has very strong SQRT(f) which is not typical of backplane material

SuggestedRemedy

Adjust equation loss to be 30 dB, correct 2nd half of equation so there is no disconnect, and reduce SQRT loss
Here is propse equation:
IL=0.4842+1.744*sqrt(f) + 1.744*f , 0.01<f<fb/2
IL=-12.44 + 3.2* f, fb/2<f<fb
see ghiasi_cd_02_1116.pdf

Proposed Response *Response Status* **O**

Cl **138** *SC* **138.3.1** *P* **229** *L* **11** # 92

Brown, Matt — Applied Micro

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

In first paragraph and in Table 138-4, the delay contraints for 50G, 100G, and 200G medium and PMD are in magenta (TBD).

SuggestedRemedy

Update with acceptable values and change to black text.

Proposed Response *Response Status* **O**

Cl **138** *SC* **138.3.2** *P* **229** *L* **49** # 93

Brown, Matt — Applied Micro

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

The Skew and Skew Variation contraints for 50G, 100G, and 200G are in magenta (TBD).

SuggestedRemedy

Update with acceptable values and change to black text.

Proposed Response *Response Status* **O**

Cl **138** *SC* **138.7** *P* **234** *L* **31** # 175

Kolesar, Paul — CommScope

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

TIA has published TIA-492AAAE, the detailed fiber specification for what is referred to in ANSI/TIA-568.3-D as wideband multimode fiber. This fiber is compliant and superior to type A1a.3 (OM4) and will support the 50G-SR, 100G-SR2 and 200G-SR4 PMDs at least as well as OM4. Therefore it should be included as a recognized media type.
Note: TIA-492AAAE is referenced in clause 123 for 400GBASE-SR16.

SuggestedRemedy

Add the fiber by replacing the second sentence of the clause as follows:
A compliant PMD operates on 50/125 um multimode fibers, type A1a.2 (OM3), type A1a.3 (OM4), or fiber compliant to TIA-492AAAE, according to the specifications defined in Table 138-15.
Note: IEC and ISO are in the midst of standardizing wideband fiber and cabling. It is anticipated that IEC type designation and ISO OMx designation will be known well before the P802.3cd amendment is published.

Proposed Response *Response Status* **O**

Cl **138** *SC* **138.7** *P* **234** *L* **42** # 176

Kolesar, Paul — CommScope

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

TIA has published TIA-492AAAE, the detailed fiber specification for what is referred to in ANSI/TIA-568.3-D as wideband multimode fiber. This fiber is compliant and superior to type A1a.3 (OM4) and will support the 50G-SR, 100G-SR2 and 200G-SR4 PMDs at least as well as OM4. Therefore it should be included as a recognized media type.
Note: TIA-492AAAE is already referenced in clause 123 for 400GBASE-SR16.

SuggestedRemedy

Add wideband fiber in a new row at the bottom of the right column of Table 138-8 as follows:
0.5 m to 100 m for wideband MMF (TIA-492AAAE)

Proposed Response *Response Status* **O**

Cl **138** *SC* **138.7.3** *P* **236** *L* **16** # 177

Kolesar, Paul CommScope

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

TIA has published TIA-492AAAE, the detailed fiber specification for what is referred to in ANSI/TIA-568.3-D as wideband multimode fiber. This fiber is compliant and superior to type A1a.3 (OM4) and will support the 50G-SR, 100G-SR2 and 200G-SR4 PMDs at least as well as OM4. Therefore it should be included as a recognized media type.

SuggestedRemedy

Add a new column just to the right of the OM4 column in Table 138-11 with the heading "Wideband MMF (TIA-492AAAE)". All values in the underlying rows should be identical to those under the OM4 heading.

Proposed Response *Response Status* **O**

Cl **138** *SC* **138.10.1** *P* **241** *L* **18** # 178

Kolesar, Paul CommScope

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

TIA has published TIA-492AAAE, the detailed fiber specification for what is referred to in ANSI/TIA-568.3-D as wideband multimode fiber. This fiber is compliant and superior to type A1a.3 (OM4) and will support the 50G-SR, 100G-SR2 and 200G-SR4 PMDs at least as well as OM4. Therefore it should be included as a recognized media type.

SuggestedRemedy

Replace the third sentence with the following: As OM4 and wideband MMF (TIA-492AAAE) optical fiber meet the requirements for OM3, a channel compliant to the "OM3" column may use OM4 or wideband MMF (TIA-492AAAE) optical fiber, or a combination of OM3, OM4 and wideband MMF (TIA-492AAAE).
Note: Idential language already exists in draft clause 123 for 400GBASE-SR16.

Proposed Response *Response Status* **O**

Cl **138** *SC* **138.10.1** *P* **241** *L* **25** # 179

Kolesar, Paul CommScope

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

TIA has published TIA-492AAAE, the detailed fiber specification for what is referred to in ANSI/TIA-568.3-D as wideband multimode fiber. This fiber is compliant and superior to type A1a.3 (OM4) and will support the 50G-SR, 100G-SR2 and 200G-SR4 PMDs at least as well as OM4. Therefore it should be included as a recognized media type.

SuggestedRemedy

Add a new column to Table 138-15 just to the right of the OM4 column with the heading "Wideband MMF (TIA-492AAAE)". All values in the underlying rows should be identical to those under the OM4 heading.

Proposed Response *Response Status* **O**

Cl **138** *SC* **138.10.2.1** *P* **242** *L* **3** # 180

Kolesar, Paul CommScope

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

TIA has published TIA-492AAAE, the detailed fiber specification for what is referred to in ANSI/TIA-568.3-D as wideband multimode fiber. This fiber is compliant and superior to type A1a.3 (OM4) and will support the 50G-SR, 100G-SR2 and 200G-SR4 PMDs at least as well as OM4. Therefore it should be included as a recognized media type.

SuggestedRemedy

Wideband fiber shares core diameter, nominal wavelength, and effective modal bandwidth characteristics with OM4. It delivers no more than 3.5 dB/km attenuation (and in fact is set to 3.0 dB/km in TIA-568.3-D). However the zero dispersion wavelength and chromatic dispersion slope are both superior to the specifications for OM3 and OM4. To handle these similarities and differences, a new column is proposed to be added to the right of the "OM4" column in Table 138-16 with the heading "Wideband MMF". Superscript the heading for footnote "c", the footnote to read: TIA-492AAAE. Increment the current "c" footnote to "d". Share the cells in this column for the first four rows with those of the "OM4" column. In the ZDW cell insert the following: 1297 <= lambda0 <= 1328. In the dispersion slope cell insert the following:
<= -412/(840(1-(lambda0/840)^4)).
Note: See Table 123-7 for an example table implementing these changes.

Proposed Response *Response Status* **O**

Cl **139** *SC* **139.3.2** *P* **250** *L* **44** # 94

Brown, Matt — Applied Micro

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

The Skew and Skew Variation contraints are in magenta (TBD).

SuggestedRemedy

Update with acceptable values and change to black text.

Proposed Response *Response Status* **O**

Cl **139** *SC* **139.6.3** *P* **256** *L* **22** # 123

Ghiasi, Ali — Ghiasi Quantum LLC

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

Missing lower fiber loss 0.43 dB/km

SuggestedRemedy

Also add the 0.43 dB/km fiber per definition of Table 88-15

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.3.1** *P* **273** *L* **31** # 95

Brown, Matt — Applied Micro

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

The delay contraints are in magenta (TBD).

SuggestedRemedy

Update with acceptable values and change to black text.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.3.2** *P* **273** *L* **43** # 96

Brown, Matt — Applied Micro

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

The Skew and Skew Variation contraints are in magenta (TBD).

SuggestedRemedy

Update with acceptable values and change to black text.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.1** *P* **277** *L* **43-4** # 108

Liu, Hai-Feng — Intel

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

Need agreement on Tx OMAmin.

SuggestedRemedy

Propose to use total of link loss and MPI penalty in the link budget consideration, and keep the optical specs unchanged from 400GBASE-DR4 specs. No changes in Tx OMA and Tx OMA - TDECQ. Will submit a presentation to provide details.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.2** *P* **278** *L* **34-3** # 109

Liu, Hai-Feng — Intel

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

Need agreemnt on Rx Sensitivity.

SuggestedRemedy

Propose to use total of link loss and MPI penalty in the link budget consideration, and keep the optical specs unchanged from 400GBASE-DR4 specs. No change in Rx sensitivity, ans stressed sensitivity. Will submit a presentation to provide details.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.3** *P* **279** *L* **1** # 107

Nicholl, Gary — Cisco Systems

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

Table 140-8. While I agree with the editor's note the values in magenta text in Table 140-8 should be 5.8dB and 2.8dB respectively, to agree with the adopted baseline (see slide 6 of traverso_3cd_03a_0916).

SuggestedRemedy

Update text in magenta to agree with the values in the baseline presentation (slide 6 of traverso_3cd_03a_0916)

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.3** *P* **279** *L* **5** # 110

Liu, Hai-Feng Intel

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

5.8 dB Power budget (for max TDECQ) was the agreed upon place holder (not 5.6 dB in the table). And need agreement on this #.

SuggestedRemedy

Propose to use total of link loss and MPI penalty in the link budget consideration, and keep the the power budget at 5.6 dB. Will submit a presentation to provide details.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.3** *P* **279** *L* **11** # 111

Liu, Hai-Feng Intel

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

2.8 dB Allocation for penalties was the agreed upon place holder(not 2.6 dB). Need agreement on this #.

SuggestedRemedy

Propose to use total of link loss and MPI penalty in the link budget consideration, and keep the the power budget at 2.6 dB. Will submit a presentation to provide details.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.3** *P* **279** *L* **15** # 112

Liu, Hai-Feng Intel

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

Make total loss + MPI penalty as a constant

SuggestedRemedy

Add a note that 3dB is the maximum link loss, and it can be lower to trade off with high MPI penalty. However, the total of link loss and MPI penalty should not exceed 3.1 dB.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.9** *P* **283** *L* **38** # 113

Liu, Hai-Feng Intel

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

Add a note for the 3 dB link loss max.

SuggestedRemedy

Add a note that 3dB is the maximum link loss, and it can be lower to trade off with high MPI penalty. However, the total of link loss and MPI penalty should not exceed 3.1 dB.

Proposed Response *Response Status* **O**