Cl **FM** *SC* **FM** *P* **1** *L* **10** # 229

Grow, Robert RMG Consulting

Comment Type **E** *Comment Status* **A** *(bucket1)*

From the amendment list starting at line 28, it appears the TF is planning to be included in the current revision project.

SuggestedRemedy

Add assigned amendment number 16.

Response *Response Status* **C**

ACCEPT.

Cl **FM** *SC* **FM** *P* **4** *L* **8** # 230

Grow, Robert RMG Consulting

Comment Type **E** *Comment Status* **A** *(bucket1)*

IEEE style has changed (2020 IEEE Standards Style Manual, 11.1).

SuggestedRemedy

Delete 2nd paragraph of the Editor's Note.

Response *Response Status* **C**

ACCEPT.

Cl **FM** *SC* **FM** *P* **8** *L* **21** # 231

Grow, Robert RMG Consulting

Comment Type **E** *Comment Status* **A** *(bucket1)*

The ballot group is now known.

SuggestedRemedy

Add WG members list at start of P802.3ck WG ballot.

Response *Response Status* **C**

ACCEPT.

Cl **FM** *SC* **FM** *P* **11** *L* **4** # 232

Grow, Robert RMG Consulting

Comment Type **E** *Comment Status* **A** *(bucket1)*

Amendment title missing.

SuggestedRemedy

Replace "Amendment title (copy from PAR)" with the title.

Response *Response Status* **C**

ACCEPT.

Cl **FM** *SC* **0** *P* **3** *L* **2** # 93

Kabra, Lokesh Synopsys Inc

Comment Type **E** *Comment Status* **A** *(bucket1)*

Abstract does not mention addition of Annex 163A and 163B

SuggestedRemedy

Annex 120F, Annex 120G, Annex 162A through Annex 162D, Annex 163A and Annex 163B

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
[Editor's note: Changed clause from 00 to FM.]
Change the first sentence in the abstract to: "This amendment to IEEE Std 802.3-2018 adds Clause 161 through Clause 163, Annex 120F, Annex 120G, Annex 162A through Annex 162D, Annex 163A, and Annex 163B."

Cl **FM** *SC* **0** *P* **3** *L* **2** # 226

Wu, Mau-Lin MediaTek Inc.

Comment Type **ER** *Comment Status* **A** *(bucket1)*

Annex 163A through Annex 163B are lost here.

SuggestedRemedy

Change the setence to
"This amendment to IEEE Std 802.3-2018 adds Clause 161 through Clause 163, Annex 120F, Annex 120G, Annex 162A through Annex 162D, and Annex 163A through Annex 163B."

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
[Editor's note: Changed clause from 00 to FM.]
Resolve using the response to comment #93.

Cl **00** *SC* **0** *P* **0** *L* **0** # 71

Wienckowski, Natalie General Motors

Comment Type **E** *Comment Status* **A** *(bucket1)*

For all additions to tables, if there are rows before or after the rows shown in the spec, there needs to be a blank, merged row with an elipses in it to indicate all places where there are additional rows not shown. Search for "unchanged rows not shown" to find places where this is needed.

SuggestedRemedy

Add additional rows, merged row with an elipses in it, to the top and/or bottom of tables as needed to indicate additional rows that are not shown.

Response *Response Status* **C**

ACCEPT.

Cl **00** *SC* **0** *P* **0** *L* **0** # 19

Brown, Matt — Huawei

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

In various clauses and annexes we specify various insertion loss, conversion loss, and return loss characteristics. The wording to identify and the variable names used to define these characteristcs is inconsistent.

SuggestedRemedy

Use consistent terminology and variable names to describe and specify the various terms. A presentation will be provided to explain further and provide proposals.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **FM** *SC* **0** *P* **13** *L* **29** # 94

Kabra, Lokesh — Synopsys Inc

Comment Type **E** *Comment Status* **A** *(bucket1)*

Abstract does not mention addition of Annex 163A and 163B

SuggestedRemedy

Annex 120F, Annex 120G, Annex 162A through Annex 162D, Annex 163A and Annex 163B

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
[Editor's note: Changed clause from 00 to FM and page from 13 to 14.]
Change the first sentence to: "This amendment includes changes to IEEE Std 802.3-2018 and adds Clause 161 through Clause 163, Annex 120F, Annex 120G, Annex 162A through Annex 162D, Annex 163A, and Annex 163B."

Cl **FM** *SC* **0** *P* **14** *L* **29** # 227

Wu, Mau-Lin — MediaTek Inc.

Comment Type **ER** *Comment Status* **A** *(bucket1)*

Annex 163A through Annex 163B are lost here.

SuggestedRemedy

Change the setence to
"This amendment to IEEE Std 802.3-2018 adds Clause 161 through Clause 163, Annex 120F, Annex 120G, Annex 162A through Annex 162D, and Annex 163A through Annex 163B."

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
[Editor's note: Changed clause from 00 to FM.]
Resolve using the response to comment #94.

Cl **1** *SC* **1.1.3.2** *P* **31** *L* **18** # 68

Wienckowski, Natalie — General Motors

Comment Type **E** *Comment Status* **A** *(bucket1)*

Subject/verb agreement (each is singular) & grammer ("of" does not belong).

SuggestedRemedy

Change: For each of chip-to-chip and chip-to-module interfaces
To: For each chip-to-chip and chip-to-module interface
The same change is needed on P31L35 & P31L50.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The current wording was intended to convey that chip-to-module and chip-to-chip interfaces are not necessarily the same. However, the wording could be improved.
Change: "For each of chip-to-chip and chip-to-module interfaces"
To: "For chip-to-chip interfaces and for chip-to-module interfaces"

Cl **1** *SC* **1.1.3.2** *P* **31** *L* **18** # 165

Zimmerman, George — CME Consulting/ADI, APL Gp, Cisco, CommScope,

Comment Type **E** *Comment Status* **A** *(bucket1)*

"For each of chip-to-chip and chip-to-module interfaces" awkward wording, subject/verb agreement - also leaves open whether the definition is different if other than chip-to-chip or chip-to-module interfaces are used here - which does not seem to be the case. Seems it would be cleaner and clearer just to say "for each interface" and the extra words are unnecessary. This same problem exists 6 places on page 31 lines 18, 35, and 50; page 33, lines 5 and 33, and page 34 line 5

SuggestedRemedy

Change "For each of chip-to-chip and chip-to-module interfaces" to "For each interface" in all 6 instances (page 31 lines 18, 35, 50; page 33 lines 5 & 33; and page 34 line 5)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comments #68, #75, and #76.

Cl **1** *SC* **1.1.3.2** *P* **31** *L* **18** # 74

Huber, Tom Nokia

Comment Type **E** *Comment Status* **A** *(bucket1)*

Awkward grammar: "For each of chip-to-chip and chip-to-module interfaces, four widths of CAUI-n/100GAUI-n are defined…".

SuggestedRemedy

The introductory clause seems unnecessary since the preceding sentence already establishes the use of CAUI-n/100GAUI-n for C2C and C2M interfaces. Change to "Four widths of CAUI-n and 100GAUI-n are defined…"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #68.

Cl **1** *SC* **1.1.3.2** *P* **31** *L* **34** # 75

Huber, Tom Nokia

Comment Type **E** *Comment Status* **A** *(bucket1)*

Awkward grammar: "For each of chip-to-chip and chip-to-module interfaces, three widths of 200GAUI-n are defined…".

SuggestedRemedy

The introductory clause seems unnecessary since the preceding sentence already establishes the use of 200GAUI-n for C2C and C2M interfaces. Change to "Three widths of 200GAUI-n are defined…"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The current wording was intended to convey that chip-to-module and chip-to-chip interfaces are not necessarily the same. However, the wording could be improved.
Change: "For each of chip-to-chip and chip-to-module interfaces"
To: "For chip-to-chip interfaces and for chip-to-module interfaces"

Cl **1** *SC* **1.1.3.2** *P* **31** *L* **50** # 76

Huber, Tom Nokia

Comment Type **E** *Comment Status* **A** *(bucket1)*

Awkward grammar: "For each of chip-to-chip and chip-to-module interfaces, three widths of 400GAUI-n are defined…".

SuggestedRemedy

The introductory clause seems unnecessary since the preceding sentence already establishes the use of 400GAUI-n for C2C and C2M interfaces. Change to "Three widths of 400GAUI-n are defined…"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The current wording was intended to convey that chip-to-module and chip-to-chip interfaces are not necessarily the same. However, the wording could be improved.
Change: "For each of chip-to-chip and chip-to-module interfaces"
To: "For chip-to-chip interfaces and for chip-to-module interfaces"

Cl **1** *SC* **1.4.36** *P* **33** *L* **5** # 69

Wienckowski, Natalie General Motors

Comment Type **E** *Comment Status* **A** *(bucket1)*

Subject/verb agreement (each is singular) & grammer ("of" does not belong).

SuggestedRemedy

Change: For each of chip-to-module and chip-to-chip interconnections
To: For each chip-to-module and chip-to-chip interconnection
The same change is needed on P33L33 & P34L5.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the responses to comments #77, #78, and #79.

Cl **1** *SC* **1.4.36** *P* **33** *L* **5** # 77

Huber, Tom
Nokia

Comment Type **E** *Comment Status* **A** *(bucket1)*

Awkward grammar: "For each of chip-to-chip and chip-to-module interfaces, four widths of CAUI-n/100GAUI-n are defined…".

SuggestedRemedy

The introductory clause seems unnecessary since the preceding sentence already establishes the use of CAUI-n/100GAUI-n for C2C and C2M interfaces. Change to "Four widths of CAUI-n and 100GAUI-n are defined…"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The current wording was intended to convey that chip-to-module and chip-to-chip interfaces are not necessarily the same. However, the wording could be improved.
Change: "For each of chip-to-chip and chip-to-module interfaces"
To: "For chip-to-chip interfaces and for chip-to-module interfaces"

Cl **1** *SC* **1.4.36** *P* **33** *L* **10** # 95

Kabra, Lokesh
Synopsys Inc

Comment Type **E** *Comment Status* **A** *(bucket1)*

Remove full-stop before closing brace

SuggestedRemedy

for 100GAUI-1)

Response *Response Status* **C**

ACCEPT.

Cl **1** *SC* **1.4.87** *P* **33** *L* **33** # 78

Huber, Tom
Nokia

Comment Type **E** *Comment Status* **A** *(bucket1)*

Awkward grammar: "For each of chip-to-chip and chip-to-module interfaces, three widths of 200GAUI-n are defined…".

SuggestedRemedy

The introductory clause seems unnecessary since the preceding sentence already establishes the use of 200GAUI-n for C2C and C2M interfaces. Change to "Three widths of 200GAUI-n are defined…"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The current wording was intended to convey that chip-to-module and chip-to-chip interfaces are not necessarily the same. However, the wording could be improved.
Change: "For each of chip-to-chip and chip-to-module interfaces"
To: "For chip-to-chip interfaces and for chip-to-module interfaces"

Cl **1** *SC* **1.4.87** *P* **33** *L* **37** # 96

Kabra, Lokesh
Synopsys Inc

Comment Type **E** *Comment Status* **A** *(bucket1)*

Remove full-stop before closing brace

SuggestedRemedy

200GAUI-2)

Response *Response Status* **C**

ACCEPT.

Cl **1** *SC* **1.4.111** *P* **34** *L* **5** # 79

Huber, Tom
Nokia

Comment Type **E** *Comment Status* **A** *(bucket1)*

Awkward grammar: "For each of chip-to-chip and chip-to-module interfaces, three widths of 400GAUI-n are defined…".

SuggestedRemedy

The introductory clause seems unnecessary since the preceding sentence already establishes the use of 400GAUI-n for C2C and C2M interfaces. Change to "Three widths of 400GAUI-n are defined…"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The current wording was intended to convey that chip-to-module and chip-to-chip interfaces are not necessarily the same. However, the wording could be improved.
Change: "For each of chip-to-chip and chip-to-module interfaces"
To: "For chip-to-chip interfaces and for chip-to-module interfaces"

Cl **1** *SC* **1.4.111** *P* **34** *L* **9** # 97

Kabra, Lokesh
Synopsys Inc

Comment Type **E** *Comment Status* **A** *(bucket1)*

Remove full-stop before closing brace

SuggestedRemedy

400GAUI-4)

Response *Response Status* **C**

ACCEPT.

Cl **1** *SC* **1.5** *P* **34** *L* **18** # 159

Zimmerman, George — CME Consulting/ADI, APL Gp, Cisco, CommScope,

Comment Type **E** *Comment Status* **A** *(bucket1)*

"FEC AM lock" While the abbreviation "AM" has been used for "Alignment Marker" in many multi-lane PHYs, it somehow was never entered in the abbreviations list (at least not that I can find, having checked 802.3-2018, where it is used, and 802.3cd). Because it has other common meanings, and this one is specific to IEEE Std 802.3, it shoudl be in the list... (simple things like FEC are). I plan to submit maintenance on this just to make it clear - but since it is an issue in this draft, you can fix it here...

SuggestedRemedy

Add "AM Alignment Marker" to the list of abbreviations in 1.5 (page 34 of draft)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
[Editor's note: Changed clause, subclause, page, line from {45,0,44,22} to {1,1.5,34,18}.]
The acronym AM is rarely used in text in 802.3-2018, 802.3cd-2018, and 802.3ck D2.0. Nor is the acronym ever properly introduced in the subclauses that use it. Normally, the full phrase "alignment marker" is used. So rather than adding yet another acronym to the list, the full phrase should be used in place of the acronym. However, changing instances of AM in Clause 45 would result in differences in nomenclature between Clause 45 and some sublayer clauses in the base specification and amendments.
In Clause 161 change 1 instance (Figure 161-5) of "AM" with "alignment marker".
[Editor's note: CC: 1, 45, 161.]

Cl **30** *SC* **30.5.1.1.16** *P* **35** *L* **48** # 157

Zimmerman, George — CME Consulting/ADI, APL Gp, Cisco, CommScope,

Comment Type **T** *Comment Status* **A** *(bucket1)*

"RS-FEC-Int enabled RS-FEC-Int enabled" - gives absolutely NO useful information in the description. Please at least expand a little or give a cross reference to give the reader a clue. (other places where this abbreviation are used, such as 45.2.1.110.ab, generally do give more information)

SuggestedRemedy

Change the description "RS-FEC-Int enabled" to "Clause 161 Codeword-interleaved Reed-Solomon Forward Error Correction enabled".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #89

Cl **30** *SC* **30.5.1.1.16** *P* **35** *L* **50** # 89

Slavick, Jeff — Broadcom

Comment Type **T** *Comment Status* **A** *(bucket1)*

aFECmode was updated to include an enumeration for the Interleave FEC found in Cl161, but the text has not been updated.

SuggestedRemedy

Change the BEHAVIOR DEFINED AS: to read as follows:

A read-write value that indicates the mode of operation of the FEC sublayer for forward error correction (see 65.2, Clause 74, Clause 91, Clause 108, and Clause 161).

A GET operation returns the current mode of operation of the PHY. A SET operation changes the mode of operation of the PHY to the indicated value. The enumerations “BASE-R enabled”, “RS-FEC enabled” and "RS-FEC-Int enabled" are only used by PHYs which support more than one type of FEC operation. For 25GBASE-CR, 25GBASE CR-S, 25GBASE-KR, and 25GBASE-KR-S PHYs operation in the no-FEC mode maps to the enumeration “disabled”, operation in the BASE-R FEC mode maps to the enumeration “BASE-R enabled”, and operation in the RS-FEC mode maps to the enumeration “RS-FEC enabled” (see 110.6 and 111.6). For 100GBASE-CR1 and 100GBASE-KR1 PHYs operation in RS-FEC mode maps to the enumeration "RS-FEC enabled" (see 91.6.2f) and operation in interleaved RS-FEC mode maps to the enumeration "RS-FEC-Int enabled" (see 161.6.23).

When Clause 73 Auto-Negotiation is enabled for a 25GBASE-R PHY, a SET operation is not allowed and a GET operation maps to the variables FEC_enable in Clause 74 and FEC_enable in Clause 108. When Clause 73 Auto-Negotiation is enabled for a non-25GBASE-R PHY supporting Clause 74 FEC a SET operation is not allowed and a GET operation maps to the variable FEC_enable in Clause 74. When Clause 73 Auto-Negotiation is enabled for a 100GBASE--R PHY supporting Clause 161 FEC a SET operation is not allowed and a GET operation maps to the variable 100G_RS_FEC_enable in Clause 91 and 100G_RS_FEC_Int_enable in Clause 161.

If a Clause 45 MDIO Interface is present, then this attribute maps to the appropriate FEC control register based upon the PHY type and the FEC operating mode (see 45.2.10.3, 45.2.1.102 and 45.2.1.110).

Response *Response Status* **C**

ACCEPT.
[Editor's note: Changed comment type from TR to T.]

Cl **30** *SC* **30.5.1.1.17** *P* **36** *L* **35** # 90

Slavick, Jeff Broadcom

Comment Type **T** *Comment Status* **A** *(bucket1)*

aFECCorrectedBlocks needs to add the RS-FEC-Int into the laundry list of FEC types

SuggestedRemedy

Bring in the last paragraph of 30.5.1.1.17 and change "RS-FEC" to "RS-FEC and RS-FEC-Int"

Response *Response Status* **C**

ACCEPT.
[Editor's note: Changed comment type from TR to T.]

Cl **30** *SC* **30.5.1.1.18** *P* **36** *L* **35** # 91

Slavick, Jeff Broadcom

Comment Type **T** *Comment Status* **A** *(bucket1)*

aFECUncorrectedBlocks needs to add the RS-FEC-Int into the laundry list of FEC types

SuggestedRemedy

Bring in the last paragraph of 30.5.1.1.18 and change "RS-FEC" to "RS-FEC and RS-FEC-Int"

Response *Response Status* **C**

ACCEPT.
[Editor's note: Changed comment type from TR to T.]

Cl **30** *SC* **30.6.1.1.5** *P* **36** *L* **32** # 5

Hajduczenia, Marek Charter Communications

Comment Type **E** *Comment Status* **A** *(bucket1)*

"as specified in Clause 73 (see 73.6.5) and" - I see very little value in adding Clause and then subclause information - subclause information is sufficient

SuggestedRemedy

Change to "as specified in 73.6.5 and"

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.110** *P* **43** *L* **13** # 158

Zimmerman, George CME Consulting/ADI, APL Gp, Cisco, CommScope,

Comment Type **E** *Comment Status* **A** *(bucket1)*

Description text indicating Clause 91 and Clause 161 should be cross references (2 instances of each)

SuggestedRemedy

Change "Clause 91" and "Clause 161" text in descriptions to active cross references.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.115a** *P* **46** *L* **13** # 1

Anslow, Pete Independent

Comment Type **E** *Comment Status* **A** *(bucket1)*

When a new subclause is inserted between two existing subclauses of the same level (e.g., between 45.2.114 and 45.2.115) the new subclause number is the same as the lower of the two with "a" added. This is 45.2.114a in the example. See 2020 IEEE SA Style manual: https://mentor.ieee.org/myproject/Public/mytools/draft/styleman.pdf#page=40
The same principle applies to inserted tables.
This needs to be corrected for 45.2.1.115a, Table 45–93a, 45.2.1.126a, Table 45–100a

SuggestedRemedy

Change the numbering of 45.2.1.115a, Table 45–93a, 45.2.1.126a, and Table 45–100a to be 45.2.1.114a, Table 45–92a, 45.2.1.125a, and Table 45–99a, respectively.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.115a** *P* **46** *L* **37** # 6

Hajduczenia, Marek Charter Communications

Comment Type **E** *Comment Status* **R** *(bucket1)*

Lots of unnecessary empty lines in between subclauses, tables, and text blocks.

SuggestedRemedy

Please remove all unnecessary white (empty) lines between (for example) 45.2.1.115 and 45.2.1.117 - these continue until at least page 54

Response *Response Status* **C**

REJECT.
The editorial policy in the 802.3ck project is to insert one empty line between each pair of editorial amendments. This is consistent throughout this draft. The intent is make a clear delineation between each new instruction AND to be consistent.

Cl **45** *SC* **45.2.1.126a** *P* **53** *L* # 214

He, Xiang Huawei

Comment Type **T** *Comment Status* **R** *counter size*

32-bit counter may be too short for some of the codeword error bins. A brief calculation below shows the saturation time for the lower bins for 400 Gb/s rate, if the overall BER is 2E-4 (random).

Bin#	Minutes to saturate
1	2.5
2	4.6
3	12.7
4	46.9
5	217

...

If considering burst errors, bin 2 and 3 will saturate even faster.
Bins saturated too early may not be able to provide useful information.

SuggestedRemedy

Increase the size of counters for bin 1~3, if not for all, to 48 bits.

Response *Response Status* **C**

REJECT.
Implementing 48-bit codeword error bin registers may not be straightforward, so there needs to be good justification for making this change.
For system debug, it is the uppermost 3-4 codeword error bins that are not zero which are of greatest interest, these bin counters increment slowly.
The important information for predicting the uncorrectable codeword ratio is in the high bins. Even if the first 3 lower bins are saturated, there are 12 more bins that contain enough information to extrapolate.
If the lower order bins are seen to be saturated, for debug purposes reading the registers every two minutes is reasonable.

Cl **45** *SC* **45.2.1.135a** *P* **55** *L* **11** # 2

Anslow, Pete Independent

Comment Type **E** *Comment Status* **A** *(bucket1)*

Changes for table footnotes b and c are not shown correctly.
Similar issues in Tables 45-103b, 45-103c, and 45-103d.

SuggestedRemedy

In Table 45-103a:
in the row for 1.1120.4:2 underline the added "c"
Underline the whole of table footnotes b and c
In Table 45-103b:
in the row for 1.1220.5:3 underline the added "b"
Underline the whole of table footnote b
In Table 45-103c:
in the row for 1.1320.4:2 underline the added "c"
Underline the whole of table footnotes b and c
In Table 45-103d:
in the row for 1.1420.5:3 underline the added "b"
Underline the whole of table footnote b

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.135a** *P* **55** *L* **12** # 72

Wienckowski, Natalie General Motors

Comment Type **T** *Comment Status* **A** *(bucket1)*

Unused bit combinations should be "reserved"

SuggestedRemedy

add a row with "0 1 x =Reserved" and
add a row with "1 0 0 =Reserved"
This also needs to be done on P56L7, P57L13, P58L7, & P152L23.

Response *Response Status* **C**

ACCEPT.
[Editor's note: CC: 45, 162 (Table 162-9).]

Cl **45** SC **45.2.1.137a** P **56** L **41** # 3

Anslow, Pete Independent

Comment Type **E** *Comment Status* **A** *(bucket1)*

Table 45-103c concerns register 1.1320, but there are 4 instances of 1.1120 in the table.

SuggestedRemedy

Change 1.1120 to 1.1320 in four places.

Response *Response Status* **C**

ACCEPT.

Cl **45** SC **45.2.7.12a.a** P **60** L **52** # 92

Slavick, Jeff Broadcom

Comment Type **T** *Comment Status* **A** *(bucket1)*

The RS-FEC-Int negotiated field is valid for all 100GBASE-P PHYs that supporting negotiating it. But text some "some" so

SuggestedRemedy

Align the text with how RS-FEC negotiated reads. Change the last sentence to read "This bit is set only when RS-FEC-Int operation been negotiated for a 100GBASE-P PHY supporting negotiation of RS-FEC-Int operation."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change last sentence to: "This bit is set only if RS-FEC-Int operation has been negotiated for a 100GBASE-P PHY supporting negotiation of RS-FEC-Int operation."

Cl **69** SC **69.1.2** P **63** L **6** # 80

Huber, Tom Nokia

Comment Type **E** *Comment Status* **A** *(bucket1)*

The editing instruction indicates that unchanged items are not included, yet items i) and j) have no changes indicated

SuggestedRemedy

Remove items i) and j), or change the editing instruction to indicate that 'some unmodified items are not included'.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
In the editorial instruction change "(unchanged list items not shown):" to "(some unchanged list items not shown):"

Cl **69** SC **69.2.3** P **63** L **43** # 98

Kabra, Lokesh Synopsys Inc

Comment Type **E** *Comment Status* **A** *(bucket1)*

Typo-error; 200Gb/s mentioned as 100Gb/s

SuggestedRemedy

the PMD defined in Clause163, and specifies 200Gb/s operation using 4-level PAM over two differential

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change: "The 200GBASE-KR2 embodiment employs the PCS defined in Clause 119, the PMA defined in Clause 120, and the PMD defined in Clause 163, and specifies 100 Gb/s operation using 4-level PAM over two differential paths in each direction."
To: "The 200GBASE-KR2 embodiment employs the PCS defined in Clause 119, the PMA defined in Clause 120, and the PMD defined in Clause 163, and specifies 200 Gb/s operation using 4-level PAM over two differential paths in each direction."

Cl **69** SC **69.2.3** P **64** L **48** # 81

Huber, Tom Nokia

Comment Type **T** *Comment Status* **A** *(bucket1)*

Not part of the new text for table 69-3b, but the title of clause 137 is incorrect in the table

SuggestedRemedy

Change 100GBASE-KR4 PMD to 200GBASE-KR4 PMD

Response *Response Status* **C**

ACCEPT.

Cl **80** SC **80.1.4** P **73** L **47** # 7

Hajduczenia, Marek Charter Communications

Comment Type **E** *Comment Status* **A** *(bucket1)*

Dead link "Clause 91 or Clause 161"

SuggestedRemedy

Add live hyperlink for these two clause numbers

Response *Response Status* **C**

ACCEPT.

Cl **91** *SC* **91.6** *P* **85** *L* **26** # 82

Huber, Tom
Nokia

Comment Type **E** *Comment Status* **A** *(bucket1)*

The newly inserted row is not marked as such. Other tables with a mix of inserted rows and existing rows have underlined text for the new rows.

SuggestedRemedy

Underline the text of the new row.

Response *Response Status* **C**

ACCEPT.

Cl **91** *SC* **91.6.2f** *P* **86** *L* **5** # 160

Zimmerman, George
CME Consulting/ADI, APL Gp, Cisco, CommScope,

Comment Type **E** *Comment Status* **A** *(bucket1)*

"For PHYs supporting RS-FEC-Int operation" should have a reference, especially because it would send the reader searching this clause (RS-FEC) for RS-FEC-Int, and not find it.

SuggestedRemedy

change "RS-FEC-Int operation" to "RS-FEC-Int operation (see Clause 161)" similar to other references, where Clause 161 is a cross-ref.

Response *Response Status* **C**

ACCEPT.

Cl **91** *SC* **91.6.2f** *P* **86** *L* **7** # 83

Huber, Tom
Nokia

Comment Type **E** *Comment Status* **A** *(bucket1)*

Awkward grammar - "When 100G_RS_FEC_Enable variable is set…"

SuggestedRemedy

Add 'the' in front of 10G_RS_FEC_Enable: "When the 100G_RS_FEC_Enable variable is set…"

Response *Response Status* **C**

ACCEPT.

Cl **91** *SC* **91.7.3** *P* **87** *L* **38** # 161

Zimmerman, George
CME Consulting/ADI, APL Gp, Cisco, CommScope,

Comment Type **T** *Comment Status* **A** *(bucket1)*

*FINT indicates RS-FEC-Int and should reference clause 161 as the relevant clause for the capability

SuggestedRemedy

Add cross-ref to clause 161 under subclause

Response *Response Status* **C**

ACCEPT.

Cl **91** *SC* **91.6** *P* **85** *L* **28** # 26

Laubach, Mark
IEEE Member / Self

Comment Type **E** *Comment Status* **A** *(bucket1)*

Line breaking of "threshold" after the "t" doesn't look good.

SuggestedRemedy

Perhaps resizing the columns can make it look better or forcing a newline before the "t"?

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Reformat so there is no break in the "threshold".

Cl **93A** *SC* **93A.1.2.3** *P* **209** *L* **47** # 111

Ran, Adee
Cisco

Comment Type **E** *Comment Status* **A** *(bucket1)*

"unless alternate values are provided by the clause that invokes this method"

The word "alternate" seems odd here, I think "alternative" is more common for this meaning. It can also be simply "other".

(Note: in section 6, "alternative" appears 13 times and "alternate" appears 3 times, both with the same meaning. This may be handled by maintenance)

SuggestedRemedy

Change "alternate" to "alternative".

Response *Response Status* **C**

ACCEPT.

Cl **93A** *SC* **93A.1.2.4** *P* **211** *L* **9** # 112

Ran, Adee Cisco

Comment Type **E** *Comment Status* **A** *figure legend (bucket1)*

Figure 93A–2 includes network elements which represent components of the package and device model, but there is no description of these elements; the definitions are scattered through 93A.1.2 and its subclauses (some of which are not in this amendment). To an unexperienced reader it will be much harder than necessary to understand what each element is.

The suggested remety is to add a legend to the figure. Alternatively, labels and arrows can be used instead.

SuggestedRemedy

Add a legend to Figure 93A–2, with text based on the following:

S^(d) = scattering parameters corresponding to C_d
S^(l) = scattering parameters corresponding to a transmission line with length z_p
S^(s) = scattering parameters corresponding to L_s

(and so on)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement the suggested remedy with editorial license.

Cl **93A** *SC* **93A.5.2** *P* **214** *L* **34** # 113

Ran, Adee Cisco

Comment Type **TR** *Comment Status* **A** *(bucket1)*

This amendment uses T_fx as a parameter of ERL calculation.

T_fx originally appears in Equation (93A–62), which is not included in this amendment (added by 802.3cd), with the text

"T_fx is twice the propagation delay in ns associated with the test fixture, obtained by measurement or inspection"

This text does not hold for the cases where the ERL is defined in this amendment; in some cases T_fx is defined as 0 or 0.2 ns (regardless of the test fixture), in other cases it is twice the delay between two specified test points (e.g. TP0 and TP0v).

SuggestedRemedy

Add 93A.5.2 and change the text following Equation (93A–62), adding after the quoted sentence:

", unless its value is specified by the clause that invokes this method"

Response *Response Status* **W**

ACCEPT.

Cl **116** *SC* **116.1.2** *P* **90** *L* **44** # 84

Huber, Tom Nokia

Comment Type **E** *Comment Status* **A** *(bucket1)*

The last part of the text that is new, "for 400GBASE-KR4", is not shown as changed text (with an underline)

SuggestedRemedy

Underline "for 400GBASE-KR4" so all changed text is identified.

Response *Response Status* **C**

ACCEPT.

Cl **116** *SC* **116.1.4** *P* **92** *L* **54** # 191

Dudek, Mike — Marvell

Comment Type **T** *Comment Status* **A** *(bucket1)*

The Optical PMD's are not listed using the new chip to chip and chip to module AUI's

SuggestedRemedy

bring the tables for the 200G and 400G from clause 116 into the document and add the new AUI interfaces to the tables.

Response *Response Status* **C**

ACCEPT.

Cl **119** *SC* **119.6.4.12** *P* **99** *L* **41** # 27

Laubach, Mark — IEEE Member / Self

Comment Type **E** *Comment Status* **A** *(bucket1)*

Line break of "status" after "stat" doesn't loook good.

SuggestedRemedy

Perhaps forcing a newline before "status"?

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Reformat so there is no break in "status".

Cl **120** *SC* **120.5.2** *P* **102** *L* **11** # 101

Ran, Adee — Cisco

Comment Type **E** *Comment Status* **A** *(bucket1)*

"when the number of physical lanes is 2 or 4" is inconsistent with the remainder of this sentence which has "8 or 4", and with the first paragraph of 120.5.

Other places with "2 or 4" are 120.5.5 (P102 L25), 120.5.7.1 (P103 L12 and L20), and 120.5.11.2 (P104 L16) - in those cases the corresponding 400G PMA is stated as having "4 or 8" lanes. That is an inconsistency in the base document, which may be fixed in the revision project, so I'm not proposing changing those cases now.

SuggestedRemedy

Change "2 or 4" to "4 or 2", at this point only in 102.5.2.

Response *Response Status* **C**

ACCEPT.

Cl **120** *SC* **120.7.3** *P* **106** *L* **30** # 102

Ran, Adee — Cisco

Comment Type **ER** *Comment Status* **A** *(bucket1)*

In items UNAUI and DNAUI, "through Annex 120G" is a newly inserted text.

SuggestedRemedy

Mark with underline in both cases.

Response *Response Status* **W**

ACCEPT.

Cl **120F** *SC* **120F.3.1** *P* **219** *L* **16** # 60

Brown, Matt — Huawei

Comment Type **E** *Comment Status* **A** *(bucket1)*

Align terminology with other clauses.

SuggestedRemedy

Change "Common-mode return loss" to "Common-mode to common-mode return loss" in Table 120F-1 and in PICS item TC8 in 120F.5.4.1.

Response *Response Status* **C**

ACCEPT.

Cl **120F** *SC* **120F.3.1** *P* **219** *L* **22** # 215

He, Xiang — Huawei

Comment Type **E** *Comment Status* **A** *abbreviations*

A dot is added to the abbreviated word "abs" in this table but not in the others.

SuggestedRemedy

Change "abs." to "abs" or add the dot for all other occurances.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
In addition to the concern expressed in the comment the grammar in this parameter name is not good.
In Table 120F-1, change "abs." to "absolute value of".
In Table 162-10 and Table 163-5, change "abs" to "absolute value of".
[Editor's note: CC: 120F, 162, 163]

Cl **120F** *SC* **120F.3.2.3** *P* **224** *L* **2** # 135

Hidaka, Yasuo — Credo Semiconductor, Inc.

Comment Type **TR** *Comment Status* **A** *RIT jitter (CC)*

Equation (120D-10) and (120D-11) referred from 120F.3.2.3 step e are not accurate, because the dual-dirac jitter distributuion estimated by these equations does not match well with the original distributuion even if the original distributuion is pure dual-dirac distributuion. For instance, J4u of the estimated dual-dirac jitter distribution is always significantly smaller than the measured J4u. I propose to change these equations.

SuggestedRemedy

Add the following equations after step j, and change references to Equation (120D-10) and (120D-11) in step e with the new equations:

D4d = (Q4d^2 + 1) * (J_RMS^2) - (J4u / 2)^2

If D4d >= 0,
A_DD = (J4u / 2 + Q4d * sqrt(D4d)) / (Q4d^2 + 1)
sigma_RJ = (J4u / 2 - A_DD) / Q4d

If D4d < 0,
Qx = sqrt((J4u / 2 / J_RMS)^2 - 1)
A_DD = (J4u / 2) / (Qx^2 + 1)
sigma_RJ = sqrt((J_RMS^2) - (A_DD^2))

where
Q4d = 3.7190

Add the following Note after the equation:

Note 1 -- Q4d is an approximated solution of Q(Q4d) = 1 x 10^(-4), where the Q function is defined in Equation (95-1).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #209.

[Editor's note: CC: 120F, 163]

Cl **120F** *SC* **120F.3.2.5** *P* **225** *L* **22** # 115

Ran, Adee — Cisco

Comment Type **E** *Comment Status* **A** *variable table (bucket1)*

Table 120F–6 has a "reference" column that has identical values for all rows (136.8.11.7.1). This reference is repeated in the text following the table, so it is redundant. Note that the similar Table 120F–3 does not have this column.

If the reference column is omitted, the "management access" column can be widened to prevent breaking its title, as in Table 120F–3.

SuggestedRemedy

delete the "reference" column and adjust the width of remaining columns.

Response *Response Status* **C**

ACCEPT.

Cl **120F** *SC* **120F.5.4.1** *P* **232** *L* **39** # 116

Ran, Adee — Cisco

Comment Type **TR** *Comment Status* **A** *(bucket1)*

Item TC13 feature is "Transmitter precoder request" with no comment, and its status is M. However, the referenced 120F.1 says "Precoding may be enabled and disabled using the precoder request mechanism specified in 135F.3.2.1." (P218 L28), and this mechanism is explicitly optional. So requesting through this mechanism can't be mandatory.

It may be preferable to add the transmitter precoder request as a major (optional) feature, as done in annex 135F (802.3cd).

SuggestedRemedy

Change TC13 status from "M" to "O". Consider moving it to 120F.5.3.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Change TC13 status from "M" to "O".

Cl **120F** SC **120F.5.4.1** P **232** L **40** # 117

Ran, Adee Cisco

Comment Type **TR** *Comment Status* **A** *TX EQ control (bucket1)*

Item TC14 is optional and points to 120F.3.1.2, which points to 120F.3.1.4, which is pointed to by item TC15 (mandatory). These two items are one and the same.

The transmitter control interface is mandatory; only its usage is described with the word "may", but it is not an optional feature. So TC15 is the correct one.

SuggestedRemedy

Remove item TC14.

Response *Response Status* **W**

ACCEPT.

Cl **120G** SC **120G.1** P **235** L **36** # 221

Wu, Mau-Lin MediaTek Inc.

Comment Type **E** *Comment Status* **A** *OIF reference (bucket1)*

The sentence below refers to CEI-112G-VSR-PAM4 defined in OIF-CEI-05.0 [B55a].
"The C2M interface is defined using a specification and test methodology that is similar to that used for CEI-112G-VSR-PAM4 defined in OIF-CEI-05.0 [B55a]."
However, OIF-CEI-05.0 doesn't exist yet.

SuggestedRemedy

Propose to remove this sentence

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
With respect to CEI-112G-VSR-PAM4, past OIF liaisons request that IEEE "acknowledge the OIF in any derivative work". For reference, a URL to the latest liaison letter is provided here:
https://www.ieee802.org/3/ck/private/OIF_liaison_letter_IEEE802.3_08Apr21_CEI_Projects.pdf
Add an editor's note in 120G.1 indicating that the referenced CEI document is expected and that the reference is to be removed at 802.3ck publication time if the CEI document is not yet published.
In Annex A, change the editor's note to indicate only that the document is expected to be published by OIF and that the bibliography entry is to be removed if the reference in 120G.1 is removed.

Cl **120G** SC **120G.3.1.2** P **238** L **41** # 185

Dudek, Mike Marvell

Comment Type **TR** *Comment Status* **A** *TP1 ERL Tfx*

Investigations of the effect of the Time-gated propagation delay on practical HCB's has shown that the input RF connector is affecting the ERL unless the 200 ps is increased to approx 300ps. 300ps is still adequately short to not affect the measurement of the device under test. i.e. The value used for Tfx does not sufficiently mitigate the effects of reflections from the test connector. See dudek_3ck_adhoc_01a_041421

SuggestedRemedy

Change the value from 0.2ns to 0.3ns also on page 242 line 41

Response *Response Status* **C**

ACCEPT.

Cl **120G** SC **120G.3.1.2** P **238** L **41** # 174

Dawe, Piers Nvidia

Comment Type **TR** *Comment Status* **A** *TP1 ERL Tfx*

This fixed time value of time-gated propagation delay Tfx is unworkable because the HCB is defined by its loss not its transit time. While HCBs for connectors with few lanes such as SFP+ may be constructed from PCB, those for connectors with many lanes such as QSFP-DD are challenged by fanout and therefore may use a cabled construction with the same loss and a much greater delay than a PCB. The discontinuity at cable-PCB interface should be windowed out just like the coax connector, but would reasonably be much more than 0.2/2 ns (or ~20 mm?) from the coax connector. The HCB transit time is known well enough, just as its loss is, so we can use that in the windowing. Notice that in 163 and 120F, "The value of Tfx is twice the delay from TP5v to TP5", so it's known there.

SuggestedRemedy

Change 0.2 ns to twice 0.8 times the delay between the test fixture test connector and the near side of the test fixture host-facing connector on the HCB. Make a similar change in 162.9.3.5 (HCB for CR). Although there may be less pressure to use a cabled technique for MCBs, for consistency, make similar changes in 120G.3.2.3 and 162.11.3 (MCB).

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Resolve using the responses to comments #184 and #185.

Cl **120G** *SC* **120G.3.1.5** *P* **239** *L* **10** # 222

Wu, Mau-Lin MediaTek Inc.

Comment Type **TR** *Comment Status* **A** *(bucket1)*

Vertical eye opening is not used as a specification in 120G, vertical eye closure is used instead. Therefore, the following sentence is not appropriate.
"Eye height and Vertical eye opening are measured according to the method described in 102G.5.2."

SuggestedRemedy

Change "vertical eye opening" to "vertical eye closure".

Response *Response Status* **W**

ACCEPT.

Cl **120G** *SC* **120G.3.3.3** *P* **244** *L* **46** # 233

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *TP3/TP4 XTALK (bucket1)*

It would be better to put the crosstalk parameters in the stressed input parameters tables rather than scattered through the text.

SuggestedRemedy

Move the peak-to-peak voltage and transition time numbers from the text of 120G.3.3.3.1 and 120G.3.4.1.1 to Table 120G-8 and 120G-11

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement the suggested remedy with editorial license.

Cl **120G** *SC* **120G.3.3.3.1** *P* **245** *L* **33** # 13

Brown, Matt Huawei

Comment Type **TR** *Comment Status* **A** *TP4 SJ*

In previous drafts we aligned KR, CR, and C2C such that they share the same jitter tolerance table, Table 162-15 and added a new frequency point at 0.4 MHz. The same table should be used for C2M.

SuggestedRemedy

Delete Table 120G-9.
At page 245 line 1, change the sentence to: "Sinusoidal jitter is applied with frequency and peak-to-peak amplitude according to each case in Table 162-15.
At page 248 line3, change the sentence to: "The amount of applied peak-to-peak sinusoidal jitter used for the module stressed input test is given in Table 162-15."
In Table 120G-8 and Table 120G-11, change "Table 120G-9" to "Table 162-15".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
[Editor's note: Changed subclause from 120G.3.3.3 to 120G.3.3.3.1.]

Implement suggested remedy with editorial license.

Cl **120G** *SC* **120G.3.3.3.1** *P* **245** *L* **25** # 43

Ghiasi, Ali Ghiasi Quantum/Inphi

Comment Type **T** *Comment Status* **A** *TP4 SJ*

Receiver jitter tolerance test point B to F test frequencies are ~2.5x but test point A and B are a decade apart

SuggestedRemedy

Please add additional test frequency between A and B at 133 KHz with amplitude of 1.5 UI

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #13.

Cl **120G** *SC* **120G.3.4.1.1** *P* **247** *L* **53** # 21

Brown, Matt Huawei

Comment Type **ER** *Comment Status* **A** *(bucket1)*

Grammar

SuggestedRemedy

Change "Eye height vertical eye closure are measured"
To "Eye height and vertical eye closure are measured"

Response *Response Status* **C**

ACCEPT.
[Editor's note: Changed line from 43 to 53.]

Cl **120G** *SC* **120G.3.4.1.1** *P* **247** *L* **50** # 131

Ben Artsi, Liav — Marvell Technology

Comment Type **TR** *Comment Status* **A** *CRU description (bucket1)*

Defining a corner frequency for a clock recovery unit (CRU) can be ambiguous due to possible actual implementations of CRU implementations

SuggestedRemedy

Change the definition of a CRU unit with a definition of the effect expected from the CRU. The effect expected is a high frequency filter applied on the jitter of the measured signal. A reference for the wording can be found in 93.8 "The effect of a single-pole high-pass filter with a 3 dB frequency of XMHz is applied to the jitter"

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Change: "A reference CRU with a corner frequency of 4 MHz and slope of 20 dB/decade is used to calibrate the stressed signal using a PRBS13Q pattern."
To: "A reference CRU acting as a high-pass jitter filter with a 3 dB corner frequency of 4 MHz and slope of 20 dB/decade is used to calibrate the stressed signal using a PRBS13Q pattern."
[Editor's note: CC: 162, 120G]

Cl **135** *SC* **135.1.4** *P* **109** *L* **15** # 103

Ran, Adee — Cisco

Comment Type **E** *Comment Status* **A** *(bucket1)*

In Figure 135-2, in "PMA (4:n)" the letter "n" is not italicized (it is italic everywhere else).

Also, in "PMA (n:p)", "n" is italic but "p" is not (but p is italic in the legend).

Also applies to Figure 120A–8 in 120A.5 where p and n are used but not italicized.

SuggestedRemedy

Change the format of the "n" and "p" to italic, across both figures.

Response *Response Status* **C**

ACCEPT.

Cl **135** *SC* **135.1.4** *P* **109** *L* **27** # 104

Ran, Adee — Cisco

Comment Type **E** *Comment Status* **A** *(bucket1)*

The term "PHY" does not appear in the new Figure 135-2, so it is not required in the legend.

SuggestedRemedy

Delete "PHY = PHYSICAL LAYER DEVICE".

Response *Response Status* **C**

ACCEPT.

Cl **135** *SC* **135.7.3** *P* **113** *L* **6** # 105

Ran, Adee — Cisco

Comment Type **TR** *Comment Status* **A** *(bucket1)*

PICS item NLA in 802.3cd has only the options 2, 4, or N/A for 100G. This project adds 100GAUI-1 for which the value should be 1.

SuggestedRemedy

Bring in item NLA and add 1 as an optional value.

Response *Response Status* **W**

ACCEPT.

Cl **136** *SC* **136.8.11** *P* **115** *L* **29** # 24

Marris, Arthur — Cadence Design Systems

Comment Type **TR** *Comment Status* **R** *control function (bucket1)*

Need to point out that the Clause 136 control function is not just for 50G lane PMDs

SuggestedRemedy

Add the following extra paragraph to the end of 136.8.11:
“The PMD control function specified in this clause is not only used by 50 Gb/s per lane PMDs, but also by other PMDs, such as the 100 Gb/s per lane PMDs specified in Clause 162.”

Response *Response Status* **W**

REJECT.
By precedent, many subclauses for one PMD are reused or recycled by clauses for other concurrent or later PMDs without any reference to those other clauses. The control function defined in 802.3cd-2018 Clause 136 (CR) does not point out that it is also used by Clause 137 (KR). Clause 162 and Clause 163 do not technically use Clause 136 control function but rather define a new control function with the Clause 136 control function as a starting point and modified with exceptions.

Cl **136** *SC* **136.8.11.7.2** *P* **116** *L* **10** # 106

Ran, Adee — Cisco

Comment Type **E** *Comment Status* **A** *(bucket1)*

Missing space after "=".

SuggestedRemedy

Insert space.

Response *Response Status* **C**

ACCEPT.

Cl **136** *SC* **136.8.11.7.2** *P* **117** *L* **37** # 128

Law, David HPE

Comment Type **T** *Comment Status* **A** *(bucket1)*

The action 'start_holdoff_timer' in the QUIET state should read 'start holdoff_timer', that is the underscore between start and holdoff_timer should be a space. See timer conventions in 14.2.3.2 and 'start holdoff_timer' in TIMEOUT state.

SuggestedRemedy

Change 'start_holdoff_timer' to read 'start holdoff_timer'.

Response *Response Status* **C**

ACCEPT.

Cl **136** *SC* **136.8.11.7.3** *P* **116** *L* **14** # 107

Ran, Adee Cisco

Comment Type **TR** *Comment Status* **A** *(bucket1)*

In the base document (802.3cd), 136.8.11.7.3 defines holdoff_timer as being started only when entering the TIMEOUT state.

In this project we added a holdoff_timer also when entering QUIET.

SuggestedRemedy

Bring in 136.8.11.7.3 and insert "or the QUIET state" after "the TIMEOUT state".

Response *Response Status* **W**

ACCEPT.

Cl **136** *SC* **136.9** *P* **118** *L* **1** # 108

Ran, Adee Cisco

Comment Type **ER** *Comment Status* **A** *(bucket1)*

The table to be modified is in 136.14.4.1 "PMD functional specifications", so the current subclause numbering is incorrect.

SuggestedRemedy

Change the 1st-level subclause number from 9 to 14, including the editorial instruction.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Change subclause number 136.9 to 136.14 and update the editorial instruction appropriately.

Cl **152** *SC* **152.6.2a** *P* **119** *L* **29** # 109

Ran, Adee Cisco

Comment Type **E** *Comment Status* **A** *(bucket1)*

in 802.3 the word "sublayer" is conventionally used with no hyphen.

SuggestedRemedy

change "sub-layer" to "sublayer".

Response *Response Status* **C**

ACCEPT.

Cl **161** SC **161.5.2.6** P **122** L **52** # 162

Zimmerman, George CME Consulting/ADI, APL Gp, Cisco, CommScope,

Comment Type **TR** *Comment Status* **A** *(bucket1)*

"The alignment markers shall be mapped to am_txmapped<1284:0> in a manner that yields the same result as the following process." Where the process begins and ends isn't really clear in the text since the text just runs in paragraphs of descriptive text intermingled with the text and multiple sets of either pseudocode or alphabetic steps. I THINK it ends at P 123 line 38, but that was only after first thinking it ended at other places a few times. This section is technically quite important and needs to be crystal clear, hence my comment is technical, as it is currently not clear to those outside the group.

Descriptive, non-process text should be set out, and the process itself should be either all in steps or all in pseudocode, and set out by its own section. (in my remedy I have used the existing text and put it all in text).
Being a little confused by the text, take caution, as I may have gotten it wrong in my proposed remedy.

SuggestedRemedy

Change "same result as the following process" to "same result as the process in 161.5.2.6.1." Insert new section "161.5.2.6.1 Alignment Marker Mapping Process" following line 54, with content from page 123 lines 1 through 10, and add step e) using text from page 123 lines 18 through 21, and step f) using the text at lines 23 ("The variable am_txmapped...) through line 33. Add step g) with text at page 123 lines 34 through 38.

Move descriptive (and non-process requirement) text at page 123 lines 12-17 and page 123 lines 39 -page 124 line 46 (end of the existing section) ahead of the new section with just the process.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

[Editor's note: Proposed response updated on 2021/5/5.]

After some offline discussion and further review, the commenter indicated that the description is clear as is.

However, it was noticed that the wrong variable is being referenced in the text. The variable name should be tx_scrambled_am rather than am_txmapped. In addition, it would be clearer if we referred to a set of processes in the clause instead of a single process.

Change:"The alignment markers shall be mapped to am_txmapped<1284:0> in a manner that yields the same result as the following process."
To: "The alignment markers shall be mapped to tx_scrambled_am<1284:0> in a manner that yields the same result as the processes described in the remainder of this subclause."

Cl **161** SC **161.5.2.9** P **125** L **8** # 163

Zimmerman, George CME Consulting/ADI, APL Gp, Cisco, CommScope,

Comment Type **E** *Comment Status* **A** *(bucket1)*

"has been FEC encoded, two FEC codewords… each FEC lane… Once the data has been Reed-Solomon encoded and interleaved… FEC lanes… highest FEC lane." - use consistent nomenclature. You go from FEC, to Reed-Solomon, and as much as I love to remember Gus Solomon by name, it suggests there may be 2 different things youre talking about here.
I didn't name it in my remedy, but the editor may wish to review instances of FEC where RS-FEC is meant to be clear - the same thing shows up in 161.5.3.1, 161.5.3.2, and 161.5.3.3. (note RS-FEC is an abbreviation in 802.3-2018 for Reed-Solomon Forward Error Correction)

SuggestedRemedy

Suggest replace instances on lines 8 through 22 of "FEC" with "RS-FEC", and "Reed-Solomon encoded" on line 21 with "RS-FEC encoded".
Additionally suggest editor review usage of "FEC" for possible replacement with RS-FEC elsewhere in clause 161 (I note this doesn't look globally feasible)

Response *Response Status* **C**

ACCEPT.

Cl **161** *SC* **161.5.3.3** *P* **127** *L* **31** # 164

Zimmerman, George CME Consulting/ADI, APL Gp, Cisco, CommScope,

Comment Type **T** *Comment Status* **A** *(bucket1)*

"The probability that the decoder fails to indicate a codeword with t+1 errors as uncorrected is
not expected to exceed 10–16." This statement is not technically correct without reference to an underlying raw symbol error rate. The probability of a failed decode can be anything if the raw symbol error rate is left unpinned. Since this subclause stands alone and could be reused with different PHYs in different scenarios, it isn't appropriate to pin the raw SER. Additionally, the descriptive sentence is unnecessary.

SuggestedRemedy

Delete the last two sentences of the 2nd paragraph of 161.5.3.3 ("The probability…").

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The symbol error rate of the system dictates the rate at which a codeword with t+1 or more errors occur. The last two sentences constrain the behavior of the decoder when a codeword with t+1 or more errors is seen.
Change:
The probability that the decoder fails to indicate a codeword with t+1 errors as uncorrected is not expected to exceed 10–16. This limit is also expected to apply for t+2 errors, t+3 errors, and so on.
To:
The probability that the decoder fails to indicate a codeword as uncorrected, given t+1 or more errors, is not expected to exceed 10–16.

Cl **162** *SC* **162.1** *P* **140** *L* **7** # 238

Zhang, Bo Inphi

Comment Type **E** *Comment Status* **R** *wording (bucket1)*

When -CRx interfaces are first introduced in the overview section of clause 162. It's not clear the definition is properly referenced.

SuggestedRemedy

Suggest provide linkage of the definition of -CRx with -CRx interfaces when they are first introduced.

Response *Response Status* **C**

REJECT.
It is not clear what the comment is concerned with. The nomenclature used here is consistent with other PMD clauses.

Cl **162** *SC* **162.1** *P* **140** *L* **13** # 154

Kochuparambil, Beth Cisco

Comment Type **E** *Comment Status* **A** *wording (bucket1)*

Annex 162D is the only description that restates the PMD. CR1, CR2, and CR4 seem to already be implied.

SuggestedRemedy

Remove "100GBASE-CR1, 200GBASE-CR2, and 400GBASE-CR4" which would leave "Annex 162D describes host and cable assembly types."

Response *Response Status* **C**

ACCEPT.

Cl **162** *SC* **162.1** *P* **140** *L* **26** # 99

Kabra, Lokesh Synopsys Inc

Comment Type **E** *Comment Status* **A** *(bucket1)*

Typo-error for Clause number corresponding to RS/CGMII functions

SuggestedRemedy

Correct Clause number to "81" instead of "80" in row 1 and row 2 of Table 162-1

Response *Response Status* **C**

ACCEPT.

Cl **162** *SC* **162.1** *P* **140** *L* **31** # 155

Kochuparambil, Beth Cisco

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

I may just be confused, but seems odd that both RS-FEC and RS-FEC-Int are required, but the Inverse RS-FEC is optional, however required to convert between the other 2 required interfaces.

SuggestedRemedy

Make Inverse RS-FEC required

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **162** *SC* **162.1** *P* **141** *L* **23** # 176

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **R** *PMD tables (bucket1)*

Tables 162-2 and 162-3 are essentially the same, and it benefits the reader to see that.

SuggestedRemedy

Combine into one table with columns for clause/annex no., description for 200G, description for 400G, and required/optional status. Similarly for tables 163-2 and 3.

Response *Response Status* **C**

REJECT.
Combining the two tables results in a less readable format since for most sublayers there is a unique row for each rate. Only RS and AN rows are common to both. The suggested remedy does not improve the quality of the draft.
[Editor's note: CC: 162, 163]

Cl **162** *SC* **162.1** *P* **142** *L* **41** # 156

Kochuparambil, Beth Cisco

Comment Type **E** *Comment Status* **A** *(bucket1)*

MAC = MEDIA ACCESS CONTROL is listed twice in the key.

SuggestedRemedy

Remove 1 of the MAC definitions

Response *Response Status* **C**

ACCEPT.

Cl **162** *SC* **162.3** *P* **143** *L* **43** # 143

Kochuparambil, Beth Cisco

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

The PMD does not reside ON the MDI.

SuggestedRemedy

Change "on" to "for"

Resulting text would read "The PMD converts these streams of symbols into appropriate signals for the MDI."

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **162** *SC* **162.7** *P* **146** *L* **28** # 193

Dudek, Mike Marvell

Comment Type **E** *Comment Status* **A** *(bucket1)*

Draft should be consistent format for the PMD control and status registers.

SuggestedRemedy

Delete the "to" to match table 162-5.

Response *Response Status* **C**

ACCEPT.

Cl **162** *SC* **162.7** *P* **147** *L* **34** # 192

Dudek, Mike Marvell

Comment Type **E** *Comment Status* **A** *(bucket1)*

Improve English

SuggestedRemedy

change "provide" to "provided"

Response *Response Status* **C**

ACCEPT.

Cl **162** *SC* **162.8.11** *P* **151** *L* **24** # 144

Kochuparambil, Beth Cisco

Comment Type **E** *Comment Status* **R** *control function (bucket1)*

Current text: "The terminal count of max_wait_timer as specified in 136.8.11.7.3 is 12s."
Given a value is specified within the clause/statement makes the phrase "specified in 136[. . .]" incorrect.

SuggestedRemedy

Change "specified" to "defined" or "described"
This is a semi-pervasive issue.

Response *Response Status* **C**

REJECT.
Clause 162 is specifying a value that is different from the value specified in Clause 136.

Cl **162** *SC* **162.9.3** *P* **154** *L* **21** # 167

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *TX vf*

Clumsy "x vf" way of defining linear fit pulse peak (min)

SuggestedRemedy

Use "Linear fit pulse peak ratio" as in 163 and 163A.3.2.1. Note the unit in the table changes to V/V.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement the suggested remedy with editorial license.

Cl **162** *SC* **162.9.3** *P* **154** *L* **21** # 166

Dawe, Piers Nvidia

Comment Type **TR** *Comment Status* **R** *CR port type*

The draft loss budget wastes over 3 dB in nearly every case.
The recommended maximum insertion loss allocation for the host traces plus BGA footprint and host connector footprint, of 6.875 dB, compares very poorly with C2M's host insertion loss up to 11.9 dB, making passive copper expensive and unattractive for a switch, while a full range of NICs can be made within only 3.75 dB. Server-switch links will get made with an asymmetric loss budget, so it would be better for the standard to regularise what will happen anyway. By the way, many server-switch links will be asymmetric anyway (different form factors at server and switch ends), and that's already allowed in this draft.
This change would also benefit CR switch-switch links because the shortest ports would get credit for their low loss.

SuggestedRemedy

As we have done for C2M, create two kinds of CR ports. Host loss allocations of 3.75 dB and 10 dB. Short can connect to short or long with same cable as today; long to long is not supported. Add entries in Clause 73 Auto-Negotiation to advertise short and long to the other end.
In Table 162-10, provide separate limits for Linear fit pulse peak (min).
In Table 162-14, provide separate rows for Test channel insertion loss: for testing the short host input the values for Test 2 are 10-6.875 = 3.125 dB higher (26.75 dB and 27.75 dB), while for the long host input the values for Test 2 are 6.875-3.75 = 3.125 dB lower (20.5 dB and 21.5 dB). No change needed for Test 1.
In 162A.4, provide two equations for each of IL_PCBmax and for ILHostMax and show them in Fig 162A-1 and 2. In 162A.5, provide two Value columns in Table 162A-1. Adjust figures 162A-3 and 4.

For discussion: should a "long" cable, 19.75+2*(6.875-3.75) = 19.75+6.25 = 26 dB max (maybe 3 m) be defined? A CR link could have no more than one of the three host, cable, and host being "long".

We could choose other names than "short" and "long" for the ports, possibly "short" and "medium" (as a C2M host can be "longer"), or A and B, somewhat like USB.

In 162.11.7.1.1, zp, representing the extra loss a host has above an MCB, could be made asymmetric but I believe that would not bring an improvement in accuracy.
There could be a third kind of CR port with 6.875 dB but this would not be useful for server-switch links, would be useful for only a subset of switch-switch links, for which passive copper is a subset anyway, so it doesn't seem worthwhile.

Response *Response Status* **U**

REJECT.

The following presentation was reviewed by the task force:
https://www.ieee802.org/3/ck/public/adhoc/apr28_21/dawe_3ck_adhoc_01_042821.pdf

The suggested remedy would require two or three different CR port types.

The assymetric-port approach was discussed early in this project.
Straw Poll #1 from the July 2018 Task Force meeting indicated strongest support for the current specification.
https://www.ieee802.org/3/ck/public/18_07/minutes_3ck_0718_approved.pdf

Based on discussion and straw poll 6 and 7, there is interest in exploring this proposal further. However, the proposal is not sufficiently complete at this time. A complete proposal and consensus is required.

Straw poll #6 (direction, chicago rule)
Straw poll #7 (direction, pick one)
I would support a new pair of CR port types with reduced host insertion loss limit on one end (e.g., NIC) and increased host loss limit on the other end (e.g., switch) similar to slide 7 of dawe_3ck_adhoc_01_042821.

Strawpoll #6
A: Yes 27
B: No 13
C: Need more information 29
D: Abstain 7

Straw poll #7
A: Yes 22
B: No 11
C: Need more information 11
D: Abstain 6

Cl **162** *SC* **162.9.3.1** *P* **155** *L* **31** # 136

Hidaka, Yasuo — Credo Semiconductor, Inc.

Comment Type **T** *Comment Status* **A** *(bucket1)*

The number of initial conditions was increased from three to five.

SuggestedRemedy

Change "three initial conditions" to "five initial conditions".

Response *Response Status* **C**

ACCEPT.

Cl **162** *SC* **162.9.3.1** *P* **155** *L* **31** # 194

Dudek, Mike — Marvell

Comment Type **T** *Comment Status* **A** *(bucket1)*

There are now five preset conditions

SuggestedRemedy

Change "three" to "five"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment 136.

Cl **162** *SC* **162.9.3.1.1** *P* **155** *L* **47** # 145

Kochuparambil, Beth — Cisco

Comment Type **E** *Comment Status* **A** *(bucket1)*

"M should be an integer not less than 32"
May be easier for the reader to avoid the double negative.

SuggestedRemedy

Change "not less than"
to "greater than or equal to"

Response *Response Status* **C**

ACCEPT.
[Editor's note: Change page from 154 to 155.]

Cl **162** *SC* **162.9.3.1.1** *P* **155** *L* **44** # 129

Ben Artsi, Liav — Marvell Technology

Comment Type **TR** *Comment Status* **A** *CRU description (bucket1)*

Defining a corner frequency for a clock recovery unit (CRU) can be ambiguous due to possible actual implementations of CRU implementations

SuggestedRemedy

Change the definition of a CRU unit with a definition of the effect expected from the CRU. The effect expected is a high frequency filter applied on the jitter of the measured signal. A reference for the wording can be found in 93.8 "The effect of a single-pole high-pass filter with a 3 dB frequency of XMHz is applied to the jitter"

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Change "A reference CRU with a corner frequency of 4 MHz and slope of 20 dB/decade is used to calibrate the stressed signal using a PRBS13Q pattern." to "A reference CRU acting as a high-pass jitter filter with a high-pass 3 dB corner frequency of 4 MHz and slope of 20 dB/decade is used to calibrate the stressed signal using a PRBS13Q pattern."
[Editor's note: CC: 162, 120G]

Cl **162** *SC* **162.9.3.1.1** *P* **155** *L* **44** # 132

Ben Artsi, Liav — Marvell Technology

Comment Type **TR** *Comment Status* **A** *CRU description (bucket1)*

Defining a corner frequency for a clock recovery unit (CRU) can be ambiguous due to possible actual implementations of CRU implementations

SuggestedRemedy

Change the definition of a CRU unit with a definition of the effect expected from the CRU. The effect expected is a high frequency filter applied on the jitter of the measured signal. A reference for the wording can be found in 93.8 "The effect of a single-pole high-pass filter with a 3 dB frequency of XMHz is applied to the jitter"

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment 129.
[Editor's note: This appears to be a duplicate of comment 129.]

Cl **162** *SC* **162.9.3.1.3** *P* **157** *L* **6** # 146

Kochuparambil, Beth — Cisco

Comment Type **E** *Comment Status* **A** *(bucket1)*

Initial is capitalized mid sentence, however is lower case in Table 162-11's title.

SuggestedRemedy

Make "Initial" lower case

Response *Response Status* **C**

ACCEPT.

Cl **162** *SC* **162.9.3.4** *P* **158** *L* **34** # 141

Hidaka, Yasuo — Credo Semiconductor, Inc.

Comment Type **TR** *Comment Status* **A** *PRBS9Q*

A detail definition of PRBS9Q with the entire sequence is recommended to avoid implementation errors.

This is re-submission of my comment #109 to draft D1.4.

SuggestedRemedy

Define PRBS9Q as a new clause in clause 120.5.11.2 using clause 120.5.11.2.1 as a template.

In the new clause, modify the second paragraph of the template (120.5.11.2.1) as follows:

When the PRBS9Q test pattern enabled, it replaces the signal on the output lane(s) for which it is enabled. The PRBS9Q test pattern is a repeating 511-symbol sequence formed by Gray coding pairs of bits from two repetitions of the PRBS9 pattern into PAM4 symbols as described in 120.5.7. The PRBS pattern generator produces the same result as the implementation shown in Figure XX–X, which implements the generator polynomial shown in Equation (YY–Y). Since the PRBS9 pattern is an odd number of bits in length, bits which are mapped as the first bit of a PAM4 symbol during one repetition of the PRBS9 sequence are mapped as the second bit of a PAM4 symbol during the next repetition of the PRBS9 sequence, and bits which are mapped as the second bit of a PAM4 symbol are mapped as the first bit of the following symbol in the next repetition of the PRBS9 sequence. For example, if the PRBS9 generator used to create the PRBS9Q sequence is initialized to a seed value of 111111111 (with the leftmost bit in S0 and the rightmost in S8), the PRBS9Q sequence is the following Gray coded PAM4 symbols, transmitted left to right:
0012322303231310010331213302202231320111030230213332303130303000
1003020031203332002123313231011003321022213103113222031333131300
0201311013311222101130233203202201221210013321323200113322333330
0110332203232300120233102211211010301312003221320210023220022223
0022122011202030031102321012312202130333101201321112010201010000
3010130102311113013221021203033011133122320310321223102110202000
1302033021032223303201211311312302232330021132121300321122111100
0331112311212000231210312332333031002023011232131330121230122222.

Draw Figure XX-X "PRBS9 pattern generator" similar to Figure 94-6 but according to polynomial 1 + x^5 + x^9.

Define Equation (YY-Y) as G(x) = 1 + x^5 + x^9 or make a reference to the polynomial in Table 68-6.

Make a reference to the new clause from 162.9.3.4.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement the suggested remedy with editorial license.
Create an equation for the polynomial but include text referring back to Clause 68.

Cl **162** *SC* **162.9.3.4** *P* **158** *L* **34** # 236

Li, Mike — Intel

Comment Type **TR** *Comment Status* **A** *PRBS9Q*

PRBS9Q pattern definition is incomplete, and PRBS9Q symbol transition definition for EOJ measurement is missing.

SuggestedRemedy

1.) change "PRBS9Q is defined in a similar way to
PRBS13Q (see 120.5.11.2.1) except that the polynomial in Table 68-6 is used instead of the polynomial
in Equation 94-3." to "PRBS9Q is defined in 162.9.3.4.1, a similar way to
PRBS13Q (see 120.5.11.2.1), except that the polynomial in Table 68-6 is used instead of the polynomial
in Equation 94-3."; 2.) Add a new sentence of "The symbol transition definition for jitter measurement and even-odd jitter calculation with PRBS9Q is provided in 162.9.3.4.1; 3.) Create a new section 162.9.3.4.1 entiled "EOJ measuement with PRBS9Q", with contents from slides 5, 6 of li_3ck_01_0521

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Comment #133 proposes an alternate set of transition locations.
Resolve using the response to comment #133.

Cl **162** *SC* **162.9.3.4** *P* **158** *L* **34** # 133

Hidaka, Yasuo — Credo Semiconductor, Inc.

Comment Type **TR** *Comment Status* **A** *PRBS9Q*

A detail definition of twelve edges in PRBS9Q is recommended to improve reproducibility of even-odd jitter measurement.

This is re-submission of my comment #110 to draft D1.4.

SuggestedRemedy

Add a new table "PRBS9Q pattern symbols used for even-odd jitter measurements" similar to Table 120D-4, but replacing the values as follows:

Label: Description : Gray coded PAM4 symbol : first : TR begins : TR ends : last
REF : Reference : 33333 : 1 : - : - : 5
R03 : 0 to 3 rise : 1000 331 : 260 : 263 : 264 : 266
F30 : 3 to 0 fall : 233333 001 : 511 : 5 : 6 : 8
R12 : 1 to 2 rise : 3111 23 : 265 : 268 : 269 : 270
F21 : 2 to 1 fall : 1222 10 : 466 : 469 : 470 : 471
R01 : 0 to 1 rise : 2000 13 : 195 : 198 : 199 : 200
F10 : 1 t0 0 fall : 21111 0003 : 256 : 260 : 261 : 264
R23 : 2 to 3 rise : 3222 330 : 210 : 213 : 214 : 216
F32 : 3 to 2 fall : 0333 20 : 401 : 404 : 405 : 406
R02 : 0 to 2 rise : 2000 23 : 275 : 278 : 279 : 280
F20 : 2 to 0 fall : 12222 001 : 321 : 325 : 326 : 328
R13 : 1 to 3 rise : 0111 331 : 166 : 169 : 170 : 172
F31 : 3 to 1 fall : 0333 10 : 107 : 110 : 111 : 112

Add an exception to use the new table instead of Table 120D-4, when PRBS9Q is used as the test pattern for even-odd jitter measurement.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Comment #236 proposes an alternate set of transition locations.
The following presentations were reviewed by the task force:
https://www.ieee802.org/3/ck/public/21_05/li_3ck_01b_0521.pdf
https://www.ieee802.org/3/ck/public/21_05/zivny_3ck_01b_0521.pdf
After running straw poll #1, there were no objections to adopting the suggested remedy in comment #236 including li_3ck_01b_0521.
With editorial license implement the suggested remedy of comment #236 and presentation li_3ck_01b_0521.
Straw poll #1 (direction)
I support addressing comments #133 and #236 using:
A. The suggested remedy for comment #133 (Yasuo Hidaka).
B. The suggested remedy for comment #236 (Mike Li).
C. Need more information.
A: 9 B: 10 C: 9
Pick one.

Cl **162** *SC* **162.9.3.4** *P* **158** *L* **38** # 130

Ben Artsi, Liav — Marvell Technology

Comment Type **TR** *Comment Status* **R** *CRU description (bucket1)*

Defining a corner frequency for a clock recovery unit (CRU) can be ambiguous due to possible actual implementations of CRU implementations

SuggestedRemedy

Change the definition of a CRU unit with a definition of the effect expected from the CRU. The effect expected is a high frequency filter applied on the jitter of the measured signal. A reference for the wording can be found in 93.8 "The effect of a single-pole high-pass filter with a 3 dB frequency of XMHz is applied to the jitter"

Response *Response Status* **U**

REJECT.
The detailed description of the CRU is provided in 120D.3.1.8.2. This exception merely suggests changing the value of that corner frequency. So no further detailed description is required here.

Cl **162** *SC* **162.9.3.4** *P* **158** *L* **39** # 32

Ghiasi, Ali — Ghiasi Quantum/Inphi

Comment Type **TR** *Comment Status* **R** *EOJ CRU BW*

"Meeting even-odd jitter requriement with only one CRU bandwidth is sufficient" is not clear

SuggestedRemedy

What is the intention of only one CRU bandwidth, please make it clear.

Response *Response Status* **U**

REJECT.

The suggested remedy does not provide sufficient detail to implement.

There was some agreement that further clarification would be helpful. However, complete proposal is required.

Cl **162** *SC* **162.9.3.5** *P* **158** *L* **46** # 147

Kochuparambil, Beth — Cisco

Comment Type **E** *Comment Status* **R** *(bucket1)*

Sentence is poor english

SuggestedRemedy

Change "Parameters that do not appear in Table 162-12 take values from Table 162-18."
to " Take parameter values that do not appear in Table 162-12 from Table 162-18."

Do the same for
162.9.4.5, pg 164, ln 40 and 162.11.3, pg 167, ln 26
163.9.2.1.2, 163.9.2.2, 163.9.3.2
163.10.3
120F.3.1.1, 120F.3.2.1, 120F.4.3
162B.1.3.2

Response *Response Status* **C**

REJECT.
The suggested remedy does not improve the quality of the draft.

Cl **162** *SC* **162.9.3.5** *P* **159** *L* **13** # 184

Dudek, Mike — Marvell

Comment Type **TR** *Comment Status* **A** *ERL Tfx*

Investigations of the effect of the Time-gated propagation delay on practical HCB's has shown that the input RF connector is affecting the ERL unless the 200 ps is increased to approx 300ps. 300ps is still adequately short to not affect the measurement of the device under test. i.e. The value used for Tfx does not sufficiently mitigate the effects of reflections from the test connector. See dudek_3ck_adhoc_01a_041421

SuggestedRemedy

Change the value from 0.2ns to 0.3ns. Also on page 167 line 44.

Response *Response Status* **C**

ACCEPT.

Cl **162** *SC* **162.9.3.6** *P* **159** *L* **18** # 169

Dawe, Piers Nvidia

Comment Type **TR** *Comment Status* **A** *RLCC description*

1. This paragraph claims that the minimum common-mode to common-mode return loss is specified to reduce reflections of signals that were generated originally as differential and end up as differential. This is not the case: it is included to contain a gross build-up of CM voltage on the line caused by repeated reflections, that is otherwise unbounded.
If it had been intended to address mixed-mode issues it would be a tighter spec, but that's not viable for front-panel connectors. Other specs such as Rx Differential to common-mode return loss and Tx Common-mode to differential mode return loss (both 12 dB at Nyquist, total 24) and Differential to common-mode cable assembly conversion loss (10 dB each way) are there to address the mixed-mode issues, and this spec at only 2 dB won't make much difference to them.
2. This is a standard, not an attempt at a textbook. We don't give any justifications for most other specs; there is no reason that this one should be different.

SuggestedRemedy

Delete the paragraph

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment 148.
[Editor's note: Changed page/line from 157/30 to 159/18.]

Cl **162** *SC* **162.9.3.6** *P* **159** *L* **18** # 148

Kochuparambil, Beth Cisco

Comment Type **E** *Comment Status* **A** *RLCC description*

Description may or may not be helpful for those reading the standard. I do, however, note that previous clauses (examples are 92.10.6 and 110.10.6) do NOT describe why we limit CM return loss, but instead just define the limit. Perhaps this description of the re-reflections concept is helpful to readers, it was somewhat confusing until reading it multiple times.

SuggestedRemedy

Remove the first paragraph of this section. "Common-mode signals can be returned [. . .] To reduce this effect, a minimum common-mode to common-mode return loss is specified."

Response *Response Status* **C**

ACCEPT.

Cl **162** *SC* **162.9.4.1** *P* **161** *L* **4** # 137

Hidaka, Yasuo Credo Semiconductor, Inc.

Comment Type **T** *Comment Status* **A** *RX signalling rate (CC)*

The signalling-rate tolerance of transmitter was changed from 100ppm to 50ppm according to comment #42 on D1.3. However, the signaling-rate tolerance of receiver remained 100ppm. It is not clear whether it was an overlooked error or it remained 100ppm on purpose for compatibility with prior implementations with up to +/- 100ppm.

SuggestedRemedy

Add the following statement:

Note that the tolerance of signaling rate of transmitter is +/- 50ppm. The tolerance of signaling rate of receiver is +/- 100ppm for compatibility with prior transmitter implementations with up to +/- 100ppm tolerance.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The signaling rate range for a transmitter is +/-50 ppm only for specific circumstances (e.g., the PMD transmitter is colocated with the PCS), otherwise it is 100 ppm. This allows for AUI transmitter specifications in the base standard and amendments (e.g., 100GAUI-4). However, an informative note may be helpful to the reader of this draft.
Add the following informative note:
"Note—Although the PMD transmitter is specified with a signaling rate range of +/-50 ppm when in the same package as the PCS sublayer, the signaling rate range may be +/- 100 ppm, when derived from an intermediate interface (e.g., 100GAUI-4)."
With editorial license, apply a similar note in Clause 163.
[Editor's note: CC: 162, 163.]

Cl **162** *SC* **162.9.4.1** *P* **161** *L* **4** # 8

Brown, Matt Huawei

Comment Type **T** *Comment Status* **D** *nominal UI*

Specification of the nominal unit interval is unnecessary and redundant (since it can easily be derived from the nominal signaling rate). It is not specified for KR, C2C, or C2M. For consistency with sister Clauses/Annexes, this specification should be removed.

SuggestedRemedy

Delete the sentence "This translates to a nominal unit interval of 18.82353 ps."

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **162** *SC* **162.9.4.3** *P* **161** *L* **36** # 33

Ghiasi, Ali — Ghiasi Quantum/Inphi

Comment Type **TR** *Comment Status* **R** *RIT channel*

Table 162-14 references table 110-8 and figure 110-3b, but unlike CL 110 for the case of low loss channel Test 1 frequency dependent attenuator is zero because the loss of cable assembly=test chanel loss

SuggestedRemedy

If the low loss channel also include frequency dependent attenuator then please increase loss by 4.75 dB, if the intention was to not include frequncy dependent attenuator then a note would be helpful

Response *Response Status* **C**

REJECT.

The frequency-dependent attenuator is excluded from the test channel used for Test 1 in order to create the minimum loss channel with a compliant cable.

Cl **162** *SC* **162.9.4.3.3** *P* **162** *L* **26** # 139

Hidaka, Yasuo — Credo Semiconductor, Inc.

Comment Type **T** *Comment Status* **A** *RIT transition time*

In 120E.3.1.5, transition time is measured with 33GHz BT4 filter.

SuggestedRemedy

Change "T_r is measured using the method in 120E.3.1.5 with the transmit equalizer turned off
(i.e., coefficients set to the preset 1 values, see 162.9.3.1.3)."
to
"T_r is measured using the method in 120E.3.1.5 with the transmit equalizer turned off (i.e., coefficients set to the preset 1 values, see 162.9.3.1.3) with an exception that the waveform is observed through a fourth-order Bessel-Thomson low-pass response with a 3 dB bandwidth of 40 GHz.."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement the suggested response with editorial license.
[Editor's note: changed subclause from 162.9.4.3 to 162.9.4.3.3.]

Cl **162** *SC* **162.9.4.3.2** *P* **162** *L* **4** # 195

Dudek, Mike — Marvell

Comment Type **T** *Comment Status* **A** *RIT channel*

An extra exception is needed for the test channel loss.

SuggestedRemedy

Change to "The test channel is the same as the one defined in 110.8.4.2.2, except that the cable assembly meets the requirements of 162.11, the test channel loss meets the requirements of table 162-14 and the cable assembly test fixture meets the requirements of 162B.1.2."

Response *Response Status* **C**

ACCEPT.

Cl **162** *SC* **162.9.4.3.3** *P* **162** *L* **36** # 228

Wu, Mau-Lin — MediaTek Inc.

Comment Type **TR** *Comment Status* **A** *RIT SNDR*

For the calculation of SNDR measured at the Tx test reference, the linear fit in 120D.3.1.3 is performed with a pulse length (N_p) of 15 UI. The pulse length (N_p) shall be long enough to cover all 'linear response', such as reflection due to package length.In this case, the calculated SNDR includes nonlinearity only, instead of the far-away 'linear' reflection. The 15 UI spec here is the same as 50GBASE-CR, which is not reasonable for 100GBASE-CR1. We shall need a larger value of N_p here.
In 'li_3ck_01_1020', the authors proposed to consider TX + RX EQ capability to decide N_p value. In that contribution, N_p = 29 was proposed for Clause 163. I found no clues why we have different N_p value for Clause 162, since their TX + RX EQ capability are similar.

SuggestedRemedy

By considering the pulse length to at least cover reflection due to package trace length, whose maximum value is 31 mm. By considering the dielectrics constant, D_k, as in the range of 3.5 ~ 4.0, the location of reflection due to 31 mm trace length is around 22 ~ 24 taps after main cursor. Therefore, adopt N_p = 29 as Clause 163 seems reasonable. Proposed to N_p value from 15 to 29.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #197.

Cl **162** *SC* **162.9.4.3.3** *P* **162** *L* **36** # 197

Dudek, Mike — Marvell

Comment Type **TR** *Comment Status* **A** *RIT SNDR*

SNDR should be measured as appropriate for this clause not as for C2C at 25G.

SuggestedRemedy

Change "SNDR is measured at the Tx test reference using the procedure in 120D.3.1.6, with the exception that the linear fit in120D.3.1.3 is performed with a pulse length (Np) of 15 UI." to "SNDR is measured at the Tx test reference using the procedure in 162.9.3.3"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The following presentation, supporting comment #228, was reviewed by the task force: https://www.ieee802.org/3/ck/public/21_05/wu_3ck_01a_0521.pdf

The reference to 162.9.3.3 as proposed in the suggested remedy would effectively change the Np value to 200.

Comment #228 proposes that the Np value should be 29.

With editorial license, implement the suggested remedy and set the value of Np to 29.

Cl **162** *SC* **162.9.4.3.3** *P* **162** *L* **42** # 198

Dudek, Mike — Marvell

Comment Type **E** *Comment Status* **A** *(bucket1)*

93A.1.2.1 and 93A.1.2.4 have been brought into this amendment.

SuggestedRemedy

Make these references standard hot links.

Response *Response Status* **C**

ACCEPT.

Cl **162** *SC* **162.9.4.3.3** *P* **163** *L* **6** # 209

Healey, Adam — Broadcom Inc.

Comment Type **TR** *Comment Status* **A** *RIT jitter (CC)*

For values of J3u/Jrms where the condition stated in NOTE 1 is satisfied, The Q3 value should be derived from 10^(-3) and not 10^(-3)/2. The A_DD and sigma_RJ derived for the given value of Q3 will correspond to a dual-Dirac distribution with a smaller value of J3u than what is measured from the pattern generator. The calibrated interference amplitude (based on COM) will in turn be somewhat higher resulting in a level of overstress. This issue has been pointed out in <https://www.ieee802.org/3/ck/public/adhoc/apr14_21/hidaka_3ck_adhoc_01_041421.pdf>.

SuggestedRemedy

Change the value of Q3 to 3.0902. Change NOTE 1 to begin "Q3 is an approximated solution of Q(Q3) = 10^(-3), where…". Make a similar change to 163.9.3.4 (page 192, line 14). In 120F.3.2.3 (page 224, line 2), note that Q4 (an approximated solution of Q(Q4) = 10^(-4)) is 3.719 as an exception to the use of Equation (120D–10) and Equation (120D–11).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The following presentations were reviewed by the task force:
https://www.ieee802.org/3/ck/public/adhoc/apr14_21/hidaka_3ck_adhoc_01_041421.pdf.
https://www.ieee802.org/3/ck/public/21_05/li_3ck_02c_0521.pdf

[Editor's note: CC: 162, 163, 120F]

Implement the suggested remedy with editorial license with the exception to change the variable names Q3 to Q3d and Q4 to Q4d.

It was noted that some explanation of this approach might be helpful. Further work is encouraged in this regard.

Straw Poll #4 (Chicago rules)
Straw Poll #5 (Pick one)
For calculation COM parameters A_DD and sigma_RJ I would support adopting the method as follows:
A: per suggested remedy in comment #209 (Adam Healey)
B: per suggested remedy in comments #134 and #135 and hidaka_3ck_adhoc_01_041421 (Yasuo Hidaka)
C: hybrid approach proposed in li_3ck_02c_0521 (Mike Li et al)
D: Need more information
E: No changes.
#4: A: 25 B: 19 C: 15 D: 11 E: 3
#5: A: 15 B: 12 C: 3 D: 7 E: 1

Cl **162** *SC* **162.9.4.3.4** *P* **163** *L* **23** # 207

Healey, Adam — Broadcom Inc.

Comment Type **TR** *Comment Status* **A** *RIT noise*

The spectrum of the broadband noise that is added at the pattern generator output is undefined. Since noise injected at the pattern generator output is filtered by the channel, "broadband" noise will be low-pass filtered at the input to the receiver under test. This is a different stress from the "broadband" noise (with bounded spectral density) injected at the receiver for the Clause 163 interference tolernace test. It could also be argued that the low-pass filtered noise is less "realistic" and test results may not represent receiver peformance under normal operating conditions.

SuggestedRemedy

Bound the spectrum of the broadband noise in a manner similar to what is done in 93C.1. The spectrum should be bounded to be more high-pass in nature so that band-pass noise is presented to the receiver (similar to Clause 163 stress).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The following presentation was reviewed by the task force:
https://www.ieee802.org/3/ck/public/21_05/healey_3ck_02a_0521.pdf

With editorial license, implement the changes proposed on slides 8 and 9 of the referenced presentation with the following corrections for slide 8:
f1 = 8 GHz, f2 = 5 GHz.

Cl **162** *SC* **162.9.4.4.2** *P* **164** *L* **25** # 35

Ghiasi, Ali — Ghiasi Quantum/Inphi

Comment Type **ER** *Comment Status* **R** *jitter tolerance*

Receiver jitter tolerance test point B to F test frequencies are ~2.5x but test point A and B are a decade apart

SuggestedRemedy

Please add additional test frequency between A and B at 133 KHz with amplitude of 1.5 UI

Response *Response Status* **U**

REJECT.
The comment does not provide sufficient justification to support the suggested remedy.

[Editor's note: Changed page from 234 to 164.]

Cl **162** *SC* **162.9.4.6** *P* **164** *L* **46** # 168

Dawe, Piers — Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

Most such RL equations are graphed out to help the user see what is meant.

SuggestedRemedy

Please illustrate this receiver differential to common-mode return loss too. This would be best done in in Figure 162-4, presently "Transmitter common mode to differential return loss" so that the reader can compare the two.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement the suggested response with editorial license.

Cl **162** *SC* **162.9.4.6** *P* **164** *L* **46** # 172

Dawe, Piers — Nvidia

Comment Type **E** *Comment Status* **R** *return loss*

In C2M-like specs the Rx Differential to common-mode return loss and Tx Common-mode to differential mode return loss differ by 3 dB at low frequency, for a good reason, but in this clause they are the same. Also, the Differential to common-mode cable assembly conversion loss is more lenient than these specs.

SuggestedRemedy

Review the relation between these three limits and adjust if necessary.

Response *Response Status* **C**

REJECT.
The suggested remedy does not provide sufficient detail to implement.

Cl **162** *SC* **162.9.4.6** *P* **165** *L* **2** # 58

Brown, Matt — Huawei

Comment Type **E** *Comment Status* **A** *(bucket1)*

For Equation (162-9) specifying a limit for receiver differential to common-mode return loss there is no graph illustrating the limit.

SuggestedRemedy

Add figure with graph for Equation (162-9).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment 168.

Cl **162** *SC* **162.9.4.6** *P* **165** *L* **2** # 173

Dawe, Piers
Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

Italic >=

SuggestedRemedy

Non-italic >= Also 162-10, 162-11, 162-11, possibly others.

Response *Response Status* **C**

ACCEPT.

Cl **162** *SC* **162.9.4.6** *P* **165** *L* **9** # 199

Dudek, Mike
Marvell

Comment Type **E** *Comment Status* **A** *(bucket1)*

It would be helpful to have a graph showing this equation.

SuggestedRemedy

Either add a separate graph or reference figure 162-4 and change the figure title to Transmitter common mode to differential return loss and Receiver differential to common mode return loss.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #168.

Cl **162** *SC* **162.11** *P* **165** *L* **43** # 38

Ghiasi, Ali
Ghiasi Quantum/Inphi

Comment Type **TR** *Comment Status* **R** *AC coupling*

Given that we have increased Baudrate it is logical to increase 3 dB cutoff by factor 2

SuggestedRemedy

Please increase 3 dB cutoff from 50 KHz to 100 KHz given that this standard is operating at 2x Baudrate of 802.3cd. It is well understood that if one needs to support 50G PAM4 then DC block corner frequency will be 50 KHz, but keeping 50 KHz for 100G PAM4 it just will force 200G gets force to 50 KHz assuming one generation support

Response *Response Status* **C**

REJECT.
The AC-coupling specification is used throughout 802.3ck and applied to predictive models as well as implemented in 802.3cd cable assemblies. The comment does not provide sufficient justification to support proposed change.
[Editor's note: CC: 162, 163]

Cl **162** *SC* **162.11.3** *P* **167** *L* **25** # 200

Dudek, Mike
Marvell

Comment Type **E** *Comment Status* **A** *(bucket1)*

93A.5 should be a hot link

SuggestedRemedy

fix it.

Response *Response Status* **C**

ACCEPT.

Cl **162** *SC* **162.11.3** *P* **167** *L* **49** # 149

Kochuparambil, Beth
Cisco

Comment Type **E** *Comment Status* **A** *CA COM Tfx (bucket1)*

The location of the Tfx not is not consistant with other clauses (namely 162.9.4.5 & 162.9.3.5)

SuggestedRemedy

Move this note to line 28 (after the description of where to find the parameters)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Each of the referenced notes are intended to be an informative note against each table and thus should be placed immediately after each table. The note in 162.11.3 is in the intended location and is consistent with notes for Table 120G–2 and Table 120G–6. The note in 162.9.4.5 is in the wrong location.
Change the location of the note in 162.9.4.5 for to be after Table 162-12.

Cl **162** *SC* **162.11.4** *P* **168** *L* **31** # 59

Brown, Matt
Huawei

Comment Type **E** *Comment Status* **A** *(bucket1)*

Change Figure title to be consistent with text.

SuggestedRemedy

Change title to "Cable assembly differential to common-mode return loss"

Response *Response Status* **C**

ACCEPT.

Cl **162** *SC* **162.11.5** *P* **168** *L* **37** # 18

Brown, Matt — Huawei

Comment Type **E** *Comment Status* **A** *CL-IL difference (bucket1)*

In a previous draft, a new parameter was added to constrain the CR channel differential to common-mode conversion loss. The term used to identify this parameter is: "difference between the cable assembly differential to common-mode conversion loss and the cable assembly insertion loss". The purpose of this parameter might not be immediately clear to a new reader of this standard and would benefit from a brief explanation.

SuggestedRemedy

Add an explanation of the purpose of this parameter. Perhaps: "This parameter constrains the amount of common-mode noise present at the transmitter that is converted to differential noise at the receiver relative to the signal level at the receiver."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
At P168 L35 (at beginning of subclause), add sentence "The cable assembly differential to common-mode conversion loss is specified relative to the insertion loss."

[Editor's note: This comment response was updated 2021/5/17.]

Cl **162** *SC* **162.11.5** *P* **168** *L* **41** # 201

Dudek, Mike — Marvell

Comment Type **TR** *Comment Status* **R** *CL-IL difference*

The differential to common mode conversion loss specification is very relaxed particularly at higher frequencies. As an example at 25GHz this specification is only approx 6dB more than the insertion loss. There is no specifiction for the common mode to common mode return loss of the Rx so all this common mode energy can be reflected back to the cable where through common mode to differential conversion it then becomes a differential signal interferer. Assuming this common mode to differential mode has approximately the same value as the differential to common mode conversion of approx 12.5dB this unwanted interferer is only 18.5dB below the wanted signal and will severely degrade the BER.

SuggestedRemedy

Add 10dB to this equation

Response *Response Status* **U**

REJECT.
The basis for a 10 dB tightening of the limit is not obvious in the stated comment and the correlation to the degradation of the BER is not provided.

Cl **162** *SC* **162.11.5** *P* **169** *L* **20** # 67

Brown, Matt — Huawei

Comment Type **E** *Comment Status* **A** *(bucket1)*

Change Figure 162-7 title to be consistent with text.

SuggestedRemedy

Change title to "Cable assembly differential to common-mode conversion loss"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Editor's note: this comment was updated on 2021/5/18.]

The commenter intended to point to Figure 162-6 at page 168 line 31.

However, it is also noted that the title of Figure 162-7 is incorrect in two ways. First "cable assembly" should be move to the head of the figure title and the parameter name must be updated.

For figure 162-6, implement the suggested remedy.

For Figure 162-7, change the title to "Cable assembly differential to common-mode conversion loss to insertion loss difference"

Cl **162** *SC* **162.11.6** *P* **169** *L* **27** # 177

Dawe, Piers — Nvidia

Comment Type **TR** *Comment Status* **R** *CA CM RL*

Relaxing the already very loose CM RL spec from 2 dB to 1.8 dB at all frequencies isn't justified. This spec becomes useless at the frequency when the MCB loss is 0.9 dB!

SuggestedRemedy

Restore it to 2 dB or use a frequency-dependent mask e.g. 1.8 + 0.01f

Response *Response Status* **U**

REJECT.

The basis for the change to the cable assmbly CM-to-CM RL spec from 2 dB to 1.8 dB was given in the following presentation.
https://www.ieee802.org/3/ck/public/21_01/champion_3ck_01a_0121.pdf

The commenter has not provided sufficient justification for the suggested remedy.

Cl **162** *SC* **162.11.7** *P* **169** *L* **39** # 202

Dudek, Mike — Marvell

Comment Type **E** *Comment Status* **A** *(bucket1)*

93A.1 is in this amendment. It should be a hot link

SuggestedRemedy

fix it.

Response *Response Status* **C**

ACCEPT.

Cl **162** *SC* **162.11.7** *P* **169** *L* **44** # 150

Kochuparambil, Beth — Cisco

Comment Type **E** *Comment Status* **A** *CA COM tests (CC)*

We've lost a bit of the description of doing COM with 2 package test cases. Someone reading this section in isolation may be confused.

93.9.1 States "The Channel Operating Margin (COM) is computed using the procedure in 93A.1 with the Test 1 and Test 2 values in Table 93–8. Test 1 and Test 2 differ in the value of the device package model transmission line length zp.

SuggestedRemedy

Use editorial licence to modify paragraph to say something like,
"COM shall be computed twice, Test 1 and Test 2, which differ in the value of the device package model transmission line length zp."
Similarly, modify the COM table from "Rx Test 2" and "TX Test 2" to "Test 2, RX" and "Test 2, TX"

Replicate in COM description and tables for 163 & 120F

Response *Response Status* **C**

ACCEPT.
[Editor's note: CC: 120F, 162, 163]

Cl **162** *SC* **162.11.7** *P* **170** *L* **18** # 50

Ghiasi, Ali — Ghiasi Quantum/Inphi

Comment Type **ER** *Comment Status* **A** *(bucket1)*

Unit for Zc should be ohms not Farad

SuggestedRemedy

Change to ohms

Response *Response Status* **W**

ACCEPT.
[Editor's note: Changed subclause from 162.11.7.1 to 162.11.7.]

Cl **162** *SC* **162.11.7** *P* **170** *L* **41** # 57

Brown, Matt — Huawei

Comment Type **T** *Comment Status* **A** *CA COM TX FIR*

In Table 162-18 COM parameters for cable assembly, the step size for c(1) is 0.02 while in Table 163-10 (KR) and Table 120F-7 (C2C) the step size is 0.05. There is no reason for these values to be different.

SuggestedRemedy

Change the C(1) step size in Table 162-18 to 0.05 or alternately change C(1) step size in 163-10 and Table 120F-7 to 0.02.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change the step size in Table 163-10 and Table 120F-7 to 0.02.
[Editor's note: Changed subclause from 162.11.7.1 to 162.11.7.]
[Editor's note: CC: 162, 163, 120F]

Cl **162** *SC* **162.11.7** *P* **171** *L* **31** # 235

Dawe, Piers — Nvidia

Comment Type **TR** *Comment Status* **R** *CA COM DFE*

The spec allows a channel to have its COM calculated with 9 taps in the range 13 to 24 clipped at +/-0.05 - which means that the channel's pulse response could be a little worse than +/-0.05 for all these 9 taps. That's a very bad cable! and not likely to get made. We don't need to provide all the receiver power and complexity to cope with it.

SuggestedRemedy

Use another DFE root-sum-of-squares limit for positions 13-24. Similarly in 163, but as 163 specifies the complete channel while 162 uses clean synthetic host traces, the limit might differ.

Response *Response Status* **U**

REJECT.
The suggested remedy does not provide sufficient evidence that this is an issue and that the proposed change would not cause new issues.

Cl **162** *SC* **162.11.7.1** *P* **171** *L* **42** # 203

Dudek, Mike — Marvell

Comment Type **T** *Comment Status* **A** *CA COM PCB*

There is ambiuity as to whether the transmitter and receiver PCB signal paths include the capacitors or not. Here the description implies that they don't but on page 172 (e.g. equation 162-14) they do.

SuggestedRemedy

Change "The transmitter and receiver PCB signal paths are calculated using the method defined in 93A.1.2.3. The scattering parameters for a PCB transmission line are defined by Equation (93A–13), Equation (93A–14)and the parameter values given in Table 162–19."to " The scattering parameters for a PCB transmission line are calculated using the method defined in 93A.1.2.3 using Equation (93A–13), Equation (93A–14) and the parameter values given in Table 162–19."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement the suggested remedy with editorial license.

Cl **162** *SC* **162.11.7.2** *P* **174** *L* **8** # 36

Ghiasi, Ali — Ghiasi Quantum/Inphi

Comment Type **TR** *Comment Status* **R** *MDI nomenclature (bucket1)*

Table 162-20 should be updated with MDI supporting 112G

SuggestedRemedy

Please replace SFP+ with SFP112
SFP-DD with SFP-DD112
QSFP+ with QSFP112

Response *Response Status* **W**

REJECT.
Resolve using the response to comment #45.
[Editor's note: CC: 162, 162C]

Cl **162** *SC* **162.14.3** *P* **176** *L* **31** # 86

Huber, Tom — Nokia

Comment Type **T** *Comment Status* **A** *(bucket1)*

Status for implementing the 100G FECs should be CR1 rather than CR2

SuggestedRemedy

Change CR2 to CR1

Response *Response Status* **C**

ACCEPT.

Cl **162** *SC* **162.14.4.3** *P* **178** *L* **43** # 219

Wu, Mau-Lin — MediaTek Inc.

Comment Type **ER** *Comment Status* **A** *(bucket1)*

The 'Feature' of 'TC5' is not correct.

SuggestedRemedy

Change "Differential mode to common-mode output return loss" to "Common-mode to differential output return loss" for the 'Feature' of 'TC5'.

Response *Response Status* **W**

ACCEPT.

Cl **162A** *SC* **162A.5** *P* **263** *L* **28** # 25

Laubach, Mark — IEEE Member / Self

Comment Type **E** *Comment Status* **A** *(bucket1)*

"usingEquation" needs a space

SuggestedRemedy

Change to "using Equation"

Response *Response Status* **C**

ACCEPT.

Cl **162B** *SC* **162B.1.3.1** *P* **269** *L* **1** # 217

Haser, Alex — Molex

Comment Type **T** *Comment Status* **A** *(bucket1)*

IL_MTFref(26.56 GHz) does not match the 6.60 dB specified in 162B.1 (page 266 line 20).

SuggestedRemedy

Update Equation 162B-5; change coefficient out front from 0.9505 to 0.942 to get correct 6.60 dB value at 26.56 GHz

Response *Response Status* **C**

ACCEPT.

Cl **162B** *SC* **162B.1.3.4** *P* **271** *L* **26** # 64

Brown, Matt — Huawei

Comment Type **E** *Comment Status* **A** *(bucket1)*

Align terminology with other clauses.

SuggestedRemedy

Change "common-mode return loss" to "Common-mode to common-mode return loss" in four places and in PICS item TF5.

Response *Response Status* **C**

ACCEPT.

Cl **162B** *SC* **162B.1.3.6** *P* **273** *L* **30** # 210

Kocsis, Sam — Amphenol

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

NEXT_loss(f) range specified is 50MHz-40.000MHz. I believe this is just a typo given the discussion on this topic. This could be deemed editorial, but there is tehcnical impact to the change.

SuggestedRemedy

Change be 40.000 GHz

Proposed Response *Response Status* **Z**

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Cl **162B** *SC* **162B.1.3.6** *P* **274** *L* **2** # 212

Kocsis, Sam — Amphenol

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

NEXT_loss(f) range specified is 50MHz-40.000MHz. I believe this is just a typo given the discussion on this topic. This could be deemed editorial, but there is tehcnical impact to the change.

SuggestedRemedy

Change to 40.000 GHz

Proposed Response *Response Status* **Z**

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Cl **162C** *SC* **162C.1** *P* **277** *L* **20** # 45

Ghiasi, Ali — Ghiasi Quantum/Inphi

Comment Type **TR** *Comment Status* **R** *MDI nomenclature (bucket1)*

Table 162C-1 should be updated with MDI supporting 112G

SuggestedRemedy

Please replace SFP+ with SFP112
SFP-DD with SFP-DD112
QSFP+ with QSFP112

Response *Response Status* **W**

REJECT.
MDI names align with 1.3 normative references in 802.3ck and the base standard.

Cl **162C** *SC* **162C.2.4** *P* **283** *L* **41** # 237

Zhang, Bo — Inphi

Comment Type **T** *Comment Status* **A** *MDI nomenclature (bucket1)*

QSFP+ is meant for 4x10G 40G pluggable connector transceivers. I believe this section is meant for QSFP families such as QSFP28, QSFP56, QSFP-DD etc.

SuggestedRemedy

Suggest replace QSFP+ with QSFP families. Also please provide similar references to the 'QSFP+' such as those in section 1.3 normative references footnotes.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
QSFP+ reference is already a normative reference in base standard subclause 1.3 as requested in the suggested remedy. However, the reference text should be updated to point to the relevant QSFP+ specification.
Change: "connectors meeting the requirements of (QSFP+)"
To: "connectors meeting the requirements of SFF-8665"
Also, for SFP+ on page 281, line 6…
Change: "meeting the requirements of (SFP+)"
To: "meeting the requirements of SFF-8432"
Resolve using the response to comment #45.

Cl **162D** *SC* **162D.1** *P* **289** *L* **14** # 216

DiMinico, Christopher MC Communications

Comment Type **ER** *Comment Status* **A** *(bucket1)*

There are six MDI connector "receptacles" destinguished uniquely by name, referring to them by "type" is unecessary.

SuggestedRemedy

P289; Line 14 delete "types of" in the sentence "There are six types of MDI connectors “receptacles” specified for hosts."
P289; Line 32 change sentence to "This enables multiple cable assembly types with different combinations of the plug connectors at each end."
P290; Line 4 in Table 162D–2 delete "type" two places "Receptacle/Plug type"
P290; Line 32 in Table 162D–3 delete "type" two places "Receptacle/Plug type"
P291; Line 20 in Table 162D–4 delete "type" two places "Receptacle/Plug type"

Response *Response Status* **W**

ACCEPT.

Cl **163** *SC* **163.1** *P* **181** *L* **9** # 220

Wu, Mau-Lin MediaTek Inc.

Comment Type **E** *Comment Status* **A** *(bucket1)*

There are no descriptions for Annex 163B in the paragraph.

SuggestedRemedy

Add the following sentence at the end of the 1st paragraph of 163.1 Overview.
"Annex 163B provides informative information of an example test fixture meeting the requirements for TP0v"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
With editorial license implement the following.
Remove the last sentence of the first paragraph.
Insert a second paragraph as follows:
"There are two associated Annexes. Annex 163A provides measurement methods and test points for backplane and chip-to-chip interfaces. Annex 163B provides information on an example test fixture."
[Editor's note: CC: 163, 120F]

Cl **163** *SC* **163.1** *P* **181** *L* **24** # 100

Kabra, Lokesh Synopsys Inc

Comment Type **E** *Comment Status* **A** *(bucket1)*

Typo-error for Clause number corresponding to RS/CGMII functions

SuggestedRemedy

Correct Clause number to "81" instead of "80" in row 1 and row 2 of Table 162-2

Response *Response Status* **C**

ACCEPT.

Cl **163** *SC* **163.9.2** *P* **187** *L* **40** # 110

Ran, Adee Cisco

Comment Type **E** *Comment Status* **A** *(bucket1)*

Numerical values in standards are exact, so there should be no trailing zeros after the decimal point. This is the common practice in 802.3 (see https://www.ieee802.org/3/WG_tools/editorial/requirements/words.html#numbers).

SuggestedRemedy

Change "1.0" to "1".

Response *Response Status* **C**

ACCEPT.
[Editor's note: CC: 163, 162]

Cl **163** *SC* **163.9.2** *P* **187** *L* **45** # 189

Dudek, Mike — Marvell

Comment Type **TR** *Comment Status* **R** *TX dERL (CC)*

The allowed value of dERL of -3dB allows complinat transmitters with substantially worse reflections than the reference transmitter used in COM. I expect to have a presentation showing this.

SuggestedRemedy

Change dERLmin to -1dB also for C2C in Table 120F-1

Response *Response Status* **U**

REJECT.

The following presentations were reviewed by the task force:
https://www.ieee802.org/3/ck/public/21_05/dudek_3ck_01_0521.pdf
https://www.ieee802.org/3/ck/public/21_05/wu_3ck_02_0521.pdf

Based on the results of straw polls #2 and #3 there is no consensus to change the value of dERL (min).

[Editor's note: CC: 163, 120F]

Straw poll #2 pick one
Straw poll #3 chicago rules
For KR and C2C TX dERL (min) value, I support the following:
A: no change, -3 dB
B: change to -1 dB
C: need more information
A: 22 B: 11 C: 9
A: 27 B: 14 C: 26

Cl **163** *SC* **163.9.3.4** *P* **191** *L* **48** # 151

Kochuparambil, Beth — Cisco

Comment Type **E** *Comment Status* **R** *(bucket1)*

There are 2 different "Test 1 and Test 2" in the interferance tolerance test. In the interferance tolerance test description and in step h for COM.

SuggestedRemedy

Change the interferance tolerance test cases to "Setup 1" and "Setup 2" in both the proceedure and the table.

Do similar for 120F.

Response *Response Status* **C**

REJECT.
The wording is consistent with previous clauses. The difference in context is clear in the text by reference to the two different tables.
[Editor's node: CC: 163, 120F]

Cl **163** *SC* **163.9.3.4** *P* **192** *L* **34** # 134

Hidaka, Yasuo — Credo Semiconductor, Inc.

Comment Type **TR** *Comment Status* **A** *RIT jitter (CC)*

Equation (163-2) and (163-3) are not accurate, because the dual-dirac jitter distribution estimated by these equations does not match well with the original distribution even if the original distribution is pure dual-dirac distribution as presented at ad hoc meeting (see hidaka_3ck_adhoc_01_041421). For instance, J3u of the estimated dual-dirac jitter distribution is always significantly smaller than the measured J3u. I propose to change these equations.

Since the proposed equations never break, we do not need Note 2.

I propose similar changes to clause 162.9.4.3.3.

SuggestedRemedy

Replace Equation (163-2) and (163-3) with the following set of equations:

D3d = (Q3d^2 + 1) * (J_RMS^2) - (J3u / 2)^2

If D3d >= 0,
A_DD = (J3u / 2 + Q3d * sqrt(D3d)) / (Q3d^2 + 1)
sigma_RJ = (J3u / 2 - A_DD) / Q3d

If D3d < 0,
Qx = sqrt((J3u / 2 / J_RMS)^2 - 1)
A_DD = (J3u / 2) / (Qx^2 + 1)
sigma_RJ = sqrt((J_RMS^2) - (A_DD^2))

where
Q3d = 3.0902

Change Note 1 as follows:

Note 1 -- Q3d is an approximated solution of Q(Q3d) = 1 x 10^(-3), where the Q function is defined in Equation (95-1).

Remove Note 2.

Apply the same changes to Equation (162-7), Equation (162-8), Note 1, and Note 2 in clause 162.9.4.3.3.

Change the references to Equation (162-7) and (162-8) in Note 2 of Table 162-15 in clause 162.9.4.4.2 with the updated equations.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #209.

[Editor's note: CC: 120F, 163]

Cl **163** *SC* **163.10.1** *P* **195** *L* **21** # 205

Healey, Adam — Broadcom Inc.

Comment Type **TR** *Comment Status* **A** *COM bmax*

The bmax limit is very generous (0.2) for taps up to Nb. Channels considered by the Task Force do not justify such a high limit. The limit should be tightened to reduce the chance that unexpected channels will meet the minimum COM threshold but contain large reflections that are difficult to handle.

SuggestedRemedy

Change the bmax limit for n = 7 to Nb to be 0.1. Make a similar change to Table 162-16.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The task force reviewed the following related presentation:
https://www.ieee802.org/3/ck/public/21_05/healey_3ck_01_0521.pdf
In Table 163-10, change the bb_max limit for n = 7 to Nb to be 0.1.
Make a similar change to Table 162-18.
[Editor's note: CC: 162, 163]

Cl **163** *SC* **163.10.7** *P* **198** *L* **31** # 37

Ghiasi, Ali — Ghiasi Quantum/Inphi

Comment Type **TR** *Comment Status* **R** *AC coupling*

Given that we have increased Baudrate it is logical to increase 3 dB cutoff by factor 2

SuggestedRemedy

Please increase 3 dB cutoff from 50 KHz to 100 KHz given that this standard is operating at 2x Baudrate of 802.3cd. It is well understood that if one needs to support 50G PAM4 then DC block corner frequency will be 50 KHz, but keeping 50 KHz for 100G PAM4 it just will force 200G gets force to 50 KHz assuming one generation support

Response *Response Status* **C**

REJECT.
There is insufficient justification that the suggested remedy does not degrade performance.
[Editor's note: CC: 162, 163]

Cl **163** *SC* **163.13.3** *P* **200** *L* **13** # 87

Huber, Tom
Nokia

Comment Type **T** *Comment Status* **A** *(bucket1)*

Status for implementing the clause 135 PMA should be KR1 rather than KR

SuggestedRemedy

Change KR to KR1

Response *Response Status* **C**

ACCEPT.

Cl **163B** *SC* **163B.2** *P* **297** *L* **25** # 225

Wu, Mau-Lin
MediaTek Inc.

Comment Type **ER** *Comment Status* **A** *(bucket1)*

Equation (163-1) is the wrong reference. It shall be "Equation (163B-1)".

SuggestedRemedy

Change "Equation (163-1)" to "Equation (163B-1)" in the following sentence.
"The insertion loss of the example test fixture is approximated by Equation (163-1) which is illustrated in Figure 163B-1."

Response *Response Status* **W**

ACCEPT.

Cl **A** *SC* **A** *P* **205** *L* **8** # 4

Anslow, Pete
Independent

Comment Type **E** *Comment Status* **A** *OIF reference (bucket1)*

"OIF-CEI-05, …" should appear in the bibliography after "[B55] OIF-CEI-04.0, …"

SuggestedRemedy

Change the numbering from [B22a] to [B55a]

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Comment #221 proposes to remove the only reference to OIF-CEI-05.0. If that reference is removed then remove this bibliography entry. If the reference is not removed, then implement the suggested remedy.