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

Marris, Arthur — Cadence Design Syste

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

It should be bit 1.200.3 rather than 1.200.2

*SuggestedRemedy*

Change to 1.200.3

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Marris, Arthur — Cadence Design Syste

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Marris, Arthur — Cadence Design Syste

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Marris, Arthur — Cadence Design Syste

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

*Proposed Response* *Response Status* **W**

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

Marris, Arthur — Cadence Design Syste

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Marris, Arthur — Cadence Design Syste

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

See also comment #106.

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

Marris, Arthur — Cadence Design Syste

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Lusted, Kent — Intel

*Comment Type* **TR** *Comment Status* **D** *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.)"

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Lusted, Kent — Intel

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

Typo

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Lusted, Kent Intel

*Comment Type* **TR** *Comment Status* **D** *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.)"

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Lusted, Kent Intel

*Comment Type* **TR** *Comment Status* **D** *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.)"

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Lusted, Kent Intel

*Comment Type* **TR** *Comment Status* **D** *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."

*Proposed Response* *Response Status* **W**

PROPOSED 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.

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

Lusted, Kent — Intel

*Comment Type* **TR** *Comment Status* **D** *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 decribes the cell encoding rules but the cell details are elsewhere.

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

*SuggestedRemedy*

Implement Option 2 by adding a new paragraph:

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

*Proposed Response* *Response Status* **W**

PROPOSED 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* **D** *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.

*Proposed Response* *Response Status* **W**

PROPOSED 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 accodingly.

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

MATOGLU, ERDEM — AMPHENOL

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

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

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

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The nominal insertion loss of the mated test fixture is determined using Equation (136A–2) shown here for convenience:
ILMatedTF = =0.091*SQRT(f)+0.25*f (dB)
for 0.01 GHz≤ f≤ 25 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* **000** *SC* **0** *P* **0** *L* **0** # 16

Ran, Adee 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* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Pending presentation and task force discussion.

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

Ran, Adee 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* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Pending presentation and task force discussion.

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

Ran, Adee Intel

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Ran, Adee Intel

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

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

Also applies in 30.6.1.1.5.

*SuggestedRemedy*

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

Apply in all relevant subclauses.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Ran, Adee Intel

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

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

Appears 3 times

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Ran, Adee Intel

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Ran, Adee Intel

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

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

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

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

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

Also applies to 30.5.1.1.18 for similar reasoning.

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Ran, Adee Intel

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Ran, Adee Intel

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

No white space between number and title

*SuggestedRemedy*

Add some spacing

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Ran, Adee Intel

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

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

*SuggestedRemedy*

Change 400G to 50G in last 5 rows

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Ran, Adee Intel

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Ran, Adee Intel

*Comment Type* **E** *Comment Status* **D** *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 siginficant.

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED REJECT.

The location is important and the instruction is sufficiently clear.

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

Ran, Adee Intel

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Ran, Adee Intel

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

100GBASE-KR is not defined in this project.

*SuggestedRemedy*

Change to 100GBASE-KR2.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Ran, Adee Intel

*Comment Type* **E** *Comment Status* **D** *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).

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Implement suggested remedy with editorial licence

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

Ran, Adee Intel

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

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

*SuggestedRemedy*

Delete the quoted phrase.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Ran, Adee Intel

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Ran, Adee Intel

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

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

802.3bs shouldn't have added AUIs either.

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

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

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

For task force discussion.

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

Ran, Adee Intel

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

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

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED REJECT.

See comment #33.

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

Ran, Adee Intel

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Ran, Adee Intel

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

Missing comma after "Clause 83"

*SuggestedRemedy*

Insert a comma

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Ran, Adee Intel

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

*Proposed Response* *Response Status* **W**

PROPOSED 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* **116** *SC* **116.1.4** *P* **87** *L* **44** # 38
Ran, Adee Intel

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

---

*Cl* **131** *SC* **131.1.2** *P* **92** *L* **3** # 39
Ran, Adee Intel

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

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

*SuggestedRemedy*

Delete item a).

*Proposed Response* *Response Status* **W**

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

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

We have specific definitions for this project, in 131.4

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

---

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

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

Annex 4a is included in this amendment.

*SuggestedRemedy*

Make it an active cross reference.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

---

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

*Comment Type* **E** *Comment Status* **D** *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".

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

---

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

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Implement suggested remedy except put at the top of the list.

*Cl* **134** *SC* **134.1.1** *P* **117** *L* **12** # 44

Ran, Adee Intel

*Comment Type* **T** *Comment Status* **D** *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".

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **134** *SC* **134.1.1** *P* **117** *L* **14** # 45

Ran, Adee Intel

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **134** *SC* **134.1.1** *P* **117** *L* **17** # 46

Ran, Adee Intel

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

Improve style

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Ran, Adee Intel

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

Missing space after "Figure 134-1"

*SuggestedRemedy*

Add space

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Ran, Adee Intel

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

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

*SuggestedRemedy*

per comment.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Ran, Adee Intel

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **134** *SC* **134.5.2.6** *P* **121** *L* **45** # 50
Ran, Adee Intel

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

The pad bit is am_txmapped<256>

*SuggestedRemedy*

Delete ":255"

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

---

*Cl* **134** *SC* **134.5.2.6** *P* **121** *L* **45** # 51
Ran, Adee Intel

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

Two values, 0 and 1

*SuggestedRemedy*

change "value" to "values"

*Proposed Response* *Response Status* **W**

PROPOSED 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"

---

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

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

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

*SuggestedRemedy*

Change "multiple" to "four".

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

---

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

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

stray character "(" before "255"

*SuggestedRemedy*

Delete it

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

---

*Cl* **134** *SC* **134.5.4.2.1** *P* **127** *L* **22** # 54
Ran, Adee Intel

*Comment Type* **T** *Comment Status* **D** *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>"

*Proposed Response* *Response Status* **W**

PROPOSED 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* **D**

fec_lpi_fw should also be redefined.

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Ran, Adee Intel

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

*Proposed Response* *Response Status* **W**

PROPOSED 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.

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

Mellitz, Richard Samtec

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

*Proposed Response* *Response Status* **W**

PROPOSED REJECT.

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

The suggested remedy requires consensus.

Pending presentation and task force discussion.

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

Mellitz, Richard Samtec

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Resolve with comment 60.

Modify Table 137-5 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 "fpHP" and corresponding value.

3. In row "Continuous time filter, DC gain 2", change symbol "gDC" to "gDC2".

See also comment 60.

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

Mellitz, Richard Samtec

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

*Proposed Response* *Response Status* **W**

PROPOSED REJECT.

Suggested remedy requires consensus.

Pending task force discussion.

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

Mellitz, Richard Samtec

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

*Proposed Response* *Response Status* **W**

PROPOSED 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.

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

Mellitz, Richard Samtec

*Comment Type* **TR** *Comment Status* **D** *Tx spec*

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

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED 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.

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

Mellitz, Richard Samtec

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

*Proposed Response* *Response Status* **W**

PROPOSED REJECT.

The suggested remedy lacks sufficient detail to implement a change in the draft:

1. Definition of ISI_SNR and DFE4_RSS
2. Specified limits for these parameters

In addition, Equation 93A-50 and the text following it define the paramter RSS_DFE4. A different parameter named DFE4_RSS would be confusing.

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

Mellitz, Richard — Samtec

*Comment Type* **TR** *Comment Status* **D** *Tx spec*

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

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED REJECT.

(See comment 62)

Resolve with comment 62.

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

Maguire, Valerie — Siemon

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

*Proposed Response* *Response Status* **W**

PROPOSED 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".

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

Mike Li — Intel

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

This comment should be OBE by the response to comment 156.

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

Mike Li — Intel

*Comment Type* **E** *Comment Status* **D** *Rx spec*

TX is not right, it should be RX

*SuggestedRemedy*

Change TX to RX

*Proposed Response* *Response Status* **W**

PROPOSED 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)."

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

Mike Li Intel

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The text in item 3 refers to the specification in item 3 (test 2) only.

However, phrasing can be improved.

Change "Receiver jitter tolerance (see 120D.3.2.2) is tested using a test channel with these insertion loss requirements"

To "Receiver jitter tolerance (see 120D.3.2.2) is tested also using a test channel with this insertion loss requirement"

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

Mike Li Intel

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

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

*SuggestedRemedy*

Change it to C(-2)

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Hidaka, Yasuo Fujitsu Lab of America

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Hidaka, Yasuo Fujitsu Lab of America

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

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

*SuggestedRemedy*

Change 50GBASES-SR to 50GBASE-SR.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Hidaka, Yasuo Fujitsu Lab of America

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

*Proposed Response* *Response Status* **W**

PROPOSED 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.

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

Hidaka, Yasuo — Fujitsu Lab of America

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

A grammer error.

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Hidaka, Yasuo — Fujitsu Lab of America

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Hidaka, Yasuo — Fujitsu Lab of America

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

*Proposed Response* *Response Status* **W**

PROPOSED REJECT.

The suggested remedy requires consensus.

Pending task force discussion.

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

Gustlin, Mark Xilinx

*Comment Type* **T** *Comment Status* **D** *FEC AM lock*

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

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The proposed change applies only to the mode of operation for new P802.3cd PHY types.

Pending presentation and task force discussion.

See comment #174.

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

Brown, Matt Applied Micro

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

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

Implement suggested remedy with editorial license.

See also comment #136.

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

Brown, Matt Applied Micro

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Pending presentation and task force discussion.

*Cl* **116** *SC* **116.4** *P* **89** *L* **25** # 78
Brown, Matt Applied Micro

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Pending presentation and task force discussion.

*Cl* **131** *SC* **131.4** *P* **97** *L* **18** # 79
Brown, Matt Applied Micro

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Pending presentation and task force discussion.

*Cl* **131** *SC* **131.5** *P* **99** *L* **22** # 80
Brown, Matt Applied Micro

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Pending presentation and task force discussion.

*Cl* **131** *SC* **131.5** *P* **100** *L* **8** # 81
Brown, Matt Applied Micro

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Pending presentation and task force discussion.

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

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

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

*SuggestedRemedy*

Update with acceptable values and change to black text.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

Pending presentation and task force discussion.

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

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

The delay contraints are "TBD" in magenta.

*SuggestedRemedy*

Update with acceptable values and change to black text.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

Pending presentation and task force discussion.

*Cl* **134** *SC* **134.4** *P* **118** *L* **50** # 84
Brown, Matt Applied Micro

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

*SuggestedRemedy*
Update with acceptable values and change to black text.

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

Pending presentation and task force discussion.

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

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

*SuggestedRemedy*
Update with acceptable values and change to black text.

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

Pending presentation and task force discussion.

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

*Comment Type* **T** *Comment Status* **D** *skew*
The Skew and Skew Variation are "TBD" in magenta.

*SuggestedRemedy*
Update with acceptable values and change to black text.

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

Pending presentation and task force discussion.

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

*Comment Type* **T** *Comment Status* **D** *delay*
In Table 135-1, the delay contraints are "TBD" in magenta.

*SuggestedRemedy*
Update with acceptable values and change to black text.

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

Pending presentation and task force discussion.

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

*Comment Type* **T** *Comment Status* **D** *delay*
In Table 136-4, the delay contraints for 50G, 100G, and 200G are in magenta (TBD).

*SuggestedRemedy*
Update with acceptable values and change to black text.

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

Pending presentation and task force discussion.

*Cl* **136** *SC* **136.6** *P* **164** *L* **52** # 89
Brown, Matt Applied Micro

*Comment Type* **T** *Comment Status* **D** *skew, CC*
The Skew and Skew Variation contraints for 50G, 100G, and 200G are "TBD" in magenta.

*SuggestedRemedy*
Update with acceptable values and change to black text.

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

Pending presentation and task force discussion.

*Cl* **137** *SC* **137.5** *P* **209** *L* **45** # 90
Brown, Matt Applied Micro

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

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

*SuggestedRemedy*

Update with acceptable values and change to black text.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Pending presentation and task force discussion.

*Cl* **137** *SC* **137.6** *P* **210** *L* **33** # 91
Brown, Matt Applied Micro

*Comment Type* **T** *Comment Status* **D** *skew, CC*

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

*SuggestedRemedy*

Update with acceptable values and change to black text.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Pending presentation and task force discussion.

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

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

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

*SuggestedRemedy*

Update with acceptable values and change to black text.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

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

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

*SuggestedRemedy*

Update with acceptable values and change to black text.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

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

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

*SuggestedRemedy*

Update with acceptable values and change to black text.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Pending presentation and task force discussion.

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

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

The delay contraints are in magenta (TBD).

*SuggestedRemedy*

Update with acceptable values and change to black text.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Pending presentation and task force discussion.

*Cl* **140** *SC* **140.3.2** *P* **273** *L* **43** # 96
Brown, Matt Applied Micro

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

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

*SuggestedRemedy*

Update with acceptable values and change to black text.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Pending presentation and task force discussion.

*Cl* **131** *SC* **131.1.4** *P* **93** *L* **1** # 97
Nicholl, Gary Cisco Systems

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

*Proposed Response* *Response Status* **W**

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

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

Unnecessary comma after "defined in 82.2.19"

*SuggestedRemedy*

Remove the comma after "defined in 82.2.19"

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

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

Update PICS as required with editorial licence

*SuggestedRemedy*

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

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

Remove unnecessary period in front of "Receive"

*SuggestedRemedy*

Remove period.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

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

Update PICS as required with editorial licence

*SuggestedRemedy*

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **135** *SC* **135.1.1** *P* **135** *L* **11** # 102

Nicholl, Gary — Cisco Systems

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

Incorrect reference to Clause 135.

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

See comment #169.

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

Nicholl, Gary — Cisco Systems

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

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

*SuggestedRemedy*

*Proposed Response* *Response Status* **W**

PROPOSED 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.)"

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

Nicholl, Gary — Cisco Systems

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

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

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED REJECT.

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.

*Cl* **135** *SC* **135.1.2** *P* **136** *L* **27** # 105

Nicholl, Gary — Cisco Systems

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

The AN ssublayer is missing in Figure 135-1.

*SuggestedRemedy*

Add AN sublayer to Figure 135-1.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Nicholl, Gary — Cisco Systems

*Comment Type* **T** *Comment Status* **D** *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).

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

See comment #6.

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

Nicholl, Gary — Cisco Systems

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

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

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Pending discussion in Task Force, awaiting input from presentation

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

Liu, Hai-Feng — Intel

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

Need agreement on Tx OMAmin.

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Pending discussion in Task Force, awaiting input from presentation

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

Liu, Hai-Feng — Intel

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

Need agreemnt on Rx Sensitivity.

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Pending discussion in Task Force, awaiting input from presentation

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

Liu, Hai-Feng — Intel

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

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

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Pending discussion in Task Force, awaiting input from presentation

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

Liu, Hai-Feng — Intel

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

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

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Pending discussion in Task Force, awaiting input from presentation

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

Liu, Hai-Feng — Intel

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

Make total loss + MPI penalty as a constant

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Pending discussion in Task Force, awaiting input from presentation

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

Liu, Hai-Feng Intel

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

Add a note for the 3 dB link loss max.

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Pending discussion in Task Force, awaiting input from presentation

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

Ghiasi, Ali Ghiasi Quantum LLC

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

*Proposed Response* *Response Status* **W**

PROPOSED 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.

---

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

Ghiasi, Ali Ghiasi Quantum LLC

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

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

*SuggestedRemedy*

Shouldn't be amp_tx_x<57,34>?

*Proposed Response* *Response Status* **W**

PROPOSED 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* **134.6.5** *P* **129** *L* **32** # 116

Ghiasi, Ali Ghiasi Quantum LLC

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

hi_ser not defined

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED 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* **134.7.4.1** *P* **132** *L* **38** # 117

Ghiasi, Ali Ghiasi Quantum LLC

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

In an integrated PCS/FEC one may do direct 256/257B encoding

*SuggestedRemedy*

The funtion should be optional

*Proposed Response* *Response Status* **W**

PROPOSED 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* **134** *SC* **134.7.4.2** *P* **133** *L* **54** # 118

Ghiasi, Ali — Ghiasi Quantum LLC

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

In an integrated PCS/FEC one may do direct 256/257B decoding

*SuggestedRemedy*

The funtion should be optional

*Proposed Response* *Response Status* **W**

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

Ghiasi, Ali — Ghiasi Quantum LLC

*Comment Type* **TR** *Comment Status* **D** *AC coupling*

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

*SuggestedRemedy*

repalce 50 kHz with 100 kHz

*Proposed Response* *Response Status* **W**

PROPOSED 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.

For task force discussion.

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

Ghiasi, Ali — Ghiasi Quantum LLC

*Comment Type* **TR** *Comment Status* **D** *AC coupling*

We should not specify the AC coupling cap value

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED 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.

For task force discussion.

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

Ghiasi, Ali — Ghiasi Quantum LLC

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

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

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

In 136.5, the assumed medium delay (two host PCBs and up to 3 m of cable) is 60 ns. The specification there is for the PMD transmit and receive in one direction, and maximum is 81.92 ns (excluding the medium).

In contrast, in 137.5 the specified delay is for PMD transmit and receiver plus channel delay. The maximum is the same as in the cable assembly case (81.92 ns), and unless it is changed, increasing the assumed medium delay would reduce the allocation to the PMD, which is already smaller than that of 136.5.

Since the devices used in implementations of PMDs for these two clauses are expected to be similar, it makes sense to align the PMD delays in 137.5 and 136.5 with each other. The medium delay should be stated as an assumption in both cases (with different values).

Suggested change is
1. Change "contributed by the PMD, the AN, and the medium in one direction" to "contributed by the PMD and the AN".

2. Change "8 ns" to "20 ns".

For task force discussion.

Also, see comment 90.

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

Ghiasi, Ali — Ghiasi Quantum LLC

*Comment Type* **TR** *Comment Status* **D** *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 propse equation:
IL=0.4842+1.744*sqrt(f) + 1.744*f , 0.01<f<fb/2
IL=-12.44 + 3.2* f, fb/2<f<fb
see ghiasi_cd_02_1116.pdf

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Pending presentation and task force discussion.

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

Ghiasi, Ali — Ghiasi Quantum LLC

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

Missing lower fiber loss 0.43 dB/km

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Add 0.43dB/km to Note a in Table 139-8 and turn 0.43dB/km in Table 139-13 to black.

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

Ghiasi, Ali — Ghiasi Quantum LLC

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

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

*SuggestedRemedy*

Add text to say where n=1 or 2.

*Proposed Response* *Response Status* **W**

PROPOSED 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."

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

Ghiasi, Ali — Ghiasi Quantum LLC

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

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

*SuggestedRemedy*

Add text to say where n=2 or 4.

*Proposed Response* *Response Status* **W**

PROPOSED 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.

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

Ghiasi, Ali — Ghiasi Quantum LLC

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

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

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED REJECT.

Figure 136A-1 values taken from slide 13 adopted baseline in 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.
For committee discussion.

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

Ghiasi, Ali — Ghiasi Quantum LLC

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

SFP28 and QSFP28 are the wrong designation

*SuggestedRemedy*

Please change SFP28 with SFP56 and QSFP28 with QSFP56

*Proposed Response* *Response Status* **W**

PROPOSED 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.

For committee discussion.

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

Ghiasi, Ali — Ghiasi Quantum LLC

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

Missing "The"

*SuggestedRemedy*

Add "The" 50 Gigabit

*Proposed Response* *Response Status* **W**

PROPOSED 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** *P* **92** *L* **18** # 129

Ghiasi, Ali — Ghiasi Quantum LLC

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

Missing reference to CL 135 A optional AUI

*SuggestedRemedy*

Add reference to CL 135A

*Proposed Response* *Response Status* **W**

PROPOSED 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* **131.2** *P* **93** *L* **42** # 130

Ghiasi, Ali — Ghiasi Quantum LLC

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

Missing couple of "The"

*SuggestedRemedy*

*Proposed Response* *Response Status* **W**

PROPOSED REJECT.

Grammar is correct as written.

*Cl* **132** *SC* **132.2** *P* **96** *L* **34** # 131

Ghiasi, Ali — Ghiasi Quantum LLC

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

Missing more "the" before 50xx

*SuggestedRemedy*

Add "the"

*Proposed Response* *Response Status* **W**

PROPOSED REJECT.

There is no need for an extra "the" at the location indicated by the commenter.

*Cl* **133** *SC* **133.1.4** *P* **107** *L* **42** # 132

Ghiasi, Ali — Ghiasi Quantum LLC

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

2nd Paragraph describes Fig 133-1 but is not referenced

*SuggestedRemedy*

Add reference to Fig 133-1

*Proposed Response* *Response Status* **W**

PROPOSED 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* **D**

Need to also reference partioning example of CL 135A

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED 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.

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

Ghiasi, Ali — Ghiasi Quantum LLC

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

Clause is not clear add refernece to 135A

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED 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* **134.5.1** *P* **119** *L* **5** # 135

Ghiasi, Ali — Ghiasi Quantum LLC

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

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

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED REJECT

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"

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

Slavick, Jeff — Broadcom Limited

*Comment Type* **T** *Comment Status* **D** *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 indicies into the PMD definitions

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED 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.

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

Slavick, Jeff — Broadcom Limited

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

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

*SuggestedRemedy*

Per comment

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Slavick, Jeff — Broadcom Limited

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

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

*SuggestedRemedy*

Per comment

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Implement with editorial licence.

The base standard has text which says:
"that has the highest priority as defined in Table 73-5 (listed from highest priority to lowest priority)"

so it is probably sufficient to just change the table.

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

Slavick, Jeff — Broadcom Limited

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

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

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Slavick, Jeff — Broadcom Limited

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Pending presentation.

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

Slavick, Jeff — Broadcom Limited

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Slavick, Jeff — Broadcom Limited

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Slavick, Jeff — Broadcom Limited

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Slavick, Jeff — Broadcom Limited

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

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

*SuggestedRemedy*

Change 1.200.2 to 1.200.3

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Slavick, Jeff — Broadcom Limited

*Comment Type* **T** *Comment Status* **D** *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."

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Remove the shall as proposed in the suggested remedy.

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

Slavick, Jeff — Broadcom Limited

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Slavick, Jeff — Broadcom Limited

*Comment Type* **T** *Comment Status* **D** *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 differntial pk-pk output voltage to drop below 30mV

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Resolve using response to comment 76.

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

Slavick, Jeff — Broadcom Limited

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

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

Slavick, Jeff — Broadcom Limited

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

*Proposed Response* *Response Status* **W**

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

Slavick, Jeff — Broadcom Limited

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

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

*SuggestedRemedy*

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

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

*Proposed Response* *Response Status* **W**

PROPOSED 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 implementions would have the wrong value for this bit.

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

Slavick, Jeff — Broadcom Limited

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Implement suggested remedy using editorial licence

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

Slavick, Jeff — Broadcom Limited

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

*Proposed Response* *Response Status* **W**

PROPOSED 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* **D** *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.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Implement suggested remedy using editorial licence

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

Healey, Adam — Broadcom Ltd.

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Defining n as a general term for the number of lanes in the "conventions" subclause may coincide with the other places where n is used in Clause 136 as an index with another meaning:

1. Figure 136-2 and preceding text (signal contacts labeled <n> and <p>)
2. Table 136-8 (polynomial identifier) and preceding text
3. Table 136-15 (DFE index)

To avoid overloading "L", change the label "L" (when it refers to the number of PMD lanes) to "N_lanes"

Apply to clauses 136 and 137.

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

Healey, Adam — Broadcom Ltd.

*Comment Type* **T** *Comment Status* **D** *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."

*Proposed Response* *Response Status* **W**

PROPOSED 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* **136.9.3.1.3** *P* **188** *L* # 156

Healey, Adam Broadcom Ltd.

*Comment Type* **T** *Comment Status* **D** *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 coeffcient. An acceptable alternative would be to use ratio definitions similar to those in 120D.3.1.5.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The ratios used in the text are based on the full-scale ratios originally defined in 85.8.3.3.3, which were re-used in clauses 92, 93, 110, and 111.

However, these ratio definitions seem to origin in the voltage ratios specified for 10GBASE-KR (Equations 72-8 and 72-9), which were measured directly from a special waveform. Since the linear fit procedure (92.8.3.5.1) replaces the special waveform measurement and yields coefficient values, which can be used to specify equalization range directly, there seems to be no need to keep using the ratio definitions from clause 72.

Note that just specifying the smallest maximum and largest minimum values for each coefficient would suggest that the combination of all coefficients being in their respective extreme values must be supported. This would diverge from the specifications of previous PMDs, which only require the extreme values to be met when some other coefficients are set to unequalized state. The specification method in 120D.3.1.5 does assume that all combinations are possible, and assigns c(0) based on other coefficients, and thus only the normalized coefficients are specified. This is different from the PMD equalization in which c(0) can be controlled independently. Therefore the specification should not be aligned with 120D.3.1.5.

The COM model assumes a minimum for guaranteed range of c(0) (0.6 in this clause) which prevents having all other coeffiecients in their extreme values. In the current draft there is no match for this assumption in the transmitter specification. Therefore a specification of the maximum value of c(0) in "minimum" state is also required.

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.

Add a fifth paragraph specifying the value of c(0) at its minimum setting to be smaller than or equal to 0.6.

Implement with editorial license.

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

Healey, Adam Broadcom Ltd.

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

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

*SuggestedRemedy*

Correct the text as stated in the comment.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Healey, Adam Broadcom Ltd.

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

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

*SuggestedRemedy*

Remove items 1 and 2 from the list of exceptions.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Healey, Adam Broadcom Ltd.

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

*Proposed Response* *Response Status* **W**

PROPOSED 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* **D** *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.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Implement suggested remedy with editorial license.

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

Healey, Adam Broadcom Ltd.

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Healey, Adam Broadcom Ltd.

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

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

*SuggestedRemedy*

Remove the exception.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Anslow, Pete Ciena

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Add a control bit for each PMA transmitter and receiver to enable and disable precoding.

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

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

Anslow, Pete Ciena

*Comment Type* **T** *Comment Status* **D** *<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
with the following exceptions:
Slide 9: change "200GBASE-CR" to "200GBASE-CR4" in the second paragraph
Slide 10: change "200GBASE-KR" to "200GBASE-KR4" in the second paragraph

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

For task force discussion.

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

Shrikhande, Kapil Innovium

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

Reference to Clause 134.1 seems incorrect, 134.1 is Overview.

*SuggestedRemedy*

Reference sub-clause 134.5.3.7 rather than 134.1

*Proposed Response* *Response Status* **W**

PROPOSED 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* **D** *bucket*

I believe variable amps_lock should be amps_lock<x>

*SuggestedRemedy*

Change amps_lock to amps_lock<x>

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Shrikhande, Kapil Innovium

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

For task for discussion.

See also comment #168.

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

Shrikhande, Kapil Innovium

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

For task force discussion.

See also comment #167.

*Cl* **135** *SC* **135.1.1** *P* **135** *L* **11** # 169

Shrikhande, Kapil Innovium

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

See comment #102.

*Cl* **135** *SC* **135.1.1** *P* **135** *L* **13** # 170

Shrikhande, Kapil Innovium

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

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

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED 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 any of the 100 Gb/s PAM4 PMDs according to Table 80-3"

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

Nicholl, Gary Cisco Systems

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

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

*SuggestedRemedy*

Improve wording.

*Proposed Response* *Response Status* **W**

PROPOSED 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* **D**

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

*SuggestedRemedy*

Improve wording.

*Proposed Response* *Response Status* **W**

PROPOSED 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* **134.5.3.1** *P* **122** *L* **45** # 173

Nicholl, Gary — Cisco Systems

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

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

*SuggestedRemedy*

Improve wording.

*Proposed Response* *Response Status* **W**

PROPOSED 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 defintions from 134.5.4.2"

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

Nicholl, Gary — Cisco Systems

*Comment Type* **T** *Comment Status* **D** *FEC AM lock*

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

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Pending task force discussion.

See also comment # 75.

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

Kolesar, Paul — CommScope

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

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

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Kolesar, Paul — CommScope

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

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

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Kolesar, Paul CommScope

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

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

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Kolesar, Paul CommScope

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

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

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Since there have not been any proposed changes to the skew and skew variation values in D1.0, change font colour to black.

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

Kolesar, Paul CommScope

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

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

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Since there have not been any proposed changes to the skew and skew variation values in D1.0, change font colour to black.

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

Kolesar, Paul CommScope

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

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

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Pete Anslow

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

Bit address is incorrect.

*SuggestedRemedy*

Change 3.4.10 to 3.4.5, twice.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

Matt Brown

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

The column for Clause 83 is incomplete and incorrect.

*SuggestedRemedy*

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

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **135** *SC* **135.1.4** *P* **137** *L* **16** # 183

Ghiasi, Ali Ghiasi Quantum LLC

*Comment Type* **TR** *Comment Status* **D** *<late>*

Example 50GBASE-R and 100GBASE-R only shows the integrated PCS+FEC. Baseline proposal inlcuded example of both integrated and seperate PCS/FEC, please see page 7 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 righhand side diagram

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

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

Here is the text that introduces Figure 135-2 and also points to figures in Annex 135A: "An example is illustrated in Figure 135–2. Additional examples are illustrated in Annex 135A."

Many other example arrangements including the one requested by the commenter may be found in Annex 135A. In particular, see Figures 135A-2 and 135A-5.

*Cl* **136A** *SC* **136A.4** *P* **334** *L* **33** # 184

Krishnasamy, Kumaran Broadcom

*Comment Type* **E** *Comment Status* **D** *<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."

*Proposed Response* *Response Status* **W**

PROPOSED 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.5** *P* **336** *L* **18** # 185

Krishnasamy, Kumaran Broadcom

*Comment Type* **ER** *Comment Status* **D** *<late>*

In Figure 136A–1, the equation "16.06 + (2 × 10.7) – (2 × 3.65) = 28.9 dB" doens'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*

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

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

*Cl* **136A** *SC* **136A.4** *P* **334** *L* **42** # 186

Krishnasamy, Kumaran Broadcom

*Comment Type* **T** *Comment Status* **D** *<late>*

The max insertion loss from TP0-TP2 (or TP3-TP5) is printed as 10.07 dB. Per Equation (92–8), this will be evaluted to be 10.11 dB

*SuggestedRemedy*

Corect the sentence with 10.11 dB.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

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

The value 10.07 is derived as follows:
7 (Equation (92A–1))+1.38 (Equation (92–34))+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 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 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.

For task force discussion.

*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* **W**

PROPOSED ACCEPT IN PRINCIPLE.

For task force discussion.