

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl **FM** SC **FM** P **15** L **2** # **69**  
 Hidaka, Yasuo Fujitsu Lab of America

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

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.

Response Response Status **C**

ACCEPT.

Cl **000** SC **0** P Ciena L # **163**  
 Anslow, Pete

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

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.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Add an MDIO control bit for each PMA transmitter and receiver to enable and disable precoding. Add text describing how these bits may be used for both AUI and PMD interfaces.

For each PMA receiver add a precoder request MDIO bit. Use the transmitter preemphasis request as a basis.

Cl **000** SC **0** P Ciena L # **164**  
 Anslow, Pete

Comment Type **T** Comment Status **A** <CC> BER

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](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

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Implement the suggested remedy except referring to the following (corrected) URL:  
[http://www.ieee802.org/3/cd/public/adhoc/archive/gustlin\\_102616\\_3cd\\_adhoc\\_v2.pdf](http://www.ieee802.org/3/cd/public/adhoc/archive/gustlin_102616_3cd_adhoc_v2.pdf)

[Editor's note (added after comment resolution): The URL in this response is incorrect. The correct URL is as follows:  
[http://www.ieee802.org/3/cd/public/adhoc/archive/anslow\\_102616\\_3cd\\_adhoc.pdf](http://www.ieee802.org/3/cd/public/adhoc/archive/anslow_102616_3cd_adhoc.pdf)]

Cl **000** SC **0** P **0** L **0** # **17**  
 Ran, Adeo Intel

Comment Type **T** Comment Status **D** <CC> 802.3bs

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 **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

CI 000 SC 0 P 0 L 0 # 16  
 Ran, Adeel Intel  
 Comment Type T Comment Status D <CC> 802.3bs  
 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 Z  
 REJECT.  
 This comment was WITHDRAWN by the commenter.

CI 000 SC 0 P 293 L 1 # 71  
 Hidaka, Yasuo Fujitsu Lab of America  
 Comment Type E Comment Status A bucket  
 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.  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Unfortunately, because of the way the Annex headings are structured in the Framemaker template the PDF bookmark headings cannot be generated automatically in the format that the commenter requests. Instead, for that format the bookmarks must be manually generated after the PDF is created.  
 To save some effort on the part of the editorial team, I would ask that the task force forgive the format until publication.

CI 001 SC 1.1.3.2 P 34 L 17 # 124  
 Ghiasi, Ali Ghiasi Quantum LLC  
 Comment Type TR Comment Status A  
 There is no mention of value of n for 50GAUI-n  
 SuggestedRemedy  
 Add text to say where n=1 or 2.  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Using the text for CAUI-n/100GAUI-n as a guide, add the following penultimate sentence: "Two widths of 50GAUI-n are defined: a two-lane version (50GAUI-2) in Annex 135D and Annex 135E, and a one-lane version (50GAUI-1) in Annex 135F and Annex 135G."

CI 001 SC 1.1.3.2 P 34 L 27 # 125  
 Ghiasi, Ali Ghiasi Quantum LLC  
 Comment Type TR Comment Status R  
 There is no mention of value of n for 100GAUI-n  
 SuggestedRemedy  
 Add text to say where n=2 or 4.  
 Response Response Status C  
 REJECT.  
 This definition is unchanged in this respect from the definition for CAUI-n in 802.3-2015.  
 It is clear from the penultimate sentence that for 100GAUI-n, n is 2 or 4.

CI 001 SC 1.4.54a P 35 L 10 # 8  
 Lusted, Kent Intel  
 Comment Type TR Comment Status A bucket  
 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.)"  
 Response Response Status C  
 ACCEPT.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

CI 001 SC 1.4.58a2 P 35 L 29 # 10  
Lusted, Kent Intel

Comment Type TR Comment Status A bucket

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.)"

Response Response Status C

ACCEPT.

CI 001 SC 1.4.58a4 P 35 L 36 # 11  
Lusted, Kent Intel

Comment Type TR Comment Status A bucket

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.)"

Response Response Status C

ACCEPT.

CI 001 SC 1.4.58a6 P 35 L 44 # 64  
Maguire, Valerie Siemon

Comment Type E Comment Status A bucket

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"

Response Response Status C

ACCEPT IN PRINCIPLE.

For 50GBASE-SR there is no need to mention the number of lanes. The wording should be based on the definition for 25GBASE-SR which is also a single-lane MMF PHY. However, the definition should not imply a single fiber.

Change "a multimode" to "multimode".

CI 030 SC 30 P 38 L 2 # 137  
Slavick, Jeff Broadcom Limited

Comment Type T Comment Status A Bucket

Need to bring in aBIPErrorCount, aFECAbility, aLaneMapping, aRSFECBIPErrorCount, and aRSFECLaneMapping and add 50G to their definitions

SuggestedRemedy

Per comment

Response Response Status C

ACCEPT.

CI 030 SC 30.3.2.1.2 P 38 L 16 # 18  
Ran, Adele Intel

Comment Type E Comment Status A Bucket

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.

Response Response Status C

ACCEPT.

CI 030 SC 30.5.1.1.2 P 38 L 50 # 2  
Marris, Arthur Cadence Design Syste

Comment Type E Comment Status A Bucket

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

Response Response Status C

ACCEPT.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

CI 030 SC 30.5.1.1.2 P 38 L 50 # 19  
 Ran, Adee Intel

Comment Type E Comment Status A Bucket

The placement of new entries is not specified 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.

Response Response Status C

ACCEPT.

CI 030 SC 30.5.1.1.2 P 39 L 3 # 20  
 Ran, Adee Intel

Comment Type E Comment Status A Bucket

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

Appears 3 times

SuggestedRemedy

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

Response Response Status C

ACCEPT.

CI 030 SC 30.5.1.1.2 P 39 L 13 # 21  
 Ran, Adee Intel

Comment Type E Comment Status A Bucket

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

SuggestedRemedy

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

Response Response Status C

ACCEPT.

CI 030 SC 30.5.1.1.17 P 40 L 7 # 23  
 Ran, Adee Intel

Comment Type T Comment Status A Bucket

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.

Response Response Status C

ACCEPT.

CI 030 SC 30.5.1.1.17 P 40 L 7 # 22  
 Ran, Adee Intel

Comment Type T Comment Status A

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.

Response Response Status C

ACCEPT.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl **045** SC **45** P **42** L **0** # **152**  
 Slavick, Jeff Broadcom Limited  
 Comment Type **T** Comment Status **A** bucket  
 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.  
 Response Response Status **C**  
 ACCEPT IN PRINCIPLE.  
 Implement suggested remedy using editorial licence

Cl **045** SC **45** P **42** L **0** # **151**  
 Slavick, Jeff Broadcom Limited  
 Comment Type **T** Comment Status **A** bucket  
 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  
 Response Response Status **C**  
 ACCEPT IN PRINCIPLE.  
 Implement suggested remedy using editorial licence

Cl **045** SC **45** P **42** L **0** # **153**  
 Slavick, Jeff Broadcom Limited  
 Comment Type **T** Comment Status **A** bucket  
 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.  
 Response Response Status **C**  
 ACCEPT IN PRINCIPLE.  
 Implement suggested remedy using editorial licence

Cl **045** SC **45.2.1.4.6a** P **43** L **47** # **3**  
 Marris, Arthur Cadence Design Syste  
 Comment Type **E** Comment Status **A** Bucket  
 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  
 Response Response Status **C**  
 ACCEPT.

Cl **045** SC **45.2.1.10** P **49** L **30** # **7**  
 Marris, Arthur Cadence Design Syste  
 Comment Type **T** Comment Status **A** Bucket  
 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.  
 Response Response Status **C**  
 ACCEPT.

Cl **045** SC **45.2.1.14b** P **50** L **12** # **24**  
 Ran, Adee Intel  
 Comment Type **E** Comment Status **A** Bucket  
 No white space between number and title  
 SuggestedRemedy  
 Add some spacing  
 Response Response Status **C**  
 ACCEPT.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

CI 045 SC 45.2.1.14b P 50 L 27 # 25  
 Ran, Adee Intel  
 Comment Type T Comment Status A Bucket  
 The description for "0" incorrectly states 400G PMDs, in 5 cases  
 SuggestedRemedy  
 Change 400G to 50G in last 5 rows  
 Response Response Status C  
 ACCEPT.

CI 045 SC 45.2.1.101 P 51 L 39 # 150  
 Slavick, Jeff Broadcom Limited  
 Comment Type T Comment Status R  
 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."  
 Response Response Status C  
 REJECT.  
 This zero value needs to reflect legacy operation so it needs to be defined this way.  
 If you made "1 = FEC is being used with a four lane PMD" legacy implementations would have the wrong value for this bit.

CI 045 SC 45.2.3.4.5a P 53 L 39 # 181  
 Pete Anslow  
 Comment Type T Comment Status A bucket  
 Bit address is incorrect.  
 SuggestedRemedy  
 Change 3.4.10 to 3.4.5, twice.  
 Response Response Status C  
 ACCEPT.

CI 045 SC 45.2.3.13 P 55 L 40 # 26  
 Ran, Adee Intel  
 Comment Type E Comment Status A Bucket  
 "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  
 Response Response Status C  
 ACCEPT.

CI 069 SC 69.2.3 P 62 L 39 # 27  
 Ran, Adee Intel  
 Comment Type E Comment Status R bucket  
 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 significant.  
 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):"  
 Response Response Status C  
 REJECT.  
 The location is important and the instruction is sufficiently clear.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 069 SC 69.2.3 P 62 L 42 # 28  
 Ran, Adee Intel

Comment Type T Comment Status A bucket

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.

Response Response Status C

ACCEPT.

Cl 069 SC 69.2.3 P 62 L 45 # 4  
 Marris, Arthur Cadence Design System

Comment Type E Comment Status A bucket

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

Response Response Status C

ACCEPT IN PRINCIPLE.

On: page/line 62/45  
 Change: "100GBASE-KR"  
 To: "100GBASE-KR2"

On page/line 62/47 and 208/1  
 Change: "200GBASE-KR"  
 To: "200GBASE-KR4"

Cl 069 SC 69.2.3 P 62 L 45 # 29  
 Ran, Adee Intel

Comment Type T Comment Status A bucket

100GBASE-KR is not defined in this project.

SuggestedRemedy

Change to 100GBASE-KR2.

Response Response Status C

ACCEPT.

Cl 073 SC 73.3 P 65 L 49 # 139  
 Slavick, Jeff Broadcom Limited

Comment Type T Comment Status A

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-Dependent PHYs are those supported by the Auto-Negotiation process (see Table 73-4)

Response Response Status C

ACCEPT.

Cl 073 SC 73.5 P 66 L 11 # 5  
 Marris, Arthur Cadence Design System

Comment Type E Comment Status A Bucket

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

Response Response Status C

ACCEPT.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

CI 073 SC 73.6.4 P 67 L 1 # 30  
 Ran, Adee Intel  
 Comment Type E Comment Status A Bucket  
 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).  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Implement suggested remedy with editorial licence

CI 073 SC 73.6.4 P 67 L 9 # 9  
 Lusted, Kent Intel  
 Comment Type TR Comment Status A Bucket  
 Typo  
 SuggestedRemedy  
 In the last sentence of the revised third paragraph of 73.6.4, change "1000BASE-X" to "1000BASE-KX"  
 Response Response Status C  
 ACCEPT.

CI 073 SC 73.6.4 P 67 L 10 # 31  
 Ran, Adee Intel  
 Comment Type E Comment Status A Bucket-Pulled  
 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.  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 OBE. The referenced paragraph is being deleted according to Maintenance item #1283.  
 Implement the instructions in maintenance item 1283.  
[http://www.ieee802.org/3/maint/requests/maint\\_1283.pdf](http://www.ieee802.org/3/maint/requests/maint_1283.pdf)

CI 073 SC 73.7.1 P 67 L 26 # 32  
 Ran, Adee Intel  
 Comment Type E Comment Status A Bucket  
 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.  
 Response Response Status C  
 ACCEPT.

CI 073 SC 73.7.6 P 67 L 41 # 138  
 Slavick, Jeff Broadcom Limited  
 Comment Type T Comment Status R  
 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  
 Response Response Status C  
 REJECT.  
 No consensus to make the change.

CI 073 SC 73.10.2 P 69 L 26 # 141  
 Slavick, Jeff Broadcom Limited  
 Comment Type T Comment Status A Bucket  
 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  
 Response Response Status C  
 ACCEPT.



IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

**Cl 073** SC **73.10.2** P **69** L **30** # **142**  
 Slavick, Jeff Broadcom Limited  
 Comment Type **T** Comment Status **A** Bucket  
 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  
 Response Response Status **C**  
 ACCEPT.

**Cl 078** SC **78.1** P **71** L **7** # **33**  
 Ran, Adee Intel  
 Comment Type **T** Comment Status **A**  
 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).  
 Response Response Status **C**  
 ACCEPT.

**Cl 078** SC **78.5.2** P **72** L **40** # **34**  
 Ran, Adee Intel  
 Comment Type **E** Comment Status **A**  
 The deletion in the title removes the essential part relevant 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).  
 Response Response Status **C**  
 ACCEPT.

**Cl 080** SC **80.1.4** P **74** L **16** # **35**  
 Ran, Adee Intel  
 Comment Type **T** Comment Status **A** bucket  
 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.  
 Response Response Status **C**  
 ACCEPT.

**Cl 080** SC **80.1.5** P **76** L **17** # **182**  
 Matt Brown  
 Comment Type **T** Comment Status **A**  
 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".  
 Response Response Status **C**  
 ACCEPT.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 080 SC 80.2.1 P 76 L 34 # 36  
 Ran, Adee Intel  
 Comment Type E Comment Status A bucket  
 Missing comma after "Clause 83"  
 SuggestedRemedy  
 Insert a comma  
 Response Response Status C  
 ACCEPT.

Cl 080 SC 80.4 P 78 L 13 # 77  
 Brown, Matt Applied Micro  
 Comment Type T Comment Status A delay  
 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.  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Resolve according the response for comments 88, 90, 92, 95.

Cl 082 SC 82.7.4 P 82 L 24 # 37  
 Ran, Adee Intel  
 Comment Type E Comment Status A bucket  
 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.  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 The subclause heading levels were in error in 802.3-2015. Without the amendments to the clause heading levels the new AN PICS would be subsidiary to 82.6.4.7 Management.  
 Add an editor's note as requested.

Cl 091 SC 91.5.4.3 P 85 L 1 # 75  
 Gustlin, Mark Xilinx  
 Comment Type T Comment Status A FEC AM lock  
 This is a comment against a subclause that is not currently part of the amendment. Currently the alignment marker lock SM does not continuously 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 continuously 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.

Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 The comment is addressed by maintenance item #1299.  
 Implement the instructions in maintenance item 1299.  
[http://www.ieee802.org/3/maint/requests/maint\\_1299.pdf](http://www.ieee802.org/3/maint/requests/maint_1299.pdf)  
 See also comment #174.

Cl 091 SC 91.6 P 85 L 50 # 143  
 Slavick, Jeff Broadcom Limited  
 Comment Type T Comment Status A Bucket  
 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  
 Response Response Status C  
 ACCEPT.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 091 SC 91.6.2a P 85 L 9 # 146  
 Slavick, Jeff Broadcom Limited  
 Comment Type E Comment Status A Bucket  
 "This variable shall.." appears to be in different font then the rest of the paragraph.  
 SuggestedRemedy  
 Fix the font used in 91.6.2a  
 Response Response Status C  
 ACCEPT.

Cl 091 SC 91.6.2a P 86 L 11 # 1  
 Marris, Arthur Cadence Design Syste  
 Comment Type E Comment Status A Bucket  
 It should be bit 1.200.3 rather than 1.200.2  
 SuggestedRemedy  
 Change to 1.200.3  
 Response Response Status C  
 ACCEPT.

Cl 091 SC 91.6.2a P 85 L 9 # 145  
 Slavick, Jeff Broadcom Limited  
 Comment Type T Comment Status A Bucket  
 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."  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Remove the shall as proposed in the suggested remedy.

Cl 116 SC 116.1.4 P 87 L 44 # 38  
 Ran, Adee Intel  
 Comment Type E Comment Status A bucket  
 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.  
 Response Response Status C  
 ACCEPT.

Cl 116 SC 116.4 P 89 L 25 # 78  
 Brown, Matt Applied Micro  
 Comment Type T Comment Status A delay  
 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.  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.

Resolve according to the response for comments 88, 90, 92.

Cl 091 SC 91.6.2a P 85 L 11 # 144  
 Slavick, Jeff Broadcom Limited  
 Comment Type T Comment Status A Bucket  
 Points to the wrong MDIO register bit for the new Four lane PMD.  
 SuggestedRemedy  
 Change 1.200.2 to 1.200.3  
 Response Response Status C  
 ACCEPT.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 131 SC 131.1.2 P91 L 16 # 128  
 Ghiasi, Ali Ghiasi Quantum LLC  
 Comment Type ER Comment Status R bucket  
 Missing "The"  
 SuggestedRemedy  
 Add "The" 50 Gigabit  
 Response Response Status C  
 REJECT.  
 There is no issue with the grammar as written. This wording is consistent with 802.3bs 116.1.2, 802.3by 105.1.2, and 802.3-2015 80.1.3.

Cl 131 SC 131.1.2 P92 L 3 # 39  
 Ran, Adeel Intel  
 Comment Type T Comment Status A  
 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).  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Add the follow sentence at the end of item a:  
 "Physical instantiations of this interface may use other data-path widths."

Cl 131 SC 131.1.2 P92 L 18 # 129  
 Ghiasi, Ali Ghiasi Quantum LLC  
 Comment Type TR Comment Status R bucket  
 Missing reference to CL 135 A optional AUI  
 SuggestedRemedy  
 Add reference to CL 135A  
 Response Response Status C  
 REJECT.  
 Consistent with other BASE-R PHY families, 135.1.4 and Annex 135A provide examples of PMA locations and MMD mapping. As such, Annex 135A is introduced and referenced from Clause 135.

Cl 131 SC 131.1.3 P92 L 39 # 70  
 Hidaka, Yasuo Fujitsu Lab of America  
 Comment Type E Comment Status A bucket  
 In Table 131-1, 50GBASE-SR is written as 50GBASES-SR.  
 SuggestedRemedy  
 Change 50GBASES-SR to 50GBASE-SR.  
 Response Response Status C  
 ACCEPT.

Cl 131 SC 131.1.4 P93 L 1 # 97  
 Nicholl, Gary Cisco Systems  
 Comment Type E Comment Status A bucket  
 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.  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 To align with the title of Clause 134...  
 In Table 131-2, Table 131-3, Table 131-4, and Table 69-2b:  
 Change "50GBASE-R FEC"  
 To "50GBASE-R RS-FEC"

Cl 131 SC 131.2 P93 L 42 # 130  
 Ghiasi, Ali Ghiasi Quantum LLC  
 Comment Type ER Comment Status R bucket  
 Missing couple of "The"  
 SuggestedRemedy  
 Response Response Status C  
 REJECT.  
 Grammar is correct as written.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

CI 131 SC 131.2.1 P 94 L 1 # 72  
 Hidaka, Yasuo Fujitsu Lab of America  
 Comment Type E Comment Status A bucket  
 A grammer error.  
 SuggestedRemedy  
 Change "it are used" to "it is used".  
 Response Response Status C  
 ACCEPT.

CI 131 SC 131.4 P 97 L 18 # 79  
 Brown, Matt Applied Micro  
 Comment Type T Comment Status A delay  
 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.  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Resolve according to the response for comments 88, 90, 92.  
 Also, for 50GBASE-FR/LR include delay numbers from 139.3.1.

CI 131 SC 131.5 P 99 L 22 # 80  
 Brown, Matt Applied Micro  
 Comment Type T Comment Status R skew  
 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.  
 Response Response Status C  
 REJECT.  
 See brown\_3cd\_01\_1116.  
 There is no consensus to make the proposed changes at this time.  
 Further contributions are invited address the the skew and skew variation values.

CI 131 SC 131.5 P 100 L 8 # 81  
 Brown, Matt Applied Micro  
 Comment Type T Comment Status R skew  
 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.  
 Response Response Status C  
 REJECT.  
 See brown\_3cd\_01\_1116.  
 There is no consensus to make the proposed changes at this time.  
 Further contributions are invited address the the skew and skew variation values.

CI 132 SC 132.1.4 P 103 L 39 # 40  
 Ran, Adeo Intel  
 Comment Type E Comment Status A Bucket  
 We have specific definitions for this project, in 131.4  
 SuggestedRemedy  
 Change "80.4" to "131.4", active cross reference.  
 Response Response Status C  
 ACCEPT.

CI 132 SC 132.1.7 P 104 L 31 # 41  
 Ran, Adeo Intel  
 Comment Type E Comment Status A Bucket  
 Annex 4a is included in this amendment.  
 SuggestedRemedy  
 Make it an active cross reference.  
 Response Response Status C  
 ACCEPT.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 132 SC 132.2 P 96 L 34 # 131  
 Ghiasi, Ali Ghiasi Quantum LLC  
 Comment Type ER Comment Status R bucket  
 Missing more "the" before 50xx  
 SuggestedRemedy  
 Add "the"  
 Response Response Status C  
 REJECT.  
 There is no need for an extra "the" at the location indicated by the commenter.

Cl 132 SC 132.4 P 104 L 45 # 42  
 Ran, Adeo Intel  
 Comment Type E Comment Status A bucket  
 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".  
 Response Response Status C  
 ACCEPT.

Cl 133 SC 133.1.2 P 107 L 26 # 43  
 Ran, Adeo Intel  
 Comment Type T Comment Status A bucket  
 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.  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Implement suggested remedy except put at the top of the list.

Cl 133 SC 133.1.4 P 107 L 42 # 132  
 Ghiasi, Ali Ghiasi Quantum LLC  
 Comment Type TR Comment Status R  
 2nd Paragraph describes Fig 133-1 but is not referenced  
 SuggestedRemedy  
 Add reference to Fig 133-1  
 Response Response Status C  
 REJECT.  
 The commenter is correct that 133.1.4 does not reference Figure 133-1.  
 The intent of Figure 133-1 is simply to show the relationship of the PCS to the other sublayers. It is referenced in 133.1.2 and 133.1.3.  
 This is consistent with every BASE-R PCS clause in 802.3.

Cl 133 SC 133.1.4 P 107 L 43 # 133  
 Ghiasi, Ali Ghiasi Quantum LLC  
 Comment Type TR Comment Status R  
 Need to also reference partitioning example of CL 135A  
 SuggestedRemedy  
 .FEC sublayer. If the optional LAUI-2 interface instantiated see the PMA sublayer partitioning examples in 135A with physical instantiation in CL135B.1 and CL135C.1, then .  
 Response Response Status C  
 REJECT.  
 Consistent with other BASE-R PHY families, Annex 135A provides examples of PMA locations and MMD mapping. As such, Annex 135A is introduced and referenced from Clause 135.  
 See also comment #129.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 133 SC 133.2.3 P 111 L 9 # 82  
 Brown, Matt Applied Micro  
 Comment Type T Comment Status R skew  
 The maximum Skew and Skew Variation are "TBD" in magenta.  
 SuggestedRemedy  
 Update with acceptable values and change to black text.  
 Response Response Status C  
 REJECT.  
 See brown\_3cd\_01\_1116.  
 There is no consensus to make the proposed changes at this time.  
 Further contributions are invited address the the skew and skew variation values.

Cl 133 SC 133.2.4 P 111 L 16 # 98  
 Nicholl, Gary Cisco Systems  
 Comment Type E Comment Status A bucket  
 Unnecessary comma after "defined in 82.2.19"  
 SuggestedRemedy  
 Remove the comma after "defined in 82.2.19"  
 Response Response Status C  
 ACCEPT.

Cl 133 SC 133.3 P 111 L 36 # 83  
 Brown, Matt Applied Micro  
 Comment Type T Comment Status A delay  
 The delay constraints are "TBD" in magenta.  
 SuggestedRemedy  
 Update with acceptable values and change to black text.  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Update the PCS delay values according to brown\_3cd\_03\_1116 slide 6.

Cl 133 SC 133.5 P 112 L 1 # 99  
 Nicholl, Gary Cisco Systems  
 Comment Type T Comment Status A bucket  
 Update PICS as required with editorial licence  
 SuggestedRemedy

Response Response Status C  
 ACCEPT.

Cl 134 SC 134.1.1 P 117 L 12 # 44  
 Ran, Adee Intel  
 Comment Type T Comment Status A bucket  
 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".

Response Response Status C  
 ACCEPT.

Cl 134 SC 134.1.1 P 117 L 14 # 45  
 Ran, Adee Intel  
 Comment Type E Comment Status A bucket  
 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.

Response Response Status C  
 ACCEPT.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 134 SC 134.1.1 P 117 L 17 # 46  
 Ran, Adeel Intel  
 Comment Type E Comment Status A bucket  
 Improve style  
 SuggestedRemedy  
 Change "that" to "for the fact that", twice in this paragraph  
 Response Response Status C  
 ACCEPT.

Cl 134 SC 134.1.2 P 117 L 27 # 47  
 Ran, Adeel Intel  
 Comment Type E Comment Status A bucket  
 Missing space after "Figure 134-1"  
 SuggestedRemedy  
 Add space  
 Response Response Status C  
 ACCEPT.

Cl 134 SC 134.3 P 118 L 40 # 134  
 Ghiasi, Ali Ghiasi Quantum LLC  
 Comment Type TR Comment Status R  
 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.  
 Response Response Status C  
 REJECT.  
 Consistent with other BASE-R PHY families, Annex 135A provides examples of PMA locations and MMD mapping. As such, Annex 135A is introduced and referenced from Clause 135.  
 See comment #129.

Cl 134 SC 134.4 P 118 L 50 # 84  
 Brown, Matt Applied Micro  
 Comment Type T Comment Status A delay  
 The delay constraints are "TBD" in magenta.  
 SuggestedRemedy  
 Update with acceptable values and change to black text.  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Update the FEC delay values according to brown\_3cd\_03\_1116 slide 7.

Cl 134 SC 134.5.1 P 119 L 5 # 135  
 Ghiasi, Ali Ghiasi Quantum LLC  
 Comment Type TR Comment Status A sublayers  
 Fig 134-1 shows a diagram having integrated PCS with FEC without a PMA, but instantiation 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 modified with dotted block covering alignment removal-transcode-Alignment insert as optional.  
 See ghiasi\_cd\_01\_1116.pdf  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.

The intent of Figure 134-1 is to show the relationship of the FEC sublayer to the other sublayers. This is consistent with previous PCS and FEC clauses in 802.3, e.g. Clause 82, 91, 107, 108, etc. PMA sublayer partitioning examples are provided in Annex 135A.

The functional block diagram of the RS-FEC sublayer shown in Figure 134-2 is independent of whether a separated PMA is connected to the FEC service interface or not, as the observable behavior must be identical in both cases.

The text in 134.6 recognizes that if a separated PMA is connected to the FEC service interface additional MDIO status bits are required as defined in Table 134-4 (and therefore if a separated PMA is not connected that these MDIO status bits are not required):

"if a separated PMA (see 45.2.1) is connected to the FEC service interface it shall map additional MDIO status bits to additional RS-FEC status variables as shown in Table 134-3"

However, it is not clear what is meant by a "separated PMA". Clarify the meaning of "separated PMA" with editorial license.



IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 134 SC 134.5.2.1 P 120 L 7 # 171  
 Nicholl, Gary Cisco Systems

Comment Type E Comment Status A

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.

Response Response Status C  
 ACCEPT IN PRINCIPLE.

Change:  
 "Block lock is obtained as specified in the block lock state diagram shown in Figure 82-12 when viewed in the context of the 50GBASE-R PCS state diagrams defined in 133.2.4."  
 To:  
 "Block lock is obtained as specified in the block lock state diagram shown in Figure 82-12, but using the state variable definitions from 133.2.4."

Cl 134 SC 134.5.2.2 P 120 L 13 # 172  
 Nicholl, Gary Cisco Systems

Comment Type E Comment Status A

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.

Response Response Status C  
 ACCEPT IN PRINCIPLE.

Change:  
 "Once the RS-FEC transmit function achieves block lock on a PCS lane, it then begins obtaining alignment marker lock as specified by the alignment marker lock state diagram shown in Figure 82-13 when viewed in the context of the 50GBASE-R PCS state diagrams defined in 133.2.4"  
 To:  
 "Once the RS-FEC transmit function achieves block lock on a PCS lane, it then begins obtaining alignment marker lock as specified by the alignment marker lock state diagram shown in Figure 82-13, but using the state variable definitions from 133.2.4."

Cl 134 SC 134.5.2.2 P 120 L 19 # 85  
 Brown, Matt Applied Micro

Comment Type T Comment Status R skew

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

SuggestedRemedy  
 Update with acceptable values and change to black text.

Response Response Status C  
 REJECT.

See brown\_3cd\_01\_1116.

There is no consensus to make the proposed changes at this time.

Further contributions are invited address the the skew and skew variation values.

Cl 134 SC 134.5.2.6 P 121 L 15 # 114  
 Ghiasi, Ali Ghiasi Quantum LLC

Comment Type TR Comment Status R bucket

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>

Response Response Status C  
 REJECT.

Item 3 copies the BIP3 field unchanged from am\_tx\_x<65:0> to amp\_tx\_x<63:0> consistent with Clause 91.

Note that the bit position index for BIP3 field has changed by 2, due to the removal of the sync header bits.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 134 SC 134.5.2.6 P 121 L 16 # 115  
 Ghiasi, Ali Ghiasi Quantum LLC  
 Comment Type TR Comment Status R bucket  
 Why are we changing bit position for M4, M5, and M6 from CL82  
 SuggestedRemedy  
 Shouldn't be amp\_tx\_x<57,34>?  
 Response Response Status C  
 REJECT.  
 M4, M5 and M6 are correctly mapped from am\_tx\_x<65:0> to amp\_tx\_x<63:0>.  
 Note that the bit position index for M4,M5 and M6 has changed by 2, due to the removal of the sync header bits.

Cl 134 SC 134.5.2.6 P 121 L 28 # 48  
 Ran, Adee Intel  
 Comment Type E Comment Status A bucket  
 Per style manual, multiple lists in the same subclause need separate labels. See 91.5.2.5 as an example  
 SuggestedRemedy  
 per comment.  
 Response Response Status C  
 ACCEPT.

Cl 134 SC 134.5.2.6 P 121 L 41 # 49  
 Ran, Adee Intel  
 Comment Type E Comment Status A bucket  
 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.  
 Response Response Status C  
 ACCEPT.

Cl 134 SC 134.5.2.6 P 121 L 45 # 50  
 Ran, Adee Intel  
 Comment Type T Comment Status A bucket  
 The pad bit is am\_txmapped<256>  
 SuggestedRemedy  
 Delete ":255"  
 Response Response Status C  
 ACCEPT.

Cl 134 SC 134.5.2.6 P 121 L 45 # 51  
 Ran, Adee Intel  
 Comment Type E Comment Status A bucket  
 Two values, 0 and 1  
 SuggestedRemedy  
 change "value" to "values"  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Change  
 "shall be set to the binary value 0 and 1 in an alternating pattern"  
 To  
 "shall be set to 0 or 1 in an alternating pattern"

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 134 SC 134.5.3.1 P 122 L 45 # 173  
 Nicholl, Gary Cisco Systems

Comment Type E Comment Status A

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.

Response Response Status C  
 ACCEPT IN PRINCIPLE.

Change:  
 "It obtains lock to the alignment markers as specified by the FEC synchronization state diagram shown in Figure 91-8 when viewed in the context of the 50GBASE-R RS-FEC state diagrams defined in 134.5.4"  
 To:  
 "It obtains lock to the alignment markers as specified by the FEC synchronization state diagram shown in Figure 91-8, but using the state variable definitions from 134.5.4.2"

Cl 134 SC 134.5.3.6 P 124 L 30 # 52  
 Ran, Adee Intel

Comment Type T Comment Status A bucket

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

SuggestedRemedy  
 Change "multiple" to "four".

Response Response Status C  
 ACCEPT.

Cl 134 SC 134.5.3.7 P 124 L 45 # 53  
 Ran, Adee Intel

Comment Type E Comment Status A bucket

stray character "(" before "255"

SuggestedRemedy  
 Delete it

Response Response Status C  
 ACCEPT.

Cl 134 SC 134.5.3.8 P 125 L 21 # 100  
 Nicholl, Gary Cisco Systems

Comment Type E Comment Status A bucket

Remove unnecessary period in front of "Receive"

SuggestedRemedy  
 Remove period.

Response Response Status C  
 ACCEPT.

Cl 134 SC 134.5.4 P 125 L 26 # 174  
 Nicholl, Gary Cisco Systems

Comment Type T Comment Status A FEC AM lock

Currently the alignment marker lock SM referenced in Clause 91 does not continuously 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 receiver. This can lead to continuously corrupted data being received. A similar comment has been submitted against Clause 91.

SuggestedRemedy  
 This issue was discussed 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 submitted against 802.3-2015.

Response Response Status C  
 ACCEPT IN PRINCIPLE.

Implement with editorial license the AM out of lock detection method proposed in `gustlin_102616_3cd_adhoc_v2` and page 3 of [http://www.ieee802.org/3/maint/requests/maint\\_1299.pdf](http://www.ieee802.org/3/maint/requests/maint_1299.pdf) as a mandatory requirement for 50GBASE-R.

See also comment # 75.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 134 SC 134.5.4.2.1 P 127 L 13 # 165  
 Shrikhande, Kapil Innovium  
 Comment Type **TR** Comment Status **A** bucket  
 Reference to Clause 134.1 seems incorrect, 134.1 is Overview.  
 SuggestedRemedy  
 Reference sub-clause 134.5.3.7 rather than 134.1  
 Response Response Status **C**  
 ACCEPT IN PRINCIPLE.  
 The correct subclause reference is 134.5.2.6.  
 Change reference to 134.5.2.6.

Cl 134 SC 134.5.4.2.1 P 127 L 21 # 166  
 Shrikhande, Kapil Innovium  
 Comment Type **TR** Comment Status **A** bucket  
 I believe variable amps\_lock should be amps\_lock<x>  
 SuggestedRemedy  
 Change amps\_lock to amps\_lock<x>  
 Response Response Status **C**  
 ACCEPT.

Cl 134 SC 134.5.4.2.1 P 127 L 22 # 54  
 Ran, Adee Intel  
 Comment Type **T** Comment Status **A** bucket  
 amps\_lock is per lane. In clause 91 it has <x>, and without it the description is confusing.  
 SuggestedRemedy  
 Change to "amps\_lock<x>"  
 Response Response Status **C**  
 ACCEPT.  
 See also comment 166.

Cl 134 SC 134.5.4.2.1 P 127 L 33 # 55  
 Ran, Adee Intel  
 Comment Type **T** Comment Status **A**  
 fec\_lpi\_fw should also be redefined.  
 SuggestedRemedy  
 Add the definition: "fec\_lpi\_fw: always set to true"  
 Response Response Status **C**  
 ACCEPT.

Cl 134 SC 134.6.1 P 129 L 3 # 167  
 Shrikhande, Kapil Innovium  
 Comment Type **T** Comment Status **A** fec\_bypass  
 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.  
 Response Response Status **C**  
 ACCEPT IN PRINCIPLE.  
 With editorial license, add an exception that the fec\_bypass\_correction feature is not an optional (or mandatory) requirement for the Clause 134 FEC.  
 See also comment #168.

Cl 134 SC 134.6.3 P 129 L 17 # 168  
 Shrikhande, Kapil Innovium  
 Comment Type **T** Comment Status **A** fec\_bypass  
 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.  
 Response Response Status **C**  
 ACCEPT IN PRINCIPLE.  
 Resolve using the response to comment #167.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

**Cl 134**    **SC 134.6.5**                      **P 129**        **L 32**                      # **116**  
 Ghiasi, Ali                                      Ghiasi Quantum LLC

**Comment Type**    **TR**                      **Comment Status**    **R**                      *bucket*  
 hi\_ser not defined

*SuggestedRemedy*  
 Defin the variable, "The hi\_ser variable is define .."

**Response**                                      **Response Status**    **C**  
 REJECT.

hi\_ser is defined in 134.6.5 on page 129 and starting on line 33.

"This variable is defined when the FEC\_bypass\_indication\_ability variable is set to one. When FEC\_bypass\_indication\_enable is set to one, this bit is set to one if the number of RS-FEC symbol errors in a window of 8192 codewords exceeds the threshold (see 91.5.3.3) and is set to zero otherwise. This variable is mapped to the bit defined in 45.2.1.102 (1.201.2)."

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

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

*SuggestedRemedy*  
 The funtion should be optional

**Response**                                      **Response Status**    **C**  
 REJECT.

Regardless of the implementation the observable behavior must be consistent with that of a separate PCS and transcoder as specified.

See also comment #117

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

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

*SuggestedRemedy*

**Response**                                      **Response Status**    **C**  
 ACCEPT.

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

**Comment Type**    **T**                                      **Comment Status**    **A**                      *bucket*  
 Incorrect reference to Clause 135.

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

**Response**                                      **Response Status**    **C**  
 ACCEPT.

See comment #169.

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

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

*SuggestedRemedy*  
 The funtion should be optional

**Response**                                      **Response Status**    **C**  
 REJECT.

Regardless of the implementation the observable behavior must be consistent with that of a separate PCS and transcoder as specified.

See also comment #118

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

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

**Response**                                      **Response Status**    **C**  
 ACCEPT.

See comment #102.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

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

Comment Type E Comment Status A

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.

Response Response Status C

ACCEPT IN PRINCIPLE.

Instead of reference to Table 80-1, refer to Table 80-3 which explicit indicates the mapping of the PMA type to PHY type.

Change:

"100GBASE-P PMA can support any of the 100 Gb/s PAM4 PMDs in Table 80-1"

To:

"100GBASE-P PMA can support the 100 Gb/s PAM4 PMDs according to Table 80-3 and Table 80-4a"

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

Comment Type E Comment Status A

The AN ssublayer is missing in Figure 135-1.

bucket

SuggestedRemedy

Add AN sublayer to Figure 135-1.

Response Response Status C

ACCEPT.

Cl 135 SC 135.1.3 P 135 L 34 # 103  
 Nicholl, Gary Cisco Systems

Comment Type E Comment Status A

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

Response Response Status C

ACCEPT IN PRINCIPLE.

The acronym FECL is defined in 802.3cd Draft 1.0 Clause 1.5 "Abbreviations". However, there is no formal definition for FECL.

Add a new definition in 1.4 for FECL as follows:

"1.4.xxx FEC lane (FECL): In 50GBASE-R and 100GBASE-R the FEC distributes encoded data to multiple logical lanes, these logical lanes are called FEC lanes. One or more FEC lanes can be multiplexed and carried on a physical lane together at the PMA service interface. (See IEEE Std 802.3, Clause 135.)"

Also, amend the definition for PCSL as amended by P802.3bs to include 50GBASE-R as follows:

"1.4.325 PCS lane (PCSL): In 40GBASE-R, 50GBASE-R, 100GBASE-R, 200GBASE-R, and 400GBASE-R, the PCS distributes encoded data to multiple logical lanes, these logical lanes are called PCS lanes. One or more PCS lanes can be multiplexed and carried on a physical lane together at the PMA service interface. (See IEEE Std 802.3, Clause 83, Clause 120, and Clause 135.)"

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 135 SC 135.1.3 P 135 L 45 # 104  
 Nicholl, Gary Cisco Systems

Comment Type T Comment Status A  
 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.

Response Response Status C  
 ACCEPT IN PRINCIPLE.

For this list it is sufficient to list "j) Perform PAM4 encoding and decoding for when required". Otherwise Gray coding would have to be added to this list.

135.5.8 provides explicit requirements for precoding.

However, it would be helpful to put 135.5.7 (Gray Coding) and 135.5.8 (precoding) under a PAM4 encoding subclause.

Create a new subclause "PAM4 encoding" with 135.5.7 and 135.5.8 as subsidiary subclauses.

Cl 135 SC 135.1.4 P 137 L 9 # 6  
 Marris, Arthur Cadence Design Syste

Comment Type TR Comment Status A bucket  
 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)

Response Response Status C  
 ACCEPT.

See also comment #106.

Cl 135 SC 135.1.4 P 137 L 16 # 183  
 Ghiasi, Ali Ghiasi Quantum LLC

Comment Type TR Comment Status A <late>  
 Example 50GBASE-R and 100GBASE-R only shows the integrated PCS+FEC. Baseline proposal included example of both integrated and separate PCS/FEC, please see page 7 [http://www.ieee802.org/3/cd/public/July16/nicholl\\_3cd\\_01a\\_0716.pdf](http://www.ieee802.org/3/cd/public/July16/nicholl_3cd_01a_0716.pdf)

SuggestedRemedy  
 Add diagram with PCS seperated from FEC similar to nicholl\_3cd\_01a\_0716 page 7 righthand side diagram

Response Response Status C  
 ACCEPT IN PRINCIPLE.

Late comment: This comment was submitted after the Task Force review closed.

There is no partitioning example in 83C showing a stack with the 100GAUI-n.

Create a new figure in 83C similar to Figure 83C-4 but adding a 100GAUI-n interface and PMA above the PMD.

Cl 135 SC 135.1.4 P 137 L 28 # 106  
 Nicholl, Gary Cisco Systems

Comment Type T Comment Status A bucket  
 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).

Response Response Status C  
 ACCEPT.

See also comment #6.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 135 SC 135.5.2 P 144 L 18 # 73  
 Hidaka, Yasuo Fujitsu Lab of America

Comment Type T Comment Status A bucket

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.

Response Response Status C

ACCEPT.

Cl 135 SC 135.5.3 P 144 L 5 # 86  
 Brown, Matt Applied Micro

Comment Type T Comment Status R skew

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

SuggestedRemedy

Update with acceptable values and change to black text.

Response Response Status C

REJECT.

See brown\_3cd\_01\_1116.

There is no consensus to make the proposed changes at this time.

Further contributions are invited address the the skew and skew variation values.

Cl 135 SC 135.5.4 P 118 L 33 # 87  
 Brown, Matt Applied Micro

Comment Type T Comment Status A delay

In Table 135-1, the delay constraints are "TBD" in magenta.

SuggestedRemedy

Update with acceptable values and change to black text.

Response Response Status C

ACCEPT IN PRINCIPLE.

Update the PMA delay values according to brown\_3cd\_03\_1116 slide 9.

Cl 136 SC 136.2 P 162 L 42 # 154  
 Healey, Adam Broadcom Ltd.

Comment Type E Comment Status A Editorial

"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.

Response Response Status C

ACCEPT IN PRINCIPLE.

Implement the suggested remedy for Clause 136 and Clause 137.

Cl 136 SC 136.5 P 164 L 22 # 88  
 Brown, Matt Applied Micro

Comment Type T Comment Status A delay

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

SuggestedRemedy

Update with acceptable values and change to black text.

Response Response Status C

ACCEPT IN PRINCIPLE.

Specify the combined delay of the PMD, AN, and medium into a single value of 4 PQ for 50G, 8 PQ for 100G, and 16 PQ for 200G (40.96 ns for all rates).

Also, include the text: "It is assumed that the one-way delay through the medium is no more than 20 ns."



IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 136 SC 136.6 P 164 L 52 # 89  
 Brown, Matt Applied Micro  
 Comment Type T Comment Status R skew, CC  
 The Skew and Skew Variation constraints for 50G, 100G, and 200G are "TBD" in magenta.  
*SuggestedRemedy*  
 Update with acceptable values and change to black text.  
 Response Response Status C  
 REJECT.  
 See brown\_3cd\_01\_1116.  
 There is no consensus to make the proposed changes at this time.  
 Further contributions are invited to address the skew and skew variation values.

Cl 136 SC 136.8.12 P 170 L 42 # 155  
 Healey, Adam Broadcom Ltd.  
 Comment Type T Comment Status A PMD control  
 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."  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 The suggested text is an improvement to the existing text.  
 Note that this independence means that the precoding setting requested/applied as part of the PMD control function is not required to be the same in all lanes. It would require controlling the precoding separately on each lane of the adjacent PMA.  
 Implement suggested remedy, and add appropriate text in 135.5.8 to clarify that precoding is controlled independently on each lane.

Cl 136 SC 136.8.12.1.1 P 171 L 33 # 12  
 Lusted, Kent Intel  
 Comment Type TR Comment Status R shall  
 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."  
 Response Response Status C  
 REJECT.

The existing text is explicit about the transmission order:  
 "The training frame marker is a run of 16 consecutive "3" symbols followed by a run of 16 consecutive "0" symbols".  
 The proposed text is similar to the existing text with "shall be" instead of "is". The requirement is normative as it stands, and there seems to be no reason to add a PICS item for the training frame marker.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 136 SC 136.8.12.1.2 P 171 L 39 # 13  
Lusted, Kent Intel

Comment Type TR Comment Status A bucket

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 describes 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."

Response Response Status C

ACCEPT IN PRINCIPLE.

Change the title of 136.8.12.1.2 from "Control and status field encoding" to "Control and status fields".

Insert the following paragraph before the first paragraph of 136.8.12.1.2:

"The control field comprises 16 bits with the structure defined in Clause 136.8.12.2. The status field comprises 16 bits with the structure defined in Clause 136.8.12.3."

Change the title of 136.8.12.2 from "Control field" to "Control field structure".

Change the title of 136.8.12.3 from "Status field" to "Status field structure".

Cl 136 SC 136.8.12.1.3 P 172 L 32 # 14  
Lusted, Kent Intel

Comment Type TR Comment Status A bucket

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.

Response Response Status C

ACCEPT IN PRINCIPLE.

Change Figure 136-5 to represent identifier\_i = 0, i.e., the first row intable 136-8 (1 + x + x^2 + x^12 + x^13), and label it accordingly.

Cl 136 SC 136.8.12.3 P 175 L 37 # 147  
Slavick, Jeff Broadcom Limited

Comment Type T Comment Status A PMD control

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 differential pk-pk output voltage to drop below 30mV

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using response to comment #76.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

CI 136 SC 136.8.12.3 P 175 L 38 # 76  
Brown, Matt Applied Micro

Comment Type T Comment Status A PMD Control

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

Response Response Status C

ACCEPT IN PRINCIPLE.

The additional information is readily available at the transmitter and may help some receiver implementations.

With editorial license expand the coefficient status field to 3 bits and update the text in 136.8.12.5 correspondingly as follows:

- 111 = reserved
- 110 = both max. voltage and coeff. at Limit
- 101 = reserved
- 100 = max. voltage
- 011 = coefficient not supported
- 010 = coefficient at limit
- 001 = updated
- 000 = not updated

See also comment #147.

CI 136 SC 136.8.12.5 P 177 L 48 # 136  
Slavick, Jeff Broadcom Limited

Comment Type T Comment Status R PMD control

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 indices into the PMD definitions

SuggestedRemedy

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

Response Response Status C

REJECT.

The list of valid coefficients is also specified in the control and status fields definitions (Table 136-9 and Table 136-10). Any extension of the number of coefficient would require multiple changes anyway. In addition, specifying valid indices in a separate table would require a reference to that table.

The proposed change would not make the control function future-proof.

CI 136 SC 136.8.12.7.3 P 181 L 7 # 148  
Slavick, Jeff Broadcom Limited

Comment Type T Comment Status A PMD control

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%

Response Response Status C

ACCEPT.

Note that 2% of 1.5 seconds allows a period of 1.47 to 1.53 seconds.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 136 SC 136.8.12.7.3 P 181 L 13 # 149  
 Slavick, Jeff Broadcom Limited

Comment Type T Comment Status A PMD control

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

Response Response Status C

ACCEPT IN PRINCIPLE.

Change

"The terminal count of wait\_timer is a period equivalent to between 100 and 300 training frames."

To

"The terminal count of wait\_timer is between 40 us and 125 us, equivalent to approximately 40 to 200 training frames."

Delete editor's note.

Cl 136 SC 136.8.12.7.5 P 182 L 8 # 140  
 Slavick, Jeff Broadcom Limited

Comment Type T Comment Status A PMD control

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

Response Response Status C

ACCEPT IN PRINCIPLE.

Implement the proposal in the referenced presentation.

Cl 136 SC 136.9.3 P 186 L 13 # 62  
 Mellitz, Richard Samtec

Comment Type TR Comment Status A Tx spec

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

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #93 against 802.3bs D2.1.

Implement with editorial license.

See also comment #63.

Cl 136 SC 136.9.3.1.1 P 187 L 15 # 61  
 Mellitz, Richard Samtec

Comment Type TR Comment Status R Tx spec

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

SuggestedRemedy

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

Response Response Status C

REJECT.

The technique described in the suggested remedy may be used to facilitate signal acquisition with some scopes.

However, these are test equipment implementation details which are not within the scope of the standard.

This technique can also be used with the original procedure in 92.8.3.5.1, so it is not an exception.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 136 SC 136.9.3.1.3 P 188 L # 156  
 Healey, Adam Broadcom Ltd.

Comment Type T Comment Status A Tx spec

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 coefficient. An acceptable alternative would be to use ratio definitions similar to those in 120D.3.1.5.

Response Response Status C

ACCEPT IN PRINCIPLE.

The intent of the commenter is met by aligning the PMD transmitter specifications with the calculated coefficients in the linear fit.

Apply the following changes:

In 136.9.3.1.3, change:

"the coefficients of the transmit equalizer shall be configured such that the ratios Rpre2, Rpre1, and Rpost (defined in Equation (136-4), Equation (136-5), and Equation (136-6)) are within the ranges specified in Table 136-12"

To

"the coefficients of the transmit equalizer shall be configured to values within the ranges specified in Table 136-12".

Delete equations 136-4, 136-5, and 136-6.

In 136.9.3.1.5:

Change the second paragraph from

"With c(-2) and c(-1) both set to zero and both c(0) and c(1) having received sufficient "decrement" requests so that they are at their respective minimum values (a setting denoted full-scale post-cursor), Rpost shall be greater than or equal to 2."

To

"With c(-2) and c(-1) both set to zero and both c(0) and c(1) having received sufficient "decrement" requests so that they are at their respective minimum values, c(1) shall be smaller than or equal to 0.25."

Apply similar changes to the third and fourth paragraphs.

Apply changes to other subclauses as necessary to account for these changes.

Implement with editorial license.

Cl 136 SC 136.9.3.1.5 P 188 L 42 # 65  
 Mike Li Intel

Comment Type T Comment Status A Tx spec

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.

Response Response Status C

ACCEPT IN PRINCIPLE.

The response to comment #156 clarifies the specification of the coefficients.

Cl 136 SC 136.9.4.3.2 P 192 L 2 # 66  
 Mike Li Intel

Comment Type E Comment Status A Rx spec

TX is not right, it should be RX

SuggestedRemedy

Change TX to RX

Response Response Status C

ACCEPT IN PRINCIPLE.

"at the Tx test reference" is correct as written. Tx test reference is a reference point in the test setup (in 110.8.4.2.1, which is referenced by 136.9.4.2.1). Compare to 120D.3.2.2 where jitter is calibrated at TP0a.

However, a suitable reference seems to be missing, and the phrasing needs improvement.

Change

"to obtain the specified peak-to-peak jitter for that frequency at the Tx test reference listed in Table 120D-6."

To

"to obtain the peak-to-peak jitter specified for that frequency in Table 120D-6 at the Tx test reference (see Figure 110-3a)."

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

CI 136 SC 136.11.7 P 194 L 33 # 59  
 Mellitz, Richard Samtec

Comment Type TR Comment Status R COM

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,

Response Response Status C

REJECT.

There is no consensus at this time to make the propose changes.

CI 136 SC 136.11.7 P 194 L 44 # 56  
 Ran, Adee Intel

Comment Type T Comment Status A COM

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.

Response Response Status C

ACCEPT IN PRINCIPLE.

Amend Table 93A-1, 93A.1.4.2 and 93A.1.6 to include c(-2).

Add limits for c(-2) matching the transmitter specification to Table 136-15 and Table 137-5.

Implement with editorial license.

CI 136 SC 136.11.7 P 195 L 18 # 60  
 Mellitz, Richard Samtec

Comment Type TR Comment Status A bucket

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

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve with comment 58.

There is no need to define new parameters, since appropriate parameters are defined in 93A.1 (as amended by 802.3bs) albeit with other names.

The COM parameter tables should be aligned with 93A.1.

Modify Table 136-15 as follows:

1. In row "Continuous time filter, zero frequencies", change symbol "fzHP" to "fz2".
2. In row "Continuous time filter, pole frequencies", remove symbol "fzHP" and corresponding value.

CI 136 SC 136.12 P 198 L 38 # 119  
 Ghiasi, Ali Ghiasi Quantum LLC

Comment Type TR Comment Status R AC coupling

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

SuggestedRemedy

repalce 50 kHz with 100 kHz

Response Response Status C

REJECT.

The argument provided by the commenter is not sufficient to make the change. The 802.3bs reference is WRT the AUI not a backplane or cable medium.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 136 SC 136.12 P 198 L 39 # 120  
 Ghiasi, Ali Ghiasi Quantum LLC  
 Comment Type TR Comment Status R AC coupling  
 We should not specify the AC coupling cap value  
 SuggestedRemedy  
 Having low frequency cut off is sufficient, remove Cap value of 100 nF.  
 Response Response Status C  
 REJECT.  
 A recommended value is a useful informative statement, as in similar previous clauses.  
 Unless it is wrong, there is no harm in keeping it.

Cl 136A SC 136A.2 P 334 L 22 # 162  
 Healey, Adam Broadcom Ltd.  
 Comment Type T Comment Status A bucket  
 Why is "the value of linear fit pulse peak (min.) is  $0.75 \times \sqrt{v}$ " listed as an exception. This the value proposed in 137.9.2 and it is unclear what the motivation would be to make the requirement different for copper cable applications.  
 SuggestedRemedy  
 Remove the exception.  
 Response Response Status C  
 ACCEPT.

Cl 136A SC 136A.4 P 334 L 33 # 184  
 Krishnasamy, Kumaran Broadcom  
 Comment Type E Comment Status A <late>  
 Include the equation for the min loss too in the first sentence.  
 SuggestedRemedy  
 Modify the sentence to "The recommended maximum and minimum printed circuit board trace insertion losses are specified in Equation (92A-1) and Equation (92A-2), respectively."  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Late comment: This comment was submitted after the Task Force review closed.  
 In Figure 136A-1 change 10.7 to 10.07.

Cl 136A SC 136A.4 P 334 L 42 # 186  
 Krishnasamy, Kumaran Broadcom  
 Comment Type T Comment Status R <late>  
 The max insertion loss from TP0-TP2 (or TP3-TP5) is printed as 10.07 dB. Per Equation (92-8), this will be evaluated to be 10.11 dB  
 SuggestedRemedy  
 Correct the sentence with 10.11 dB.  
 Response Response Status C  
 REJECT.  
 Late comment: This comment was submitted after the Task Force review closed.

The value 10.07 is derived as follows:  
 $7 \text{ (Equation (92A-1))} + 1.38 \text{ (Equation (92-34))} + \text{connector assumptions stated in 92 (1.07+0.62)} = 10.07$   
 Or more simply:  
 $7 + 1.38 + 1.07 + 0.62 = 10.07$   
 One of these terms has to change to yield 10.11.

Except for the connector, which is a fixed value, changing the other terms implies changing the coefficients of the equations used to generate the initial value i.e., 10.07...  
 $10.11 \text{ db would also impact channel budget. } 28.9 = 16.06 + (2 * 10.07) - 2 * 3.65$  to  $28.98 = 16.06 + (2 * 10.11) - 2 * 3.65$ .

The discrepancy is an acceptable difference.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 136A SC 136A.5 P 335 L 12 # 15  
MATOGLU, ERDEM AMPHENOL

Comment Type T Comment Status A

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.

Response Response Status C

ACCEPT IN PRINCIPLE.

The nominal insertion loss of the mated test fixture is determined using Equation (136A-2) shown here for convenience:  

$$IL_{MatedTF} = -0.091 * \sqrt{f} + 0.25 * f \text{ (dB)}$$
 for  $0.01 \text{ GHz} \leq f \leq 25 \text{ GHz}$ .  
 where f is the frequency in GHz

On P:335 L:12 and L:30  
 Change: "Equation (92A-4)"  
 To: "Equation (136A-2)" in two places

On P:335 L:13  
 Add: "Equation (136A-2)" and reorder equations

Cl 136A SC 136A.5 P 336 L 18 # 185  
Krishnasamy, Kumaran Broadcom

Comment Type ER Comment Status A <late>

In Figure 136A-1, the equation " $16.06 + (2 \times 10.7) - (2 \times 3.65) = 28.9 \text{ dB}$ " doesn't add up to 28.9 dB. The value 10.7 should be changed to 10.07.

In the upper left side of the figure, TP1-Host connector, where it is labeled as 1.38 dB, should be corrected to either 1.2 dB (or 1.17 dB).

In the upper right side of the figure, TP4-Host connector it is labeled as 1.17 dB but the same section in the bottom diagram is labeled as 1.2dB. So it seems the top right 1.17 label needs to be changed to 1.2 dB ,

SuggestedRemedy

Response Response Status C

ACCEPT IN PRINCIPLE.

Late comment: This comment was submitted after the Task Force review closed.

This was due to an editorial error from the adopted baseline.

In Figure 136A-1, change the equation " $16.06 + (2 \times 10.7) - (2 \times 3.65) = 28.9 \text{ dB}$ " to be " $16.06 + (2 \times 10.07) - (2 \times 3.65) = 28.9 \text{ dB}$ "

In the upper left side of the figure, TP1-Host connector, where it is labeled as 1.38 dB, change to 1.2 dB.

In the upper right side of the figure, TP4-Host connector it is labeled as 1.17 dB change to 1.2 dB.

The bottom mated cable assembly and test point test fixture is correct.



IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 136A SC 136A.5 P 336 L 336 # 126  
 Ghiasi, Ali Ghiasi Quantum LLC

Comment Type TR Comment Status R

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 fixture 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.

Response Response Status C

REJECT.

There was no consensus to implement the suggested change.

Contributions to build consensus are welcome.

It was observed that the noted differences already exist in prior clauses, e.g., Clause 92 vs. Annex 83D.

Figure 136A-1 values taken from slide 13 adopted baseline in [http://www.ieee802.org/3/cd/public/July16/diminico\\_3cd\\_01a\\_0716.pdf](http://www.ieee802.org/3/cd/public/July16/diminico_3cd_01a_0716.pdf). The values are consistent with referenced equations in clause 92 and clause 110.

Cl 136C SC 136C P 341 L 1 # 127  
 Ghiasi, Ali Ghiasi Quantum LLC

Comment Type TR Comment Status R

SFP28 and QSFP28 are the wrong designation

SuggestedRemedy

Please change SFP28 with SFP56 and QSFP28 with QSFP56

Response Response Status C

REJECT.

The 136.12 MDI specifications point to clause 110 and clause 92.

For 50GBASE-CR, the mechanical interface between the PMD and the cable assembly may be either a mated pair of connectors meeting the requirements of 110.11.1 (single-lane MDI) or a mated pair of connectors meeting the requirements of 92.12.1.1 (multi-lane MDI). The plug connector is used on the cable assembly and the receptacle is used on the PMD.

For 100GBASE-CR2 or 200GBASE-CR4, the mechanical interface between the PMD and the cable assembly is a mated pair of connectors meeting the requirements of 92.12.1.1 (multi-lane MDI). The plug connector is used on the cable assembly and the receptacle is used on the PMD.

Cl 137 SC 137.1 P 215 L 14 # 57  
 Mellitz, Richard Samtec

Comment Type TR Comment Status R COM

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.

Response Response Status C

REJECT.

[Editor's note: Changed subclause from 137.1 to 137.10.]

There is no consensus at this time to make the propose changes.



IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 137 SC 137.9.2 P 213 L 9 # 63  
Mellitz, Richard Samtec

Comment Type TR Comment Status A Tx spec

Since SNDR is computed with  $N_p=200$ , 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

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #93 against 802.3bs D2.1.

Implement with editorial license.

Cl 137 SC 137.9.2 P 213 L 12 # 161  
Healey, Adam Broadcom Ltd.

Comment Type E Comment Status A Tx spec

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.

Response Response Status C

ACCEPT.

Cl 137 SC 137.9.2 P 213 L 14 # 158  
Healey, Adam Broadcom Ltd.

Comment Type T Comment Status A bucket

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

SuggestedRemedy

Remove items 1 and 2 from the list of exceptions.

Response Response Status C

ACCEPT.

Cl 137 SC 137.9.2 P 213 L 19 # 159  
Healey, Adam Broadcom Ltd.

Comment Type T Comment Status A bucket

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.

Response Response Status C

ACCEPT IN PRINCIPLE.

802.3bs changed 120D to use J4 instead of J5 in D2.1. Specification method in Clause 136 refers to 120D definitions and uses J4. Clause 137 should be aligned.

Remove the exception.

Cl 137 SC 137.9.2 P 213 L 22 # 160  
Healey, Adam Broadcom Ltd.

Comment Type T Comment Status A Tx specs

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.

Response Response Status C

ACCEPT.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 137 SC 137.9.3 P 213 L 31 # 67  
 Mike Li Intel

Comment Type T Comment Status A Rx specs

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)

Response Response Status C

ACCEPT IN PRINCIPLE.

The text in item 3 refers to the specification in item 3 (test 2) only. Jitter tolerance is intended to be tested with the high-loss channel only.

However, phrasing can be improved.

Delete the sentence from item 3: "Receiver jitter tolerance (see 120D.3.2.2) is tested using a test channel with these insertion loss requirements".

Add item 5:  
 "Receiver jitter tolerance (see 120D.3.2.2) is tested using the test channel in item 3)."

Cl 137 SC 137.10 P 215 L 14 # 74  
 Hidaka, Yasuo Fujitsu Lab of America

Comment Type TR Comment Status R COM

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.

Response Response Status C

REJECT.

There is no consensus for the suggested remedy at this time.

A consensus proposal is invited.

Cl 137 SC 137.10 P 215 L 25 # 68  
 Mike Li Intel

Comment Type E Comment Status A bucket

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

SuggestedRemedy

Change it to C(-2)

Response Response Status C

ACCEPT.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 137 SC 137.10.1 P 216 L 24 # 122  
 Ghiasi, Ali Ghiasi Quantum LLC

Comment Type TR Comment Status A Channel specs

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 propose 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

Response Response Status C

ACCEPT IN PRINCIPLE.

Implement the equation in the suggested remedy, not the presentation.

Leave coefficients in magenta.

Cl 138 SC 138.3.1 P 229 L 11 # 92  
 Brown, Matt Applied Micro

Comment Type T Comment Status A delay

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

SuggestedRemedy

Update with acceptable values and change to black text.

Response Response Status C

ACCEPT IN PRINCIPLE.

Specify the delay for all rates to be 20.48 ns and corresponding bit times and pause quanta.

Align the subclause text with P802.3bs subclause 123.3.1.

Cl 138 SC 138.3.2 P 229 L 49 # 93  
 Brown, Matt Applied Micro

Comment Type T Comment Status R skew

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

SuggestedRemedy

Update with acceptable values and change to black text.

Response Response Status C

REJECT.

See brown\_3cd\_01\_1116.

There is no consensus to make the proposed changes at this time.

Further contributions are invited address the the skew and skew variation values.

Cl 138 SC 138.7 P 234 L 31 # 175  
 Kolesar, Paul CommScope

Comment Type T Comment Status A

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.

Response Response Status C

ACCEPT IN PRINCIPLE.

Implement the suggested remedy following the style of P802.3bs Draft 2.2.

See straw poll #1 and related notes in the meeting minutes.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 138 SC 138.7 P 234 L 42 # 176  
Kolesar, Paul CommScope

Comment Type T Comment Status A

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)

Response Response Status C

ACCEPT IN PRINCIPLE.

Implement the suggested remedy following the style of P802.3bs Draft 2.2.

See straw poll #1 and related notes in the meeting minutes.

Cl 138 SC 138.7.3 P 236 L 16 # 177  
Kolesar, Paul CommScope

Comment Type T Comment Status A

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.

Response Response Status C

ACCEPT IN PRINCIPLE.

Implement the suggested remedy following the style of P802.3bs Draft 2.2.

See straw poll #1 and related notes in the meeting minutes.

Cl 138 SC 138.10.1 P 241 L 18 # 178  
Kolesar, Paul CommScope

Comment Type T Comment Status A

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: Identical language already exists in draft clause 123 for 400GBASE-SR16.

Response Response Status C

ACCEPT IN PRINCIPLE.

Implement the suggested remedy following the style of P802.3bs Draft 2.2.

See straw poll #1 and related notes in the meeting minutes.

Cl 138 SC 138.10.1 P 241 L 25 # 179  
Kolesar, Paul CommScope

Comment Type T Comment Status A

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.

Response Response Status C

ACCEPT IN PRINCIPLE.

Implement the suggested remedy following the style of P802.3bs Draft 2.2.

See straw poll #1 and related notes in the meeting minutes.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

Cl 138 SC 138.10.2.1 P 242 L 3 # 180  
Kolesar, Paul CommScope

Comment Type T Comment Status A

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:  $1297 \leq \lambda \leq 1328$ . In the dispersion slope cell insert the following:

$\leq -412/(840(1-(\lambda/840)^4))$ .

Note: See Table 123-7 for an example table implementing these changes.

Response Response Status C

ACCEPT IN PRINCIPLE.

Implement the suggested remedy following the style of P802.3bs Draft 2.2.

See straw poll #1 and related notes in the meeting minutes.

Cl 139 SC 139.3.2 P 250 L 44 # 94  
Brown, Matt Applied Micro

Comment Type T Comment Status R skew

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

SuggestedRemedy

Update with acceptable values and change to black text.

Response Response Status C

REJECT.

See brown\_3cd\_01\_1116.

There is no consensus to make the proposed changes at this time.

Further contributions are invited address the the skew and skew variation values.

Cl 139 SC 139.6 P 254 L 37 # 187  
Matt Brown Applied Micro

Comment Type E Comment Status D <late>

Need values for TBD/magenta in Table 139-6 and Table 139-7.

SuggestedRemedy

Provide appropriate values.

Proposed Response Response Status Z

REJECT.

This comment was WITHDRAWN by the commenter.

Cl 139 SC 139.6.3 P 256 L 22 # 123  
Ghiasi, Ali Ghiasi Quantum LLC

Comment Type TR Comment Status A

Missing lower fiber loss 0.43 dB/km

SuggestedRemedy

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

Response Response Status C

ACCEPT IN PRINCIPLE.

Add a footnote to the value 6.3 consistent with footnote b in Table 88-9.

Cl 140 SC 140.3.1 P 273 L 31 # 95  
Brown, Matt Applied Micro

Comment Type T Comment Status A delay

The delay constraints are in magenta (TBD).

SuggestedRemedy

Update with acceptable values and change to black text.

Response Response Status C

ACCEPT IN PRINCIPLE.

For 140.3.1...  
Convert magenta text to black.

IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

**Cl 140 SC 140.3.2 P 273 L 43 # 96**  
 Brown, Matt Applied Micro  
**Comment Type T Comment Status R** skew  
 The Skew and Skew Variation constraints are in magenta (TBD).  
**SuggestedRemedy**  
 Update with acceptable values and change to black text.  
**Response Response Status C**  
 REJECT.  
 See brown\_3cd\_01\_1116.  
 There is no consensus to make the proposed changes at this time.  
 Further contributions are invited address the the skew and skew variation values.

**Cl 140 SC 140.6.1 P 277 L 43-4 # 108**  
 Liu, Hai-Feng Intel  
**Comment Type T Comment Status A**  
 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.  
**Response Response Status C**  
 ACCEPT IN PRINCIPLE.  
 There is consensus on the concept to allow a tradeoff between the channel insertion loss and MPI penalty. Refer traverso\_3cd\_01a\_1116.  
 How to account of this in the draft is for further consideration.  
 No changes to the draft at that this time.

**Cl 140 SC 140.6.2 P 278 L 34-3 # 109**  
 Liu, Hai-Feng Intel  
**Comment Type T Comment Status A**  
 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.  
**Response Response Status C**  
 ACCEPT IN PRINCIPLE.  
 Resolve using the response to comment #108.

**Cl 140 SC 140.6.3 P 279 L 1 # 107**  
 Nicholl, Gary Cisco Systems  
**Comment Type T Comment Status A**  
 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)  
**Response Response Status C**  
 ACCEPT IN PRINCIPLE.  
 Resolve using the response to comment #108.

**Cl 140 SC 140.6.3 P 279 L 5 # 110**  
 Liu, Hai-Feng Intel  
**Comment Type T Comment Status A**  
 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.  
**Response Response Status C**  
 ACCEPT IN PRINCIPLE.  
 Resolve using the response to comment #108.



IEEE P802.3cd 50 Gb/s, 100 Gb/s, 200 Gb/s Ethernet 1st Task Force review comments

---

Cl **140** SC **140.6.3** P **279** L **11** # **111**  
Liu, Hai-Feng Intel

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

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.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #108.

---

Cl **140** SC **140.6.3** P **279** L **15** # **112**  
Liu, Hai-Feng Intel

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

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.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #108.

---

Cl **140** SC **140.9** P **283** L **38** # **113**  
Liu, Hai-Feng Intel

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

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.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #108.