Cl **45** *SC* **45.2.1** *P* **77** *L* **32** # 1

Marris, Arthur self

Comment Type **T** *Comment Status* **A** *(B1) (L)*

All of the registers from 1.2412 through 1.2436 are for lane 0 only and there are equivalent registers for lanes 1 through 7 in the range 1.2437 through 1.2611.
However, only the last two counters have "lane 0" in their names. However all the registers should have "lane 0" in their names to make it clear that there are equivalent registers following on for the other lanes for all of them.

SuggestedRemedy

Add "lane 0" in the register name for registers 1.2412 through 1.2423

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1** *P* **77** *L* **52** # 2

Marris, Arthur self

Comment Type **TR** *Comment Status* **A** *(B1) (L)*

The range of the "IFEC symbol error counter, lane 16 to 31" registers should be "1.2770 through 1.2801" rather than "1.2770 through 1.2799".

SuggestedRemedy

Change range to "1.2770 through 1.2801" in 45.2.1

In 45.2.1.222 on page 110 line 21 make it "IFEC symbol error counter, lane 1 through 31 (Register 1.2212 through 1.2241, and 1.2770 through 1.2801)"

In the body of 45.2.1.222 update the text to clarify that lanes 1 through 15 are in the block 1.2212 through 1.2241 and lanes 16 through 32 are in the block 1.2270 through 1.2801.

Response *Response Status* **W**

ACCEPT.

Cl **45** *SC* **45.2.1.60c** *P* **87** *L* **4** # 3

Marris, Arthur self

Comment Type **ER** *Comment Status* **A** *(B1) (L)*

This is the "800G PMA/PMD extended ability register" not the "800G PMA/PMD extended ability 2 register".

SuggestedRemedy

Delete "2" on lines 4, 6, and 9

Response *Response Status* **W**

ACCEPT.

Cl **45** *SC* **45.2.1.271** *P* **122** *L* **46** # 4

Marris, Arthur self

Comment Type **T** *Comment Status* **A** *(B1) (L)*

Table 45û212t shows the assignment of bits for the lane 0 PMA test block error bin 0 to bin 3 registers in the transmit direction, and the text in the third paragraph mentions test_block_error_bin_tx_0_16p and test_block_error_bin_tx_1_0 registers, however there is no "tx" in the names and descriptions in Table 45û212t.

SuggestedRemedy

On line 46 change "Table 45û212tùLane 0 PMA test block error bin register definitions (for 4 of the 17 bins)"
to "Table 45û212tùLane 0 PMA transmit test block error bin register definitions (for 4 of the 17 bins)"

In the table add "transmit" to the names. For example make the first name "PMA transmit test block error bin 0 lower"

In the table add "tx" to the descriptions. For example make the first description "test_block_error_bin_tx_0_0[15:0] "

Response *Response Status* **C**

ACCEPT.

Cl **184** *SC* **184.10** *P* **615** *L* **45** # 5

Marris, Arthur self

Comment Type **TR** *Comment Status* **A** *(B1) (L)*

In "Table 184û5ùInner FEC status variables and MDIO mapping" are defined to use PMA registers test_block_error_bin_0_<0:15> and test_block_error_bin_0_16p. These registers are required by the AUI so a new set of inner fec registers need to be defined for the PRBS31 checker.

SuggestedRemedy

Create 51 new "Inner FEC test error bin" registers at 1.2644 through 1.2694, with similar functionality to the existing PMA registers test_block_error_bin_0_k and test_block_error_bin_0_16p.

In 184.6.2 and Table 184-5:

Rename "test_block_error_bin_0_k" to "Inner_FEC_test_block_error_bin_k"
Rename "test_block_error_bin_0_16p" to "Inner_FEC_test_block_error_bin_16p"

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

[Editor's note: CC 45]

Cl **45** *SC* **45.2.1.217.6a** *P* **109** *L* **5** # 6

Marris, Arthur self

Comment Type **T** *Comment Status* **A** *(B1) (L)*

Correct subclause tiltle and and make it clear this is for the 800G-ER1 FEC.

SuggestedRemedy

Change "45.2.1.217.6a IER1 FEC remote loopback ability (1.2201.7)"
to: "45.2.1.217.6a 800G-ER1 FEC remote loopback ability (1.2201.7)"

on line 7 change "the ER1 FEC" to "the 800G-ER1 FEC"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

It is the "800GBASE-ER1 FEC" rather than the "800G-ER1 FEC"

Change from: "45.2.1.217.6a IER1 FEC remote loopback ability (1.2201.7)"
to: "45.2.1.217.6a 800GBASE-ER1 FEC remote loopback ability (1.2201.7)"

on line 7 change "the ER1 FEC" to "the 800GBASE-ER1 FEC"

Implement with editorial licence.

Cl **45** *SC* **45.2.1.257** *P* **115** *L* **8** # 7

Marris, Arthur self

Comment Type **E** *Comment Status* **A** *(B1) (L)*

Change PS to "pilot sequence" for clarity

SuggestedRemedy

Change "PS" to "pilot sequence"

Response *Response Status* **C**

ACCEPT.

Cl **186** *SC* **186.7.2** *P* **690** *L* **12** # 8

Marris, Arthur self

Comment Type **T** *Comment Status* **A** *(B1) (L)*

In Table 186ũ8 IFEC_degraded_SER points to bit 1.2201.2.

This is incorrect as 1.2201.2 is for high SER

SuggestedRemedy

Create new bit in Clause 45 at register location 1.2201.12 to indicate IFEC degraded SER.

Change 1.2201.2 to 1.2201.12 on line 12 in Table 168-8 for IFEC_degraded_SER and make appropriate additions in "45.2.1.217 IFEC status register (Register 1.2201)" for this new bit

Response *Response Status* **C**

ACCEPT.

[Editor's note: CC: 186, 45]

Cl **45** *SC* **45.2.1.217.6c** *P* **109** *L* **15** # 9

Marris, Arthur self

Comment Type **TR** *Comment Status* **A** *Management (L) (B1)*

The bit definitions for 1.2201.4 and 1.2201.5 are incorrect. These bits are nothing to do with the 800GBASE-ER1 FEC but are for indicating IFEC status signalled by the partner AUI attached PCS.

SuggestedRemedy

Change "45.2.1.217.6c IFEC received local degraded (1.2201.5)" description to:

"When read as a one, bit 1.2201.5 indicates that the local degraded SER signal has been received. This bit reflects the state of rx_local_degraded for the IFEC."

Change "45.2.1.217.6d IFEC received remote degraded (1.2201.4)" description to:

"When read as a one, bit 1.2201.4 indicates that the remote degraded SER signal has been received. This bit reflects the state of rx_rm_degraded for the IFEC."

Response *Response Status* **W**

ACCEPT.

Cl **179B** *SC* **179B.4.5** *P* **914** *L* **9** # 10

Chen, Chi-Hua — Chunghwa Telecom Laboratories

Comment Type **T** *Comment Status* **A** *(B1) (E)*

*** Comment submitted with the file Corrected Equation (179B-8).pdf attached ***

Equation (179B-8) appears to contain a minor numerical inaccuracy. Specifically, the value currently stated as 53.12 should be corrected to 53.125.

SuggestedRemedy

Corrected Equation (179B-8) is written in the attached file.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The following file was submitted along with this comment:
https://www.ieee802.org/3/dj/comments/D3p0/8023dj_D3p0_comment_i-10_attachment.pdf

Resolved using the response to comment #177.

Cl **186** *SC* **186.7.2** *P* **690** *L* **10** # 11

Marris, Arthur — self

Comment Type **TR** *Comment Status* **A** *(B1) (L)*

Missing status variables in Table 186û8ù800GBASE-ER1 FEC sublayer status variables and MDIO mapping

SuggestedRemedy

In Table 186-8

Add IFEC_high_SER status variable mapping to 1.2201.2

Add remote PHY fault indication status variable as described in 186.2.3.5.2 and map to new status bit 1.2411.2

Response *Response Status* **W**

ACCEPT.

[Editor's note: CC: 186, 45]

Cl **176D** *SC* **176D.8.13.2** *P* **834** *L* **8** # 12

Lusted, Kent — Synopsys, Inc.

Comment Type **TR** *Comment Status* **A** *C2M specs (E)*

Repeating comment #58 from D2.3: For the module receiver interference tolerance test, item b) states that "COM is calculated
using the module device package and device termination models". However, the module test channel shown in Figure 176D-8b includes the host compliance board (HCB). The reference loss of the HCB equals the module loss allocation to TP1d illustrated in Figure 176D-6. Therefore, the addition of the module device package model results in the interference tolerance test being calibrated with approximately 2.1 dB more loss than a module has been allocated.

SuggestedRemedy

Replace 176D.8.13.2 item b) with the following. "For the module test, the test channel is measured between the Tx and Rx test references shown in Figure 176D-8b, and COM is calculated using device termination model in Table 176Dû6 for the receiver S-parameter model."

implement the changes per
https://www.ieee802.org/3/dj/public/26_01/healey_3dj_01_2601.pdf

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the responses to comments I-174 and I-175.

Cl **179B** *SC* **179B.4.1** *P* **911** *L* **10** # 13

Lusted, Kent — Synopsys, Inc.

Comment Type **T** *Comment Status* **R** *ILdd fit (E)*

Repeat of comment #306 against D2.2: Ildd_MTFmin is, at fNyquist, 4dB lower than Ildd_MTFmax. This large allowed variation in
MTF IL introduces too much uncertainty as to whether a given DUT (host or cable assembly) passes or fails due to variation in the test fixture.

SuggestedRemedy

Apply a fitted ILdd mask and add details on de-embed/re-embed process in the draft. A consensus presentation with a detailed solution is expected to be provided.

See also https://www.ieee802.org/3/dj/public/26_01/ran_3dj_02_2601.pdf,
https://www.ieee802.org/3/dj/public/26_03/lusted_3dj_02a_2603.pdf and straw poll #10 in
https://www.ieee802.org/3/dj/public/26_03/motions_3dj_2603.pdf

Response *Response Status* **C**

REJECT.
Resolved using the response to comment I-238.

Cl **45** *SC* **45.2.1.269** *P* **121** *L* **15** # 14

Marris, Arthur self

Comment Type **E** *Comment Status* **A** *(B1) (L)*

For 1.2733.13 "0 = Lane 20 alignment marker is not locked" should read "0 = Lane 29 alignment marker is not locked"

SuggestedRemedy

Change 20 to 29 on line 15 to fix this typo.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.60b** *P* **85** *L* **32** # 15

Marris, Arthur self

Comment Type **E** *Comment Status* **A** *(B1) (L)*

Typo in description of bit 1.73.6 in Table 45û58bù800G PMA/PMD ability register bit definitions

SuggestedRemedy

Change:
0 = PMA/PMD is not able to perform 800GBASE-DR8-2
To
0 = PMA/PMD is not able to perform 800GBASE-KR4

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.139** *P* **90** *L* **26** # 16

Marris, Arthur self

Comment Type **ER** *Comment Status* **A** *(B1) (L)*

Missing space in "0 = Lane 9Tx output precoder disabled"

SuggestedRemedy

Change "9Tx" to "9 Tx"

Response *Response Status* **W**

ACCEPT.

Cl **178** *SC* **178.1** *P* **381** *L* **14** # 17

Brown, Matthew Qualcomm

Comment Type **TR** *Comment Status* **A** *Ref pkg (E)*

Relating to the following text: "The package is either class A or class B. PMD transmitters and PMD receivers conform to electrical specifications of either class A or class B."
It is not possible to determine if a package is of class A or class B. It is only possible to determine if a a device meets the class A or class B requirements. Also, these are not mutually exclusive; a device could possibly meet both the class A and class B requirements. Instead reword this to indicate that two classes, class A and class B, are defined for transmitters and receivers to allow for a range of package characteristics.

SuggestedRemedy

Change the paragraph to the following:
"This clause defines specifications for two classes of transmitters and two classes of receivers, class A and class B, to allow for a range of package characteristics. A transmitter or receiver is classified as class A or class B if it meets all the specifications for class A or class B, respectively. The required characteristics of the electrical interconnect between two PMDs depend on the intended transmitter class on one PMD and the receiver class on the other PMD."
Further changes elsewhere may be required to align with this restatement.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The CRG reviewed slides 21-22 of
<https://www.ieee802.org/3/dj/public/26_05/ran_3dj_01c_2605.pdf>.

Implement the proposed changes as shown on slides 21-22 of ran_3dj_01c_2605 with editorial license.
[CC 178, 176C]

Cl **180** *SC* **180.5.12** *P* **466** *L* **38** # 18

Brown, Matthew Qualcomm

Comment Type **E** *Comment Status* **A** *editorial (B1) (CA)*

"functions" appears twice in title

SuggestedRemedy

change heading to "180.5.12 Autonomous path startup (APSU) functions"
change heading 181.5.12, 182,5.12, and 183.5.12 similarly

Response *Response Status* **C**

ACCEPT.

Cl **180** *SC* **180.9.6.3** *P* **479** *L* **10** # 19

Brown, Matthew Qualcomm

Comment Type **E** *Comment Status* **A** *editorial (B1) (OI)*

In Figure 180-10, the arrow-line goes through the summer beside the detector.

SuggestedRemedy

Split the line on each side of the summer.

Response *Response Status* **C**

ACCEPT.

Cl **180** *SC* **180.9.6.3** *P* **479** *L* **22** # 22

Brown, Matthew Qualcomm

Comment Type **E** *Comment Status* **A** *Reference equalizer(B1) (OI)*

The variable "a" is not well defined here. It would be helpful to the reader to clearly associate this with the permitter number of precursor taps as specified in Table 180-16.

SuggestedRemedy

Change the note the the following or similar:
"NOTEùThe variable a is an integer in the range û3 to 0 associated with the permitted number of precursor taps as specified in Table 180-16."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement the suggested remedy with editorial license.
Note however that this comment may be overtaken by other comments such as comment #465.

Cl **181** *SC* **181.5.5** *P* **506** *L* **39** # 26

Brown, Matthew Qualcomm

Comment Type **ER** *Comment Status* **A** *editorial(B1) (OI)*

In Table 181-2, the text "For any lane" is redundant since the specification in this clause is for each lane. This text should have been deleted when 181.5.5 and 181.5.4 were updated in an early draft. Should align this table with Table 181-5 and Table 182-5. Same for Table 183-2.

SuggestedRemedy

In Table 181-2 and Table 183-2, delete "For any lane; " twice.

Response *Response Status* **W**

ACCEPT.

Cl **174A** *SC* **174A.6** *P* **744** *L* **25** # 27

Brown, Matthew Qualcomm

Comment Type **E** *Comment Status* **A** *(B1) (CG)*

list of figures and tables should include Figure 174A-11

SuggestedRemedy

Change "(see Figure 174Aû6, Table 174Aû1, and Table 174Aû2)"
To "(see Figure 174Aû6, Figure 174A-11, Table 174Aû1, and Table 174Aû2)"

Response *Response Status* **C**

ACCEPT.

Cl **174A** *SC* **174A.13** *P* **755** *L* **43** # 28

Brown, Matthew Qualcomm

Comment Type **T** *Comment Status* **A** *(B1) (CG)*

This figure should include allocation of FLR for the PCS to PCS path.

SuggestedRemedy

Add arrows and label for PCS-to-PCS path, similar to Figure 174A-10, except for error expectations listing only "FLR < 6E-11".

Response *Response Status* **C**

ACCEPT.

Cl **1** *SC* **1.3** *P* **57** *L* **9** # 31

Brown, Matthew Qualcomm

Comment Type **E** *Comment Status* **A** *Normative references (B1) (E)*

The following normative reference is never referenced in the draft:
"SFF-8665, Rev 1.9.11, July 11, 2025, QSFP+ 4X Pluggable Transceiver Solutions."

SuggestedRemedy

Delete this reference or alternately move to bibliography if there is a desire to keep it in the draft as informative information.
Alternately, if the lack of reference was an oversight then add the reference where needed.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve with the response to Comment #324.

Cl **178** *SC* **178.10.1** *P* **402** *L* **12** # 32

Brown, Matthew Qualcomm

Comment Type **E** *Comment Status* **A** *(Bx) ?*

Per style manual, use of the word "can" in the sense of "is permitted" is deprecated. Instead, use the word "may".

SuggestedRemedy

Change "parameters can be measured" to "parameters may be measured".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The second sentence of the NOTE is redundant as the same statement appears in 178A.1.3.

Delete "Channel scattering parameters can be measured with different reference impedance and renormalized to match the reference impedance before computation". Change the notes at the bottom of Table 179-19, Table 176C-10, and Table 176D-6 accordingly.
Implement with editorial license.
[CC: 178, 176C]

Cl **179C** *SC* **179C.2.3** *P* **926** *L* **36** # 34

Turner, Michelle Editorial Coordination

Comment Type **TR** *Comment Status* **A** *Normative references (B1) (E)*

The reference to SFF-TA-1027 appears inside a permissive construction (use of ômayö). Because ômayö indicates an optional choice rather than a requirement, this wording does not cite SFF-TA-1027 normatively, even though the document is listed in the Normative References clause.

SuggestedRemedy

If SFF-TA-1027 is required for proper implementation, please consider rewriting the sentence using normative language.

If SFF-TA-1027 is not required for implementation, please move it to the Bibliography as an informative reference.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

The comment points out an ambiguity in the current draft. There are two parts. First, a host/module "may" use a QSFP224 form factor. Second, if it does then it "shall" comply with SFF-TA-1027. Further, this issue also applies to 179C.2.4 and 179C.2.5 in the same manner.

Propose to change the following text from:
"the mechanical interface between the PMD and the cable assembly may be a mated pair of connectors as defined in SFF-TA-1027, Rev 1.0.7, 2025-05-30, QSFP2 Connector, Cage, & Module Specification"
to:
"the mechanical interface between the PMD and the cable assembly may be a mated pair of QSFP224 connectors. If QSFP224 is used, the implementation shall comply with the QSFP224 Component Mechanical Specification in SFF-TA-1027, Rev 2.0, September 9, 2025."

Implement similar corrections, with editorial license, in 179C.2.4 and 179C.2.5 as necessary.

Also, update the reference in 1.4 to "SFF-TA-1027, Rev 2.0, September 9, 2025".
Implement with editorial license.

Cl **179C** *SC* **179C.2.5** *P* **928** *L* **21** # 35

Brown, Matthew Qualcomm

Comment Type **E** *Comment Status* **A** *Normative references (B1) (E)*

Revision "5.1" does not match revision "5.22" in subclause 1.4. Also, "Specification" should not be capitalized since it is not part of the reference title.

SuggestedRemedy

Change "5.1" to "5.22".
Change "Specification" to "specification".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement the suggested remedy with editorial license.
Note that the response to comment #34 may result in further related changes to this subclause.

Cl **185A** *SC* **185A.2.3** *P* **947** *L* **38** # 36

Brown, Matthew Qualcomm

Comment Type **E** *Comment Status* **A** *(B1) (OC)*

Regarding this text... "Processing steps can be consolidated and changed in order but may not perform any additional signal processing with the purpose of compensating for transmitter signal distortions except for those explicitly mentioned below."
Per style manual, use of the word "can" in the sense of "is permitted" is deprecated. Instead, use the word "may".

SuggestedRemedy

Change "Processing steps can be consolidated" to "Processing steps may be consolidated".

Response *Response Status* **C**

ACCEPT.

Cl **185A** *SC* **185A.2.4.1** *P* **949** *L* **23** # 37

Brown, Matthew Qualcomm

Comment Type **T** *Comment Status* **A** *(B1) (OC)*

There are two issues with the following text: "ENOB can be measured using sine waves as described in IEEE Standard 1241-2023, Section 9.4 provided that the amplitude and frequency of the sine wave used for the measurement are specified."
Per style manual, use of the word "can" in the sense of "is permitted" is deprecated. Instead, use the word "may".
However, if the ENOB is not measured using the method in 1241-2023 then how should one measure it. Can it be measured in any way that one wants?

SuggestedRemedy

Change "ENOB can be measured using" to "ENOB is measured using"

Response *Response Status* **C**

ACCEPT.

Cl **180** *SC* **180.9.1** *P* **475** *L* **36** # 38

Issenhuth, Tom Huawei Technologies Co., Ltd,Issenhuth Consulting,

Comment Type **E** *Comment Status* **A** *editorial (OI)*

In Table 180-9 TECQ is listed before TDECQ_CER but for the associated cross references TDECQ_CER comes before TECQ so the cross references for the Table are not listed in order

SuggestedRemedy

In Table 180-9 swap the order for the parameters TECQ and TDECQ_CER so all the parameters and their associated cross references in the Table are listed from smallest to largest

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved using the response to comment #I-71.

Cl **182** *SC* **182.9.1** *P* **548** *L* **5** # 39

Issenhuth, Tom — Huawei Technologies Co., Ltd,Issenhuth Consulting,

Comment Type **E** *Comment Status* **A** *editorial (B1) (OI)*

In Table 182-14, the parameter Transmitter eye closure for PAM4 (TECQ) has an incorrect cross reference to 182.9.7. It should be cross referenced to 182.9.8

SuggestedRemedy

Change the TECQ cross reference to 182.9.8

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license.
Note that this comment might be overtaken by other comments such as comment #71.

Cl **182** *SC* **182.9.1** *P* **548** *L* **5** # 40

Issenhuth, Tom — Huawei Technologies Co., Ltd,Issenhuth Consulting,

Comment Type **E** *Comment Status* **A** *editorial (B1) (OI)*

In Table 182-14 the parameter and associated cross reference to TDECQ_CER is missing

SuggestedRemedy

In Table 182-14 add the parameter TDECQ_CER after TDECQ with a pattern of 6 and cross reference to 182.9.7

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license.
Note that this comment might be overtaken by other comments such as comment #71.

Cl **183** *SC* **183.9.1** *P* **581** *L* **15** # 41

Issenhuth, Tom — Huawei Technologies Co., Ltd,Issenhuth Consulting,

Comment Type **E** *Comment Status* **A** *editorial (B1) (OI)*

In Table 183-14 the parameter and associated cross reference to TDECQ_CER is missing

SuggestedRemedy

In Table 183-14 add the parameter for TDECQ_CER after TDECQ with a pattern of 6 and cross reference to 183.9.7

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license.
Note that this comment might be overtaken by other comments such as comment #71.

Cl **183** *SC* **183.9.1** *P* **581** *L* **17** # 42

Issenhuth, Tom — Huawei Technologies Co., Ltd,Issenhuth Consulting,

Comment Type **E** *Comment Status* **A** *editorial (B1) (OI)*

In Table 183-14, the parameter Transmitter functional symbol error histogram is missing the related subclause cross reference

SuggestedRemedy

In Table 183-14 for transmitter functional symbol error histogram add a cross reference to 183.9.9

Response *Response Status* **C**

ACCEPT.

Cl **180** *SC* **180.9.15** *P* **491** *L* **1** # 44

Issenhuth, Tom — Huawei Technologies Co., Ltd,Issenhuth Consulting,

Comment Type **T** *Comment Status* **A** *Rx sensitivity (OI)*

The receiver sensitivity subclauses should be revised. A supporting presentation with the proposed changes for 180.9.15, 181.9.15, 182.9.15 and 183.9.15 will be provided.

SuggestedRemedy

Update the noted subclauses per the supporting presentation

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Slides 1 through 8 of the following contribution was reviewed by the CRG:
https://www.ieee802.org/3/dj/public/26_05/cole_3dj_01b_2605.pdf

Slides 33 through 49 of the following editorial contribution were also reviewed by the CRG:
https://www.ieee802.org/3/dj/public/26_05/issenhuth_3dj_01_2605.pdf

Implement the changes proposed in slides 34, 35, 36, 37, 42, 44, 46, and 48 of issenhuth_3dj_01_2605.

Implement with editorial license.

Cl **FM** *SC* **FM** *P* **8** *L* **41** # 45

McClellan, Brett — Marvell Semiconductor, Inc.

Comment Type **E** *Comment Status* **A** *(B1) (CG)*

typo

SuggestedRemedy

change 'Mcclellan' to 'McClellan'

Response *Response Status* **C**

ACCEPT.

Cl **178** *SC* **178.10** *P* **400** *L* **28** # 46

Lusted, Kent — Synopsys, Inc.

Comment Type **T** *Comment Status* **A** *Modal ERL (E)*

Apply modal ERL.
Keep all frequency domain modal masks
If modal masks for cable assembles, hosts, modules, KR channels,
chip to chip channels, or MTF fail the respective modal RL mask,
there is an opportunity to pass if modal ERL passes.

SuggestedRemedy

Apply modal ERL per mellitz_3dj_03a_2603, slides 2 and 3.

see also straw poll #13 in https://www.ieee802.org/3/dj/public/26_03/motions_3dj_2603.pdf

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment I-156.

Cl **180** *SC* **180** *P* **468** *L* **34** # 47

Mazzini, Marco — Cisco Systems

Comment Type **T** *Comment Status* **A** *TDECQ_CER (OI)*

TDECQcer is not stable enough measurement a contribution is forthcoming.

SuggestedRemedy

Remove TDECQcer from Table 180-7, row 34

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment #I-71.

Cl **181** *SC* **181** *P* **509** *L* **28** # 48

Mazzini, Marco — Cisco Systems

Comment Type **T** *Comment Status* **A** *TDECQ_CER (OI)*

TDECQcer is not stable enough measurement a contribution is forthcoming.

SuggestedRemedy

Remove TDECQcer from Table 181-5, row 28

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment #I-71.

Cl **182** *SC* **182** *P* **540** *L* **36** # 49

Mazzini, Marco — Cisco Systems

Comment Type **T** *Comment Status* **A** *TDECQ_CER (OI)*

TDECQcer is not stable enough measurement a contribution is forthcoming.

SuggestedRemedy

Remove TDECQcer from Table 182-7, row 36

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment #I-71.

Cl **183** *SC* **183** *P* **572** *L* **37** # 50

Mazzini, Marco — Cisco Systems

Comment Type **T** *Comment Status* **A** *TDECQ_CER (OI)*

TDECQcer is not stable enough measurement a contribution is forthcoming.

SuggestedRemedy

Remove TDECQcer from Table 183-6, row 37

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment #I-71.

Cl **178A** *SC* **178A.1.9.1** *P* **857** *L* **47** # 51

Shakiba, Mohammad — Huawei Technologies Canada Co., Ltd.

Comment Type **TR** *Comment Status* **R** *:OM signal amplitude (B1) (E)*

*** Comment submitted with the file 802d3_TFR_SAB_comments_D3p0_Shakiba260318.xls attached ***

Equation (178A-37) defines signal amplitude, (A_s) used in Equation (178A-36) for COM calculation. However, Equation (178A-37) defines the signal amplitude at the launch point. Since noise amplitude (A_ni) for COM calculation (described in section 178A.1.9.2 and its referenced sections and equations) is for noise at the input of the DFE slicer, A_s should also be defined as the signal amplitude at this point. This was the case in Annex 93A.

SuggestedRemedy

Modify Equation (178A-37) to include the effect of the signal chain on the signal amplitude up to the DFE slicer input (from before TxFFE to after RxFFE). This can be achieved by adding a multiplying factor equal to the main cursor of the equalized pulse response (h^(0)(0)) to Equation (178A-37).
FYI, the COM Matlab code implementation seems to have used the correct equation as it is still following the procedure defined in section 93A.1.6 to calculate A_s.

Response *Response Status* **W**

REJECT.
[Editor's note: The commenter indicated that the file submitted with the comment was unintentional.]
The optimization of the discrete-time equalizer defined in 178A.1.8 forces the value of the pulse response at the input to the decision feedback equalizer (or maximum likelihood sequence detector) to be 1 at n = d+1 (the "main cursor").
The value of Ani is also computed from the inter-symbol interference and noise at the input to the decision feedback equalizer (or maximum likelihood sequence detector) and therefore is subject to the same filtering and scaling.
There is no difference in the scale between As and Ani and since the value of the "main cursor" is 1, it does not need to be included in the equation. Equation (178A-37) is correct as written.

Cl **178** *SC* **178.14.3** *P* **407** *L* **15** # 58

de Koos, Andras — Microchip Technology Inc

Comment Type **ER** *Comment Status* **A** *(B1) (E)*

It is unclear how the PICS items PMA100, FEC100, and PCS100 relate to the 200GBASE-KR1 PMD. Are they meant to be in this table?

SuggestedRemedy

Clean up the Clause 178 PICS table - The equivalent table in Clause179 (CR) looks a lot cleaner - includes references to 800GBASE-R and does NOT include references to 100GBASE-P/R.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
There are several discrepancies in the PICS tables that require significant rework.
Recreate the PICS subclause based on the structure of Clause 179 PICS, with editorical license.

Cl **178** *SC* **178.14.3** *P* **407** *L* **18** # 59

de Koos, Andras — Microchip Technology Inc

Comment Type **ER** *Comment Status* **A** *(B1) (E)*

Typo : "200GBASE-P PMA"

SuggestedRemedy

Replace with "200GBASE-R PMA"

Response *Response Status* **W**

ACCEPT.

Cl **177** *SC* **177.4.7.1** *P* **362** *L* **41** # 60

WANG, Xuebo — Huawei Technologies Co., Ltd

Comment Type **ER** *Comment Status* **A** *(B1) (L)*

The hyphen in "48-bits" is redundant, and should be removed.

SuggestedRemedy

Change "48-bits" to "48 bits".

Response *Response Status* **W**

ACCEPT.

Cl **186** *SC* **186.4.3** *P* **685** *L* **25** # 61

WANG, Xuebo Huawei Technologies Co., Ltd

Comment Type **TR** *Comment Status* **A** *(B1) (L)*

In 5_BAD state of state diagram 186-19, the assignment "mfas_lock<x> <= false" is redundant with the same assignment in LOSS_OF_ALIGNMENT state, and should be removed. Setting fec_mfas_restart_lock <= true will restart all 8 instances of state diagram 186-19 (x=0,...,7), and they will go to LOSS_OF_ALIGNMENT with mfas_lock<x> <= false there. Having the redundant assignment in 5_BAD seems to imply that just the single instance is being reset, but if that was the case then fec_mfas_restart_lock should also be indexed with <x>. Similar issues in state diagram 186-17 and 186-18 had been resolved per comment #386 against D2.2.

SuggestedRemedy

In 5_BAD state of state diagram 186-19, remove the assignment of mfas_lock<x> to false, and leave only the assignment of fec_mfas_restart_lock to true.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #407.

Cl **178B** *SC* **178B.8.3.1** *P* **888** *L* **16** # 63

WANG, Xuebo Huawei Technologies Co., Ltd

Comment Type **TR** *Comment Status* **A** *(B1) (CA)*

The value of local_mc_mode is initially set to PAM2 by the training control state diagram instead of training frame lock state diagram. A similar issue happens in Line 33 on Page 888. The value of local_tp_mode is initially set to synchronous PRBS13 by the training control state diagram instead of training frame lock state diagram.

SuggestedRemedy

Change "training frame lock state diagram" to "training control state diagram" in Line 16 on Page 888.
Make the same change in Line 33 on Page 888.

Response *Response Status* **W**

ACCEPT.

Cl **174A** *SC* **174A.13** *P* **755** *L* **43** # 64

WANG, Xuebo Huawei Technologies Co., Ltd

Comment Type **TR** *Comment Status* **A** *(B1) (CG)*

In Figure 174A-11, CRC error ratio for FEC-to-FEC path should be less than 5.7 x 10-11 instead of 1.45 x 10-11 according to 174A.7.

SuggestedRemedy

Change "CRC error ratio < 1.45 x 10-11" to "CRC error ratio < 5.7 x 10-11".

Response *Response Status* **W**

ACCEPT.

Cl **174A** *SC* **174A.4** *P* **743** *L* **45** # 65

WANG, Xuebo Huawei Technologies Co., Ltd

Comment Type **ER** *Comment Status* **A** *(B1) (CG)*

"MAC-TO-MAC" in the sub-clause title should be "MAC-to-MAC".

SuggestedRemedy

Change "MAC-TO-MAC" to "MAC-to-MAC".

Response *Response Status* **W**

ACCEPT.

Cl **174A** *SC* **174A.9.6** *P* **749** *L* **12** # 66

WANG, Xuebo Huawei Technologies Co., Ltd

Comment Type **TR** *Comment Status* **A** *(B1) (CG)*

For step b), Ha(k) should reflect the error distribution over all lanes that are not tested by the PMA. When using Equation (174A-5) to calculate Ha(k), the value of n should be specified to be 544 as Ha(k) is calcuated without convolution of per-lane error histogram. The same issue also exists in 174A.9.7. A contribution related to this comment was presented in March plenary meeting and the option 1 therein was supported. See https://www.ieee802.org/3/dj/public/26_03/wang_3dj_01a_2603.pdf

SuggestedRemedy

Implement option 1 of the proposed change on slide 5 in https://www.ieee802.org/3/dj/public/26_03/wang_3dj_01a_2603.pdf

Response *Response Status* **W**

ACCEPT.

Cl **178B** *SC* **178B.10** *P* **895** *L* **50** # 67

WANG, Xuebo — Huawei Technologies Co., Ltd

Comment Type **TR** *Comment Status* **A** *(B1) (CA)*

The variables local_mc_mode and local_tp_mode are set according to control field bits of training frames from the link partner (LP), and are encoded in the status field of training frames of the local device (LD). Thus, these two variables should correspond to 45.2.1.167, the PMD training LD status registers, instead of 45.2.1.165, the PMD training LD control registers. A contribution related to this comment was presented in March plenary meeting. See https://www.ieee802.org/3/dj/public/26_03/mi_3dj_01a_2603.pdf

SuggestedRemedy

Implement the proposed change on slide 5 in https://www.ieee802.org/3/dj/public/26_03/mi_3dj_01a_2603.pdf

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

Cl **FM** *SC* **FM** *P* **14** *L* **1** # 68

Maguire, Valerie — Copperopolis

Comment Type **E** *Comment Status* **A** *(B1) (CG)*

IEEE Std 802.3da has published

SuggestedRemedy

Replace "20xx" with "2026"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
802.3dk was also approved.
Change "IEEE Std 802.3da™-20xx" to "IEEE Std 802.3da™-2026"
Change "IEEE Std 802.3dk™-20xx" to "IEEE Std 802.3dk™-2026"
[Editor's note: changed Clause/Subclause to FM]

Cl **180** *SC* **180.9.7** *P* **484** *L* **1** # 71

El-Chayeb, Ahmad — Keysight Technologies Inc

Comment Type **TR** *Comment Status* **A** *TDECQ_CER (OI)*

TDECQ_CER captures additional penalties that TDECQ does not. While TDECQ_CER can be useful to improve correlation to link performance, the measurement needs more time to mature particularly to improve measurement variability which could be as high as 0.5dB in its current form. Given we are at SA ballot, TDECQ_CER should be removed from the spec.

SuggestedRemedy

Remove TDECQ-CER from clauses 181, 182 and 183 (180.9.7, 181.9.7, 182.9.7 and 183.9.7).

Remove TDECQ-CER from tables 180-7, 180-14, 181-5, 181-12, 182-7 and 183-6.

Remove editors notes on pages 484, 541 and 573.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

According to the result of straw poll TF-1 there is consensus to adopt the changes in the suggested remedy.

Although the TDECQ_CER parameter is theoretically a helpful metric for assessing the quality of an optical transmitter, the methodology has not been sufficiently developed for inclusion within the timeline of this project.

Remove TDECQ_CER and related definitions and editors notes from clauses 180, 181, 182, and 183, except move the definition of Q_t (Equation 180-27) to the TDECQ subclause.

Implement with editorial license.

Straw poll TF-1 (directional)
I support removing the TDECQ_CER specifications and related definition from clauses 180, 181, 182, and 183.
Y: 45
N: 8

Cl **180** *SC* **180.7.2** *P* **470** *L* **7** # 72

HE, MICHAEL TeraHop

Comment Type **T** *Comment Status* **R** *Tx OMA (OI)*

Base on volume production DR transceiver data, Rx sensitivity OMAouter, Tx OMAouter, and other according Tx/Rx specs can be refined/optimized for cost, power efficiency.

SuggestedRemedy

Reduce Rx sensitivity OMAouter, Tx OMAouter, and other according Tx/Rx specs by 0.6dB. (Refer to contribution he_3dj_01_2603, page 10-11)
Details for transmitter---
--180.7.1 Table 180û7, page 468 line 21
Change Average launch power, each lane (min) from -3.1 to -3.7 (dBm)
--180.7.1 Table 180û7, page 468 line 26
Change Tx OMAouter (min) (for TECQ < 0.9 dB) from -0.1 to -0.7 (dBm)
--180.7.1 Table 180û7, page 468 line 27
Change Tx OMAouter (min) (for TECQ >= 0.9 dB) from -1 + max(TECQ, TDECQ) to -1.6 + max(TECQ, TDECQ) (dBm)
--180.7.1 Figure 180û3, page 469 line 27
Shift Tx OMAouter (min) lines down for 0.6 dB

Details for receiver---
--180.7.2 Table 180û8, page 469 line 51
Change Average receive power (min) from -6.1 to -6.7 (dBm)
--180.7.2 Table 180û8, page 470 line 7
Change Receiver sensitivity OMAouter (min) (for TECQ < 0.9 dB) from -3.4 to -4.0 (dBm)
--180.7.2 Table 180û8, page 470 line 8
Change Receiver sensitivity OMAouter (min) (for TECQ >= 0.9 dB) from -4.3 + max(TECQ, TDECQ) to -4.9 + max(TECQ, TDECQ) (dBm)
--180.7.2 Table 180û8, page 470 line 9
Change Stressed receiver sensitivity OMAouter (max) from -0.9 to -1.5 (dBm)
--180.7.2 Figure 180û4, page 470 line 43
Shift Receiver sensitivity OMAouter (max) line down for 0.6 dB

--180.7.3 Figure 180û5, page 471 line 47
Shift Tx OMAouter (min) and Rx sensitivity OMAouter (max) lines down for 0.6 dB

Response *Response Status* **C**

REJECT.

The following presentation was reviewed
https://www.ieee802.org/3/dj/public/26_05/welch_3dj_01a_2605.pdf

Straw poll #1 taken at the 21 April 2026 task force ad hoc meeting indication no consensus to make this proposed change. The straw poll is recorded in the following contribution:
https://www.ieee802.org/3/dj/public/adhoc/electrical/26_0421/3dj_elec_adhoc_Straw_Polls_260421.pdf

Straw Poll #1
I support a reduction in Tx OMA_outer and Rx Sensitivity (OMA_outer) specs per he_m_3dj_adhoc_01a_260421
Y: 11, N: 26, A: 18

No consensus to make a change.

Cl **181** *SC* **181.7.2** *P* **511** *L* **26** # 73

HE, MICHAEL TeraHop

Comment Type **T** *Comment Status* **R** *Tx OMA (OI)*

Base on volume production FR-500 transceiver data, Rx sensitivity OMAouter, Tx OMAouter, and other according Tx/Rx specs can be refined/optimized for cost, power efficiency.

SuggestedRemedy

Reduce Rx sensitivity OMAouter, Tx OMAouter, and other according Tx/Rx specs by 0.8dB. (Refer to contribution he_3dj_01_2603, page 12-13)
Details for transmitter---
--181.7.1 Table 181û5, page 509 line 16
Change Average launch power, each lane (min) from -2.1 to -2.9 (dBm)
--181.7.1 Table 181û5, page 509 line 20
Change Tx OMAouter (min) (for TECQ < 0.9 dB) from 0.9 to 0.1 (dBm)
--181.7.1 Table 181û5, page 509 line 21
Change Tx OMAouter (min) (for TECQ >= 0.9 dB) from 0 + max(TECQ, TDECQ) to -0.8 + max(TECQ, TDECQ) (dBm)
--181.7.1 Figure 181û3, page 510 line 22
Shift Tx OMAouter (min) lines down for 0.8 dB

Details for receiver---
--181.7.2 Table 181û6, page 511 line 18
Change Average receive power (min) from -5.6 to -6.4 (dBm)
--181.7.2 Table 181û6, page 511 line 26
Change Receiver sensitivity OMAouter (min) (for TECQ < 0.9 dB) from -3.2 to -4.0 (dBm)
--181.7.2 Table 181û6, page 511 line 27
Change Receiver sensitivity OMAouter (min) (for TECQ >= 0.9 dB) from -4.1 + max(TECQ, TDECQ) to -4.9 + max(TECQ, TDECQ) (dBm)
--181.7.2 Table 181û6, page 511 line 28
Change Stressed receiver sensitivity OMAouter (max) from -0.7 to -1.5 (dBm)
--181.7.2 Figure 181û4, page 512 line 21
Shift Receiver sensitivity OMAouter (max) line down for 0.8 dB

--181.7.3 Figure 181û5, page 513 line 25
Shift Tx OMAouter (min) and Rx sensitivity OMAouter (max) lines down for 0.8 dB

Response *Response Status* **C**

REJECT.

Resolved using the response to comment #72

Cl **176** *SC* **176.4.2.3.1** *P* **322** *L* **52** # 76

Ran, Adee
Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **A** *(B1) (L)*

"The 4-codeword deskew aligns PCSLs to a four codeword boundary relative to the start of the alignment marker block across all PCSLs"

The expression "alignment marker block" is used once in 176A where it refers to what we usually call "alignment marker group" (subject of another comment). In clause 176 it is used 3 times (176.4.2.3.1, 176.4.2.3.2, and 176.4.2.3.3) and seems to refer to the (single) alignment marker on each PCSL.

This expression is used in the base standard only once, in clause 82, with the meaning of single alignment markers (which are 66-bit blocks in that case). But from clause 119 and on, alignment markers are not 66-bit blocks anymore.

SuggestedRemedy

Change from
"relative to the start of the alignment marker block across all PCSLs"
to
"relative to the start of the alignment marker on each PCSL".

Apply the same change in 176.4.2.3.2, and 176.4.2.3.3.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

In 176.4.2.3.1, 176.4.2.3.2, and 176.4.2.3.3:
Change:
"... relative to the start of the alignment marker block across all PCSLs.".
To:
"... relative to the start of the alignment markers across all PCSLs."

Implement with editorial license.

Cl **176** *SC* **176.4.4.2** *P* **332** *L* **35** # 79

Ran, Adee
Cisco Systems, Inc.

Comment Type **E** *Comment Status* **A** *(B1) (L)*

(Comment resubmitted from WG ballot)
This subclause includes a dashed list with one item (external reference to Figure 119-12), and then a paragraph with multiple statements regarding different PMAs, which would be more readable as a table or a list.
It should be the other way around: single statement in a text paragraph, and multiple statements in a list.

The suggested remedy is one way of improving this text, using a table. Other ways may be considered.

SuggestedRemedy

Use the following content, with editorial license:
The 200GBASE-R 8:1, 400GBASE-R 16:2, 800GBASE-R 32:4, and 1.6TBASE-R 16:8 PMAs use the alignment marker lock state diagram from Clause 119 (Figure 119-12), with the definitions of variables in 176.4.4.2.1, functions in 176.4.4.2.2, and counters in 176.4.4.2.3. Table 176-<new> lists the locations of additional variable definitions and values, and the values of the index x, which denotes the PMA service interface lane number.

Add a new table 176-<new> with columns for PMA type, reference clause for variables, and the range of x.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The current text in 176.4.4.2 is technically correct as written, but could be improved for clarity. Further, the definition of the index variable, x, is included in the definitions in Clauses 119, 172, and 175 and can be removed from 176.4.4.2.

Replace the text in 176.4.4.2 with:

"The 200GBASE-R 8:1, 400GBASE-R 16:2, 800GBASE-R 32:4, and 1.6TBASE-R 16:8 PMAs use the alignment marker lock state diagram from Clause 119 (Figure 119-12).

Any constants, variables, functions, or counters used in the alignment marker lock state diagram (Figure 119-12), that are not defined in the following subclauses, shall use the values and definitions for each PMA from the following subclauses:
- For 200GBASE-R 8:1 PMA, use 119.2.6.2
- For 400GBASE-R 16:2 PMA, use 119.2.6.2
- For 800GBASE-R 32:4 PMA, use 172.2.6.2
- For 1.6TBASE-R 16:8 PMA, use 175.2.6.2
"

Implement with editorial license.

Cl **176** *SC* **176.4.4.3** *P* **334** *L* **39** # 80

Ran, Adee Cisco Systems, Inc.

Comment Type **E** *Comment Status* **A** *(B1) (L)*

"shall each implement m alignment marker processes as depicted in Figure 119û12"
Figure 119-12 is titled "Alignment marker lock state diagram".

SuggestedRemedy

Change "alignment marker processes" to "alignment marker lock processes".

Response *Response Status* **C**

ACCEPT.

Cl **176** *SC* **176.7.1.2** *P* **341** *L* **18** # 81

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **A** *ILT reference (L) (B1)*

"in the LINK_READY state on lane i (see Figure 178Bû10)"
There is no such state.

SuggestedRemedy

Change "LINK_READY" to "ISL_READY".

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #371.

Cl **176** *SC* **176.7.3** *P* **341** *L* **42** # 82

Ran, Adee Cisco Systems, Inc.

Comment Type **E** *Comment Status* **A** *(B1) (L)*

Typo: IS_UNIT_DATA (twice)

SuggestedRemedy

Change to IS_UNITDATA

Response *Response Status* **C**

ACCEPT.

Cl **177** *SC* **177.2** *P* **355** *L* **21** # 83

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **A** *(B1) (L)*

For SIGNAL_OK in the transmit direction (.request primitive) there is the following text:
"When SIGNAL_OK is IN_PROGRESS or FAIL, the corresponding tx_symbol parameters on all lanes are unspecified"
In the subsequent paragraph, for the receive direction (.indication primitive) there is a similar text but it also includes the READY state.

The READY state indicates that the sublayer that generates the primitive is not generating valid data - either because of incomplete training on an adjacent interface or because AM lock and deskew is still underway. Therefore, the data that the inner FEC sublayer provides to the next sublayer will also be invalid, both for indication and for request.

However, this paragraph actually describes the behavior of the client sublayer (PMA), so the wording "the corresponding tx_symbol parameters" refers to the PMA's transmitted symbol. The statement does not describe the inner FEC sublayer's output, and thus is not required in this subclause.

SuggestedRemedy

Since the paragraph about the PMA's signal status information describes the PMA's output, it should be deleted from this clause.

If the paragraph is retained, change the quoted sentence to
"When the value of SIGNAL_OK is READY, IN_PROGRESS, or FAIL, the corresponding tx_symbol parameters of the PMA:IS_SIGNAL.request_i primitive on all lanes are unspecified".

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Change
"When SIGNAL_OK is IN_PROGRESS or FAIL, the corresponding tx_symbol parameters on all lanes are unspecified"
to
"When the value of SIGNAL_OK is READY, IN_PROGRESS, or FAIL, the corresponding tx_symbol parameters of the PMA:IS_SIGNAL.request_i primitive on all lanes are unspecified".

Cl **177** *SC* **177.7.2.1** *P* **369** *L* **50** # 84

Ran, Adee — Cisco Systems, Inc.

Comment Type **T** *Comment Status* **R** *(B1) (L)*

There is only one signal_ok variable in the inner FEC sublayer, but it seems that there should be one for each of the two interfaces (similar to the PMA's signal_ok_mux and signal_ok_demux).
There are no state diagrams for the client sublayer interface function but the inner FEC should have a function for identifying the symbol boundaries similar to the PMA multiplex synchronization state diagram (Figure 176-10), which uses signal_ok_mux. The currently defined signal_ok is for the PMD service interface, and should thus be called signal_ok_demux. Alternatively, it can be called pmd_signal_ok.

SuggestedRemedy

Rename signal_ok to signal_ok_demux in the definition and the state diagrams that use it (Figure 177-13 and Figure 177-14).
Consider adding signal_ok_mux to represent the PMA's SIGNAL_OK and specifying how it affects the transmit process.

Response *Response Status* **C**

REJECT.
The signal_ok in the synchronization state diagram is clearly defined to be relevant to PMD:IS_SIGNAL.indication. The client sublayer interface function has been defined in 177.4.1.1, which referred to CL176. Adding new text explaining this process would be redundant.

Cl **179** *SC* **179.9.4.7.2** *P* **431** *L* **10** # 86

Ran, Adee — Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **A** *(B1) (E)*

"The set may be filtered by eliminating transitions heavily affected by ISI"

The set A_i is the transition times corresponding to a specific transition (location in the test pattern) i.
All these transitions are equally affected by ISI, so this sentence seems to be misplaced. The intent is probably to filter specific sets (values of i) that are heavily affected by ISI.

SuggestedRemedy

Delete the quoted sentence.
Add a sentence instead to the paragraph preceding the dashed list, which describes the set A:
"For example, locations where the transition slope is low due to ISI should be eliminated".

Response *Response Status* **W**

ACCEPT.

Cl **179** *SC* **179.9.4.7.2** *P* **431** *L* **21** # 87

Ran, Adee — Cisco Systems, Inc.

Comment Type **T** *Comment Status* **A** *(B1) (E)*

Equation 179-10 includes the term RJdd_i, which is not defined and not used elsewhere. This seems to be a typo, and the term should be RJrms_i, which appears in the paragraph and the dashed list preceding the equation.

SuggestedRemedy

Change RJdd_i to RJrms_i

Response *Response Status* **C**

ACCEPT.

Cl **179** *SC* **179.9.4.7.2** *P* **431** *L* **26** # 88

Ran, Adee — Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **A** *(Bx) ?*

"calculate the best-fit coefficients for the polynomial in 1 / s_i"

DJdd, the "deterministic jitter component" of the dual-Dirac model, is always a positive value, regardless of the sign of the slope. The noise amplification factor is the inverse absolute value of the slope.

SuggestedRemedy

Change to the absolute value, i.e., 1 / |s_i|, both in the text and in equation 179-12.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The statement in the comment is inaccurate. The intent was that the noise amplification factor is positive regardless of the slope of the signal.

Change to the absolute value of the inverse slope, i.e., 1 / |s_i|, both in the text and in equation 179-12.

Cl **179** *SC* **179.11.6.2.2** *P* **449** *L* **23** # 89

Ran, Adee — Cisco Systems, Inc.

Comment Type **E** *Comment Status* **A** *(B1) (E)*

(Comment resubmitted from WG ballot)
A single exception does not require a list (there are many such exceptions in the draft without a list).

SuggestedRemedy

Merge the list into the preceding paragraph, with editorial license.

Response *Response Status* **C**

ACCEPT.

Cl **179** *SC* **179.12** *P* **450** *L* **8** # 90

Ran, Adee — Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **A** *MDI connector (E)*

As presented in <https://www.ieee802.org/3/dj/public/26_03/ran_3dj_02a_2603.pdf>, implementations that support multiple combinations of PHY types on the same connector (e.g. 1.6TBASE-CR8 and 8x200GBASE-CR1) need to be configured appropriately for interoperability.
A proposed NOTE in 179.12 to inform users about this need was included on slide 8 of ran_3dj_02a_2603.

SuggestedRemedy

Add an informative note at the end of 179.12 as follows:
NOTEùImplementations that support multiple combinations of PHY types on the same MDI connector, as described in Annex 179C, must be configured appropriately for interoperability with the connected link partners. Selecting the appropriate configuration requires knowledge of the link partners.

Response *Response Status* **C**

ACCEPT.

Cl **180** *SC* **180.9.15** *P* **491** *L* **20** # 93

Ran, Adee — Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **A** *Rx sensitivity - SHE (OI)*

The definition of n in the NOTE is:
"where n is the largest value of k, where all bins from 0 to n have a count greater than 2"

This is awkward ("where" twice) and, strictly speaking, incorrect: if all bins from 0 to n have a count greater than 2 then n is likely not the largest value of k.

n should be the largest number of k that satisfies a condition that is independent of n.

Also applies to the similar comments in 180.9.16, 181.9.15, 181.9.16, 182.9.15, 182.9.16, 183.9.15, and 183.9.16.

SuggestedRemedy

Change the quoted phrase to
"where n is the largest value of k for which all bins from 0 to k have a count greater than 2".

Make the same change in 180.9.16, 181.9.15, 181.9.16, 182.9.15, 182.9.16, 183.9.15, and 183.9.16.

Response *Response Status* **C**

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

Cl **182** *SC* **182.9.6.1** *P* **550** *L* **12** # 98

Ran, Adee — Cisco Systems, Inc.

Comment Type **E** *Comment Status* **A** *editorial (B1) (OI)*

In Table 182û15 the first column "PMD type" is unnecessary, because all PMD types have the same parameters and values.
Compare with the similar Table 180û15, which does not include this column.

SuggestedRemedy

Remove the first column.

Response *Response Status* **C**

ACCEPT.

Cl **184** *SC* **184.3** *P* **598** *L* **48** # 101

Ran, Adee — Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **A** *(B1) (L)*

"When SIGNAL_OK is FAIL, the tx_symbol parameters of the FEC:IS_UNITDATA_i.indication primitives are undefined"
FEC:IS_UNITDATA_i.indication parameter is rx_symbol, not tx_symbol.

SuggestedRemedy

Change tx_symbol to rx_symbol.

Response *Response Status* **W**

ACCEPT.

Cl **176A** *SC* **176A** *P* **768** *L* **45** # 102

Ran, Adee — Cisco Systems, Inc.

Comment Type **ER** *Comment Status* **A** *(B1) (L)*

"The first of the four codewords contains the alignment marker block"
"Alignment marker block" is not defined in 802.3dj or the base standard. Its usage here seems to refer to the "alignment marker group" which is defined in 175.2.4.6 and used extensively in clause 175 and annex 175A, consistent with previous PCS clauses and annexes.

SuggestedRemedy

Change "alignment marker block" to "alignment marker group".

Response *Response Status* **W**

ACCEPT.

Cl **176B** *SC* **176B.3** *P* **773** *L* **5** # 103

Ran, Adee
Cisco Systems, Inc.

Comment Type **T** *Comment Status* **A** *(B1) (CG)*

176B.3 is titled "Special Case for 200GBASE-R, 400GBASE-R, and 800GBASE-R PMAs", and includes Figure 176Bû4, which provides examples of 800GBASE-R PHYs with back-to-back PMAs. However, there are no examples of the equally relevant 200GBASE-R and 400GBASE-R PHYs.

Realizing that adding detailed 200G and 400G labeling to the same figure would make it unreadable, and new figures would be almost identical, this could be noted in the text and/or in a NOTE inside the figure.

The suggested remedy is a NOTE.

SuggestedRemedy

Add a NOTE inside the figure:
NOTE---400GBASE-R and 200GBASE-R PHYs are formed in a similar way except that the number of lanes is divided by two and four, respectively.

Implement with editorial license.

Response *Response Status* **C**

ACCEPT.

Cl **176C** *SC* **176C.6.4.4** *P* **803** *L* **32** # 106

Ran, Adee
Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **A** *Error Ratio (CG)*

For p=1, measurement of block error ratio for validation of the requirements for AUI-C2C (Table 176C-6, probability lower than Hmax for all values of k), even with corrected values of Hmax per another comment, would take more than 1e20 years (for k=16), which is not quite feasible.
For p>1 the required times are even longer.

This means the test cannot be declared to pass without some kind of extrapolation of the measurement.

Similar concerns exist for AUI-C2M (Table 176D-10), KR (Table 178-11) and CR (Table 179-13). Although for KR and CR the test times for p=1 may be feasible, p=2 would still require more than a year to verify.

A spreadsheet for the calculation will be contributed.

SuggestedRemedy

Add the following NOTE after Table 176C-6, based on 180.9.16:

NOTEùIf the statistical projection is modeled accurately by a linear fit extrapolation, a means to provide statistical projection of the measured histograms (see 174A.9.3) in order to reduce test time follows. Extrapolate the measured histogram to Hm(i)(16) using a line determined by a linear fit of log10(Hm(i)(k)), for k = 1 to n, where n is the largest value of k for which all bins from 0 to k have a count greater than 2.

Add similar notes after Table 176D-10, Table 178-11, and Table 179-13.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Add the NOTE as in the response to comment I-266 after Table 178-11, and Table 179-13.

There was no consesus to add similar notes to Table 176C-6 and Table 176D-10.

Cl **176D** *SC* **176D** *P* **817** *L* **35** # 107

Ran, Adee
Cisco Systems, Inc.

Comment Type **T** *Comment Status* **A** *C2M figures (E)*

Updated figures for Annex 176D have been proposed in <https://www.ieee802.org/3/dj/public/26_03/ran_3dj_03a_2603.pdf>, to reduce usage of the contentious term "connector" and improve the representation of entities.

SuggestedRemedy

Implement the proposed figures on slides 7, 8, 9, and 10 of ran_3dj_03a_2603, with editorial license.

Response *Response Status* **C**

ACCEPT.

Cl **179C** *SC* **179C.1** *P* **918** *L* **23** # 112

Ran, Adee
Cisco Systems, Inc.

Comment Type **E** *Comment Status* **A** *(B1) (E)*

In Table 179C-1, the heading for the first column, "MDI types", should be "MDI connector type", to match the text in the first paragraph that points to this table.

SuggestedRemedy

Change the heading to "MDI connector type".

Response *Response Status* **C**

ACCEPT.

Cl **179C** *SC* **179C.1** *P* **919** *L* **1** # 113

Ran, Adee
Cisco Systems, Inc.

Comment Type **E** *Comment Status* **A** *MDI connector (E)*

"An MDI connector type may support one or more PMDs"
For MDI connector types this is not an option - either they support one, or more than one (and if SFP is removed, all MDI connector types support more than one).
The actual connector (not type) may be used by one or more PMDs.

SuggestedRemedy

Change the quoted sentence to "An MDI connector may be used by one or more PMDs".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement the suggested remedy with editorial license, and keep the text consistent with the responses to comment I-115, I-116, I-117, as appropriate.

Cl **179C** *SC* **179C.1** *P* **919** *L* **3** # 114

Ran, Adee
Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **A** *MDI connector (E)*

The signal assignment for partially-implemented MDI connectors should be normative, as was explained in <https://www.ieee802.org/3/dj/public/26_03/ran_3dj_02a_2603.pdf>.
Improved language of this requirement was proposed on slide 7 of ran_3dj_02a_2603.
Since the table heading is "contact mapping", the word "contact" should be used.

SuggestedRemedy

Change the last sentence in the paragraph preceding Table 179C-2:
From: When an MDI connector is not fully utilized the lower PMD numbers in Table 179Cû2 should be used.
To: When not all connector contacts in an MDI connector are physically connected to PMD signals, the connector contacts corresponding to lower PMD numbers in Table 179Cû2 shall be used.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The suggested remedy supports the consensus clarification from the discussion at the March Plenary.

Implement the suggested remedy as proposed.

Cl **180A** *SC* **180A.2** *P* **935** *L* **29** # 115

Ran, Adee
Cisco Systems, Inc.

Comment Type **T** *Comment Status* **A** *MDI connector (OI)*

Annex 180A refers to the three listed connectors (single-fiber, 12-fiber, and 16-fiber) as "MDI type".
MDI is defined as "The mechanical and electrical or optical interface between the transmission medium and <...> the PHY". Thus, a connector that serves multiple PHYs has multiple MDIs; the connector is not an "MDI type".

In Annex 179C, the term used is "MDI connector".

SuggestedRemedy

Edit the text in Annex 180A to align the language with 179C, using "MDI connector" for the connector, such that an MDI connector can support one or more PMDs. The single-fiber, 12-fiber, and 16-fiber are connector types.
Implement with editorial license.

Response *Response Status* **C**

ACCEPT.

Cl **180A** *SC* **180A.4.1** *P* **936** *L* **3** # 116

Ran, Adee
Cisco Systems, Inc.

Comment Type **ER** *Comment Status* **A** *MDI connector (OI)*

The text describing the requirement for partially-implemented MDI connectors can be improved, as was proposed in <https://www.ieee802.org/3/dj/public/26_03/ran_3dj_04a_2603.pdf>, slides 4-5.

SuggestedRemedy

Implement the proposed text changes on slides 4-5 of ran_3dj_04a_2603, with editorial license.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Implement suggested remedy with the exception that the wording "is implemented with the optical connector" is changed to "is implemented with this optical connector".

With editorial license.

Cl **180A** *SC* **180A.4.1** *P* **937** *L* **33** # 117

Ran, Adee
Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **A** *MDI connector (OI)*

As presented in <https://www.ieee802.org/3/dj/public/26_03/ran_3dj_04a_2603.pdf>, implementations that support multiple combinations of PHY types on the same MDI connector (e.g. 1.6TBASE-DR8 and 8x200GBASE-DR1) need to be configured appropriately for interoperability.
A proposed NOTE in 180A.4.1 and 180A.4.2 to inform users about this need was included on slide 3 of ran_3dj_04a_2603.

SuggestedRemedy

Add informative notes at the end of 180A.4.1 and 180A.4.2, as follows:
NOTEùImplementations that support multiple combinations of PHY types on the same MDI must be configured appropriately for interoperability with the connected link partners. Selecting the appropriate configuration requires knowledge of the fiber plant and the link partners.

Another comment suggests changing "MDI" to "MDI connector" in Annex 180A. If that comment is accepted, it should be applied in this note too.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Implement suggested remedy with editorial license. Align "MDI" with the response to comment #115

Cl **185** *SC* **185.11.4.3** *P* **644** *L* **8** # 118

Issenhuth, Tom
Huawei Technologies Co., Ltd,Issenhuth Consulting,

Comment Type **E** *Comment Status* **A** *(B1) (OC)*

In optical measurements PICS table the term "Tx clock phase noise: total periodic jitter (max)" should not include "(max)"

SuggestedRemedy

Remove "(max)" from the feature description

Response *Response Status* **C**

ACCEPT.

Cl **187** *SC* **187.11.4.3** *P* **718** *L* **9** # 119

Issenhuth, Tom
Huawei Technologies Co., Ltd,Issenhuth Consulting,

Comment Type **E** *Comment Status* **A** *(B1) (OC)*

In optical measurements PICS table the term "Tx clock phase noise: total periodic jitter (max)" should not include "(max)"

SuggestedRemedy

Remove "(max)" from the feature description

Response *Response Status* **C**

ACCEPT.

Cl **180** *SC* **180.9.7.1** *P* **486** *L* **33** # 120

Huber, Thomas
Nokia

Comment Type **ER** *Comment Status* **A** *TDECQ_CER (OI)*

"probability of receiving an FEC symbol incorrectly" is ambiguous. I think the intended meaning of "incorrectly" is a FEC symbol that has uncorrected errors.

SuggestedRemedy

Change "an FEC symbol incorrectly" to "an FEC symbol with uncorrected errors"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved using the response to comment #I-71.

Cl **184** *SC* **184.4** *P* **599** *L* **5** # 125

Huber, Thomas Nokia

Comment Type **TR** *Comment Status* **A** *(B1) (L)*

The text indicates that the alignment lock and deskew are the same as specified in 172.2.5.1, except that deskew is only required to a 2-symbol boundary. However, 172.2.5.1 specifies the state machine in figure 172-6 is required. That state machine counts FEC codeword errors and restarts lock if 3 consecutive uncorrected codewords are received. The LR1 inner FEC does not decode the FEC, so it doesn't need this state machine.

SuggestedRemedy

Change the sentence to read:
The alignment lock and deskew function shall be identical to the processes specified in 172.2.5.1 except that only a deskew to 20-bit (two RS-FEC symbols) boundaries across all PCS lanes is required, and the codeword monitor function in Figure 172-6 is not required.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

Cl **186** *SC* **186.4.3** *P* **685** *L* **25** # 129

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **A** *(B1) (L)*

In Figure 186-19, in the 5_BAD state, there is no need to set mfas_lock<x> to false. Setting fec_mfas_restart_lock to true will cause a transition to the loss of alignment state, which sets mfas_lock<x> to false.

SuggestedRemedy

remove "mfas_lock<x> <= false" from the 5_BAD state

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #407.

Cl **183** *SC* **183.8.2** *P* **578** *L* **52** # 141

Johnson, John Broadcom Corporation

Comment Type **TR** *Comment Status* **A** *fiber attenuation (OI)*

2 dB allocation for fiber cable attenuation for 800GBASE-FR4 is incorrect given 2 km maximum fiber length and 0.5 dB/km attenuation. For reference, clauses 122, 155 and 182 have the correct value of 1 dB.

SuggestedRemedy

Change:
"The maximum link distance for 800GBASE-FR4 is based on an allocation of 2 dB total fiber cable attenuation,"
To:
"The maximum link distance for 800GBASE-FR4 is based on an allocation of 1 dB total fiber cable attenuation,"
Also change:
"a total connection and splice loss allocation of 2 dB supports four connections"
To:
"a total connection and splice loss allocation of 3 dB supports six connections"

Response *Response Status* **W**

ACCEPT.

Cl **177** *SC* **177.5.2** *P* **365** *L* **37** # 143

Bruckman, Leon NVIDIA

Comment Type **E** *Comment Status* **A** *(B1) (L)*

Figure 177-11 is related with section 177.5.2.

SuggestedRemedy

Move Figure 177-11 to be before section 177.5.3

Response *Response Status* **C**

ACCEPT.

Cl **178B** *SC* **178B.8.3.5** *P* **891** *L* **49** # 144

Bruckman, Leon NVIDIA

Comment Type **TR** *Comment Status* **A** *state diagram (CA) (B1)*

There is no guidance how the FAIL state is exited.

SuggestedRemedy

Add to the end of 178B.7 - ILT function, this text:
ôRecovery from the FAIL state in the Training control state diagram (Figure 178B-10) requires management to assert mr_restart_training or reset; the timing of this action is implementation dependent and beyond the scope of this standard.ö

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

Cl **178** *SC* **178.8.10** *P* **388** *L* **37** # 146

Bruckman, Leon NVIDIA

Comment Type **TR** *Comment Status* **A** *ILT (B1) (E)*

The PMD reset, resets also the RTS function as shown in Figure 178B-9. See also the reset variable definition in 178B.8.2.1.

SuggestedRemedy

Change: "PMD reset shall reset the inter-sublayer link training (ILT) and ready-to-send (RTS) functions associated with the PMD"

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
To avoid duplicate definitions, the PMD reset function can refer to 179.8.10, like the other functions.
Change the text of 178.8.10 to:
The specification of PMD reset function is identical to that of 179.8.10.
See also related comment #381.

Cl **178B** *SC* **178B.11.3** *P* **898** *L* **29** # 148

Bruckman, Leon NVIDIA

Comment Type **TR** *Comment Status* **A** *(B1) (CA)*

The polarity test appears twice

SuggestedRemedy

Delete the second apperance of the polarity test in Table 178B.11.3

Response *Response Status* **W**

ACCEPT.

Cl **176** *SC* **176.12.3** *P* **349** *L* **52** # 149

Bruckman, Leon NVIDIA

Comment Type **TR** *Comment Status* **R** *(B1) (L)*

MDIO has its own table (Table 176.12.3.6)

SuggestedRemedy

Delete MDIO row from Table 176.12.3

Response *Response Status* **W**

REJECT.

MDIO is a major capability, therefore listed in Table 176.12.3. The MDIO capability is also a condition for the line items in Table 176.12.3.6. MDIO is listed as a major capability in other clauses as well.
The draft is correct as written. There isn't sufficient justification to adopt the suggested remedy.

Cl **181** *SC* **181.7.1** *P* **509** *L* **17** # 150

Ran, Adee — Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **R** *OMAouter value (OI)*

200G/L transmitter are found to be optimized with a lower extinction ratio; for this thereÆs the need to raise power close to the maximum limits to meet minimum OMAouter specifications.

For manufacturing purposes it would be good to have some extra room to allow for maximum OMAouter specified.

While 1.6TBASE-DR8/DR8-2 specifies OMAouter (max) = 4.2dBm and Average power (max) = 4.0 dBm, this is not true for FR4/FR4-500 which are specified with a lower OMAouter (max) = 4.8 dBm then Average power (max) = 4.9 dBm.

Proposed to normalize the tuning range across PMDs and set maximum Outer optical modulation amplitude (OMAouter) = 5.1 dBm for both FR4-500 and FR4.

SuggestedRemedy

In Table 181û5, change Outer optical modulation amplitude (OMAouter), each lane (max) from 4.8 to 5.1 dBm.
In Table 183û6, for 800GBASE-FR4, change Outer optical modulation amplitude (OMAouter), each lane (max) from 4.8 to 5.1dBm.

Response *Response Status* **W**

REJECT.

Strawpoll O-1 (directional)

I support adopting the suggested remedy to comment I-150.
Yes: 4
No: 13

Based on the result of strawpoll O-1 there was no consensus to make a change.

There was interest expressed in this topic. Further contributions on this topic are encouraged.

Cl **178A** *SC* **178A.1.2** *P* **842** *L* **47** # 153

Mellitz, Richard — Samtec, Inc.

Comment Type **TR** *Comment Status* **A** *Modal ERL (E)*

Modal S-parameters are not explicitly specified for 200 Gb/s per lane, reflecting the consensus from Straw Poll #11 in https://www.ieee802.org/3/dj/public/26_03/motions_3dj_2603.pdf.

SuggestedRemedy

Modify 178A.1.2 to include modal S-parameter syntax (see mellitz_3dj_02_adhoc_260415.pdf).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment I-156.

Cl **178A** *SC* **178A** *P* **864** *L* **13** # 154

Mellitz, Richard — Samtec, Inc.

Comment Type **TR** *Comment Status* **A** *Modal ERL (E)*

A comprehensive method is required to support modal ERL, reflecting the consensus from Straw Poll #13 in https://www.ieee802.org/3/dj/public/26_03/motions_3dj_2603.pdf.

SuggestedRemedy

Add a section to Annex 178A (178A.1.3) that describes the computation of modal ERL (see mellitz_3dj_02_adhoc_260415.pdf).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment I-156.

Cl **178** *SC* **178.10** *P* **400** *L* **41** # 155

Mellitz, Richard — Samtec, Inc.

Comment Type **TR** *Comment Status* **A** *Modal ERL (E)*

Reflect the proposal on slide 3 in https://www.ieee802.org/3/dj/public/26_03/mellitz_3dj_03a_2603.pdf, incorporating the consensus from Straw Poll #13 in https://www.ieee802.org/3/dj/public/26_03/motions_3dj_2603.pdf.

SuggestedRemedy

In Table 178û13:
Add note (a) to row ôDifferential-mode to common-mode return loss, RLcdö
Insert 3 table rows for with the respective Reference, Value, and Units
Common-mode to common-mode effective return loss, ERLcc (min) (b); 178A.3; 2dB
Common-mode to differential-mode effective return loss, ERLdc (min) (b); 178A.3; 17 dB
Differential -mode to common-mode effective return loss, ERLcd (min) (b); 178A.3; 17 dB
Add the following notes to the bottom of the table:
(a & b) The minimum modal return loss is met by exceeding the requirements of either (a) or (b)
(b) Modal ERL parameter values are taken from 179,10.3

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment I-156.

Cl **179** *SC* **179.4** *P* **423** *L* **47** # 156

Mellitz, Richard — Samtec, Inc.

Comment Type **TR** *Comment Status* **A** *Modal ERL (E)*

Reflect the proposal on slide 3 in https://www.ieee802.org/3/dj/public/26_03/mellitz_3dj_03a_2603.pdf, incorporating the consensus from Straw Poll #13 in https://www.ieee802.org/3/dj/public/26_03/motions_3dj_2603.pdf.

SuggestedRemedy

In Table 179û7:

Add note (a) to rows
Common-mode to common-mode return loss, RLcc (min)
Common-mode to differential-mode return loss, RLdc (min)
Insert 3 table rows for with the respective Reference, Value, and Units
Common-mode to common-mode effective return loss, ERLcc (min) (b); 178A.3; 2dB
Common-mode to differential-mode effective return loss, ERLdc (min) (b); 178A.3; 17 dB
Differential -mode to common-mode effective return loss, ERLcd (min) (b); 178A.3; 17 dB
Add the following notes to the bottom of the table:
(a & b) The minimum modal return loss is met by exceeding the requirements of either (a) or (b)
(b) Modal ERL parameter values are taken from 179.9.4.8

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The CRG has reviewed slides 24-35 of <https://www.ieee802.org/3/dj/public/26_05/ran_3dj_01b_2605.pdf>.

Implement the proposed changes in slides 5-8 of <https://www.ieee802.org/3/dj/public/26_05/mellitz_3dj_01_2605.pdf>, which also address the related comments I-46, I-155, I-157, I-158, I-239, I-159, I-160, I-161, I-162, I-163, I-165, and I-164.

In addition, implement the proposed changes on slides 24-35 of ran_3dj_01b_2605, which address the related comments I-153, I-154.

implement with editorial license.

Cl **179** *SC* **179.5** *P* **434** *L* **44** # 157

Mellitz, Richard — Samtec, Inc.

Comment Type **TR** *Comment Status* **A** *Modal ERL (E)*

Reflect the proposal on slide 3 in https://www.ieee802.org/3/dj/public/26_03/mellitz_3dj_03a_2603.pdf, incorporating the consensus from Straw Poll #13 in https://www.ieee802.org/3/dj/public/26_03/motions_3dj_2603.pdf.

SuggestedRemedy

In Table 179–11:
Add note (a) to rows "Differential-mode to common-mode return loss, RLcd"
Insert 3 table rows for with the respective Reference, Value, and Units
Common-mode to common-mode effective return loss, ERLcc (min) (b); 178A.3; 28 dB
Common-mode to differential-mode effective return loss, ERLdc (min) (b); 178A.3; 17 dB
Differential -mode to common-mode effective return loss, ERLcd (min) (b); 178A.3; 17 dB
Add the following notes to the bottom of the table:
(a & b) The minimum modal return loss is met by exceeding the requirements of either (a) or (b)
(b) Modal ERL parameter values are taken from 179.9.5.6

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment I-156.

Cl **179** *SC* **179.11** *P* **443** *L* **16** # 158

Mellitz, Richard — Samtec, Inc.

Comment Type **TR** *Comment Status* **A** *Modal ERL (E)*

Reflect the proposal on slide 3 in https://www.ieee802.org/3/dj/public/26_03/mellitz_3dj_03a_2603.pdf, incorporating the consensus from Straw Poll #13 in https://www.ieee802.org/3/dj/public/26_03/motions_3dj_2603.pdf.

SuggestedRemedy

In Table 179–16:
Add note (b) to rows
Differential-mode to common-mode return loss, RLcd
Common-mode to common-mode return loss, RLcc
Insert 3 table rows for with the respective Reference, Value, and Units
Common-mode to common-mode effective return loss, ERLcc (min) (c); 178A.3; 28 dB
Common-mode to differential-mode effective return loss, ERLdc (min) (c); 178A.3; 17 dB
Differential -mode to common-mode effective return loss, ERLcd (min) (c); 178A.3; 17 dB
Add the following notes to the bottom of the table:
(b & c) The minimum modal return loss is met by exceeding the requirements of either (a) or (b)
(c) Modal ERL parameter values are taken from 179.11.3

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment I-156.

Cl **176C** *SC* **176C.6.7** *P* **807** *L* **33** # 159

Mellitz, Richard — Samtec, Inc.

Comment Type **TR** *Comment Status* **A** *Modal ERL (E)*

Reflect the proposal on slide 3 in https://www.ieee802.org/3/dj/public/26_03/mellitz_3dj_03a_2603.pdf, incorporating the consensus from Straw Poll #13 in https://www.ieee802.org/3/dj/public/26_03/motions_3dj_2603.pdf.

SuggestedRemedy

In Table 176Cû8:
Add note (a) to row ôDifferential-mode to common-mode return loss, RLcdö
Insert 3 table rows for with the respective Reference, Value, and Units
Common-mode to common-mode effective return loss, ERLcc (min) (b); 178A.3; 2dB
Common-mode to differential-mode effective return loss, ERLdc (min) (b); 178A.3; 17 dB
Differential -mode to common-mode effective return loss, ERLcd (min) (b); 178A.3; 17 dB
Add the following notes to the bottom of the table:
(a & b) The minimum modal return loss is met by exceeding the requirements of either (a) or (b)
(b) Modal ERL parameter values are taken from 178C.7.3

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment I-156.

Cl **176D** *SC* **176D.6.4** *P* **821** *L* **18** # 160

Mellitz, Richard — Samtec, Inc.

Comment Type **TR** *Comment Status* **A** *Modal ERL (E)*

Reflect the proposal on slide 3 in https://www.ieee802.org/3/dj/public/26_03/mellitz_3dj_03a_2603.pdf, incorporating the consensus from Straw Poll #13 in https://www.ieee802.org/3/dj/public/26_03/motions_3dj_2603.pdf.

SuggestedRemedy

In Table 179Dû2:

Add note (a) to rows
Common-mode to common-mode return loss, RLcc (min)
Common-mode to differential-mode return loss, RLdc (min)
Insert 3 table rows for with the respective Reference, Value, and Units
Common-mode to common-mode effective return loss, ERLcc (min) (b); 178A.3; 2dB
Common-mode to differential-mode effective return loss, ERLdc (min) (b); 178A.3; 17 dB
Differential -mode to common-mode effective return loss, ERLcd (min) (b); 178A.3; 17 dB
Add the following notes to the bottom of the table:
(a & b) The minimum modal return loss is met by exceeding the requirements of either (a) or (b)
(b) Modal ERL parameter values are taken from 176D.8.3

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment I-156.

Cl **176D** *SC* **176D.6.5** *P* **822** *L* **20** # 161

Mellitz, Richard Samtec, Inc.

Comment Type **TR** *Comment Status* **A** *Modal ERL (E)*

Reflect the proposal on slide 3 in https://www.ieee802.org/3/dj/public/26_03/mellitz_3dj_03a_2603.pdf, incorporating the consensus from Straw Poll #13 in https://www.ieee802.org/3/dj/public/26_03/motions_3dj_2603.pdf.

SuggestedRemedy

In Table 179Dû3:

Add note (a) to rows
Common-mode to common-mode return loss, RLcc (min)
Common-mode to differential-mode return loss, RLdc (min)
Insert 3 table rows for with the respective Reference, Value, and Units
Common-mode to common-mode effective return loss, ERLcc (min) (b); 178A.3; 2dB
Common-mode to differential-mode effective return loss, ERLdc (min) (b); 178A.3; 17 dB
Differential -mode to common-mode effective return loss, ERLcd (min) (b); 178A.3; 17 dB
Add the following notes to the bottom of the table:
(a & b) The minimum modal return loss is met by exceeding the requirements of either (a) or (b)
(b) Modal ERL parameter values are taken from 176D.8.3

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment I-156.

Cl **176D** *SC* **176D.6.6** *P* **823** *L* **16** # 162

Mellitz, Richard Samtec, Inc.

Comment Type **TR** *Comment Status* **A** *Modal ERL (E)*

Reflect the proposal on slide 3 in https://www.ieee802.org/3/dj/public/26_03/mellitz_3dj_03a_2603.pdf, incorporating the consensus from Straw Poll #13 in https://www.ieee802.org/3/dj/public/26_03/motions_3dj_2603.pdf.

SuggestedRemedy

In Table 176Dû4:
Add note (a) to row ôDifferential-mode to common-mode return loss, RLcdö
Insert 3 table rows for with the respective Reference, Value, and Units
Common-mode to common-mode effective return loss, ERLCC (min) (b); 178A.3; 2dB
Common-mode to differential-mode effective return loss, ERLCD (min) (b); 178A.3; 17dB
Differential -mode to common-mode effective return loss, ERLDC (min) (b); 178A.3; 17; dB
Add the following notes to the bottom of the table:
(a & b) The minimum modal return loss is met by exceeding the requirements of either (a) or (b)
(b) Modal ERL parameter values are taken from 178D.8.3

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment I-156.

Cl **176D** *SC* **176D.6.7** *P* **823** *L* **45** # 163

Mellitz, Richard Samtec, Inc.

Comment Type **TR** *Comment Status* **A** *Modal ERL (E)*

Reflect the proposal on slide 3 in https://www.ieee802.org/3/dj/public/26_03/mellitz_3dj_03a_2603.pdf, incorporating the consensus from Straw Poll #13 in https://www.ieee802.org/3/dj/public/26_03/motions_3dj_2603.pdf.

SuggestedRemedy

In Table 176Dû5:
Add note (a) to row ôDifferential-mode to common-mode return loss, RLcdö
Insert 3 table rows for with the respective Reference, Value, and Units
Common-mode to common-mode effective return loss, ERLcc (min) (b); 178A.3; 2dB
Common-mode to differential-mode effective return loss, ERLdc (min) (b); 178A.3; 17 dB
Differential -mode to common-mode effective return loss, ERLcd (min) (b); 178A.3; 17 dB
Add the following notes to the bottom of the table:
(a & b) The minimum modal return loss is met by exceeding the requirements of either (a) or (b)
(b) Modal ERL parameter values are taken from 178D.8.3

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment I-156.

Cl **179B** *SC* **179B.4.5** *P* **914** *L* **3** # 164

Mellitz, Richard — Samtec, Inc.

Comment Type **TR** *Comment Status* **A** *Modal ERL (E)*

Reflect proposal on slide 3 in https://www.ieee802.org/3/dj/public/26_03/mellitz_3dj_03a_2603.pdf reflecting the consensus from Straw Poll #13 in https://www.ieee802.org/3/dj/public/26_03/motions_3dj_2603.pdf and augmented with the discussion that MTF specs should be more stringent than for other channels.

SuggestedRemedy

Replace line 3 with:
The common-mode to differential-mode return loss of the mated test fixtures measured at each test fixture test interface shall meet Equation (179Bû8) as illustrated in Figure 179Bû5.or shall meet the following modal ERL requirements.
Common-mode to common-mode effective return loss, ERLcc (min); 178A.3; 2.25 dB
Common-mode to differential-mode effective return loss, ERLdc (min); 178A.3; 20 dB
Differential -mode to common-mode effective return loss, ERLcd (min); 178A.3; 20 dB

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment I-156.

Cl **179B** *SC* **179B.4.4** *P* **913** *L* **3** # 165

Mellitz, Richard — Samtec, Inc.

Comment Type **TR** *Comment Status* **A** *Modal ERL (E)*

Reflect proposal on slide 3 in https://www.ieee802.org/3/dj/public/26_03/mellitz_3dj_03a_2603.pdf reflecting the consensus from Straw Poll #13 in https://www.ieee802.org/3/dj/public/26_03/motions_3dj_2603.pdf and augmented with the discussion that MTF specs should be more stringent than for other channels.

SuggestedRemedy

Replace line 3 with:
The common-mode to common-mode return loss of the mated test fixtures measured at each test fixture test interface shall meet Equation (179Bû7) as illustrated in Figure 179Bû4 or shall meet the following modal ERL requirements.
Common-mode to common-mode effective return loss, ERLcc (min); 178A.3; 2.25 dB
Common-mode to differential-mode effective return loss, ERLdc (min); 178A.3; 20 dB
Differential -mode to common-mode effective return loss, ERLcd (min); 178A.3; 20 dB

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment I-156.

Cl **178** *SC* **178.10** *P* **400** *L* **41** # 166

Mellitz, Richard — Samtec, Inc.

Comment Type **TR** *Comment Status* **A** *ERL (E)*

As suggested in 179.1, table 179-16, channels with high values of COM should not be required to meet minimum ER

SuggestedRemedy

Add note (c) to the ERL row in table 178.13 and the add the following note at bottom of the table:
(c) Channels with a COM greater than 4 dB are not required to meet minimum ERL.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add a footnote (a) to the ERL row in table 178-13 with the following footnote text:
(a) Channels with a COM greater than 4 dB are not required to meet minimum ERL.

Cl **176C** *SC* **176C.7** *P* **807** *L* **32** # 167

Mellitz, Richard — Samtec, Inc.

Comment Type **TR** *Comment Status* **A** *ERL (E)*

As suggested in 179.1, table 179-16, channels with high values of COM should not be required to meet minimum ER

SuggestedRemedy

Add note (c) to the ERL row in table 176C.8 and the add the following note at bottom of the table:
(c) Channels with a COM greater than 4 dB are not required to meet minimum ERL.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add a footnote (a) to the ERL row in table 176C-8 with the following footnote text:
(a) Channels with a COM greater than 4 dB are not required to meet minimum ERL.

Cl **179** *SC* **179.11** *P* **443** *L* **9** # 168

Mellitz, Richard — Samtec, Inc.

Comment Type **TR** *Comment Status* **A** *ILdd fit (E)*

Channel ILD is covered by COM and ERL. ILdd variations are common in potential passing channels. The ILdd here is overly restrictive.

SuggestedRemedy

In Table 179-16 and section 179.11.2 change Ildd to Ildd fit

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement the suggested remedy, adding a reference to the fitted insertion loss calculation in 93A.3, with editorial license.

Cl **179B** *SC* **179B.4.19** *P* **909** *L* **18** # 169

Mellitz, Richard — Samtec, Inc.

Comment Type **TR** *Comment Status* **R** *ILdd fit (E)*

Channel ILD is covered by FOM_ILD and ERL. . ILdd variations are common in these channels on good fixture channels. The ILdd here is overly restrictive.

SuggestedRemedy

Change line 18 to
ILdd(f) is the fitted insertion loss in dB at frequency f

Response *Response Status* **U**

REJECT.
The suggested remedy would result in relaxing the test fixture specifications. Comment #13 refers to previous presentations and straw polls that indicate a desire to tighten the specifications instead.
There was no consensus to make the proposed change.

Cl **179B** *SC* **179B.4.3** *P* **912** *L* **5** # 170

Mellitz, Richard — Samtec, Inc.

Comment Type **TR** *Comment Status* **A** *MTF Requirements (E)*

Intrapair skew has not been directly considered for the MTF. Although intrapair skew is included in the computed differential modeûtoûdifferential mode insertion loss, the effect of skew has not been explicitly specified. Common modeûtoûdifferential mode insertion loss does contain elements of skew. An either or specification for SCMR_CH should be added to control MTF intrapair skew.

SuggestedRemedy

Replace line 3 with:
The common-mode to differential-mode insertion loss of the mated test fixtures measured in both directions shall meet Equation (179Bû6) as illustrated in Figure 179Bû3. or the channel signal to common-mode ratio (SCMR_CH) shall exceed 12 dB using the procedure described in 179.11.7.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The CRG viewed slides 12-15 of
<https://www.ieee802.org/3/dj/public/26_05/ran_3dj_01a_2605.pdf>.

The CRG discussion indicate that the intent is to tighten the existing specs.

Replace line 3 with:
"The mated test fixture shall comply the following requirements:
- The common-mode to differential-mode insertion loss of the mated test fixtures measured in both directions meets Equation (179B-6) as illustrated in Figure 179B-3.
- The channel signal to common-mode ratio (SCMR_CH) is greater than 12 dB using the procedure described in 179.11.7."

Cl **178** *SC* **178.10** *P* **400** *L* **43** # 171

Mellitz, Richard — Samtec, Inc.

Comment Type **TR** *Comment Status* **A** *SCMR_CH (E)*

Prior posted computations for SCMR_CH where computed using DER_0 for P_Peak. The current daft specifies P_peak as 1e-7. This reduces SCMR_CH by 3 dB.

SuggestedRemedy

Lower SCMR_CH (min) as follows:

178.10
Page 400
Line 43
Change
Minimum channel signal to common-mode ratio, SCMR_CH from 20 dB to 17 dB

179.11
Page 443
Line 21
Channel signal to common-mode ratio, SCMR_CH (min) from 12 dB to 9 dB

Page 807
Line 35
Change
Minimum channel signal to common-mode ratio, SCMR_CH from 20 dB to 17 dB

Response *Response Status* **C**

ACCEPT.

Cl **177** *SC* **177.6.1.1** *P* **368** *L* **4** # 172

He, Xiang — Huawei Technologies Co., Ltd

Comment Type **E** *Comment Status* **A** *(B1) (L)*

"FEC lane" should be "Inner FEC lane". Also line 51 on this page.

SuggestedRemedy

Change "FEC lane" to "Inner FEC lane". Apply this fix throughout the clause.

Response *Response Status* **C**

ACCEPT.

Cl **176D** *SC* **176D.3** *P* **819** *L* **38** # 173

Healey, Adam Broadcom Inc.

Comment Type **E** *Comment Status* **A** *A176D figures (E)*

In Figure 176D-2, the delineation between host and module is shown to be the outer edge of the box labeled "connector". However, in Figures 176D-4 and 176D-5, the host and module are shown to extend to the line in the middle of a simlar looking "connector" box. Figure 176D-2 should be changed to be consistent with the other figures.

SuggestedRemedy

In Figure 176D-2, move the point where the arrows delineating "host" and "module" meet to align with the line in the middle of the box labelled "connector". If there is ambiguity about what this line represents, add a note to the figure indicating that the line corresponds to the "mating point of the MDI connector" similar to what is described in 179B.2.1 and 179B.3.1.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Comment I-107 suggests modifying Figure 176D-2 in a different way (see <https://www.ieee802.org/3/dj/public/26_03/ran_3dj_03a_2603.pdf#page=7>).
Resolved using the response to comment I-107.

Cl **176D** *SC* **176D.8.13.2** *P* **834** *L* **9** # 174

Healey, Adam Broadcom Inc.

Comment Type **TR** *Comment Status* **A** *Test channel calibration (E)*

For the module receiver interference tolerance test, item b) states that "COM is calculated using the module device package and device termination models". However, the module test channel shown in Figure 176D-8b includes the host compliance board (HCB). The reference loss of the HCB equals the module loss allocation to TP1d illustrated in Figure 176D-6. Therefore, the addition of the module device package model results in the interference tolerance test being calibrated with approximately 2.1 dB more loss than a module has been allocated.

SuggestedRemedy

Replace 176D.8.13.2 item b) with the following. "For the module test, the test channel is measured between the Tx and Rx test references shown in Figure 176D-8b, and COM is calculated using device termination model in Table 176Dû6 for the receiver S-parameter model."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The suggested remedy removes the only mention of the module device package model in Annex 176D. As a result, the "Device package model, module" row in Table 176D-6 becomes irrelevant.

Implement the suggested remedy, and in addition, delete the "Device package model, module" row in Table 176D-6.
Implement with editorial license.

[Editor's note: Changed page from 836 to 834]

Cl **176D** *SC* **176D.6.5** *P* **824** *L* **25** # 175

Healey, Adam Broadcom Inc.

Comment Type **TR** *Comment Status* **A** *C2M specs (E)*

Slide 7 of <https://www.ieee802.org/3/dj/public/25_11/healey_3dj_01a_2511.pdf> highlighted that there is some ambiguity in the loss that has been allocated to the module. The value computed on slide 12 for module output Rpeak was based on the more generous interpretation i.e., 5.9 dB from the TP4d to the mating point of the connector. If the loss from TP4d to the mating point of the connector is limited to 3.8 dB as shown in Figure 176D-6, then the Rpeak limit in Table 176D-3 needs to be adjusted.

SuggestedRemedy

If the module loss allocation is limited to 3.8 dB, then in Table 176D-3 change Rpeak (min) to 0.51 and change the lower value of the vf range to 0.392.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The CRG reviewed slides 6-10 of <https://www.ieee802.org/3/dj/public/26_05/ran_3dj_01c_2605.pdf>.

In Table 176D-3, change Rpeak (min) to 0.51 and change the lower value of the vf range to 0.392.

Cl **178** *SC* **178.9.2.3** *P* **391** *L* **11** # 176

Healey, Adam Broadcom Inc.

Comment Type **TR** *Comment Status* **A** *ERL (B1) (E)*

The receiver 3 dB bandwidth and the target detector error ratio for the dERL measurement is not defined. It is presumably the values specified in Table 178-15 but this table is not included in the list of references for parameter values.

SuggestedRemedy

In the first sentence of 178.9.2.3, change "àwith the values in Table 178-8 and Table 178-14, with differential reference impedanceà" to "àwith the values in Table 178-8, Table 178-14, and Table 178-15, with differential reference impedanceà".

Response *Response Status* **W**

ACCEPT.

[Editor's note: changed page from 954 to 391]

Cl **179B** *SC* **179B.4.5** *P* **914** *L* **9** # 177

Healey, Adam Broadcom Inc.

Comment Type **TR** *Comment Status* **A** *(B1) (E)*

RLdc(f) is specified to be 15 dB for frequencies greater than or equal to 53.12 GHz and less than 67 GHz. The lower limit should be 53.125 GHz.

SuggestedRemedy

Change "53.12" to "53.125".

Response *Response Status* **W**

ACCEPT.

Cl **176D** *SC* **176D.6.2** *P* **820** *L* **25** # 178

Healey, Adam Broadcom Inc.

Comment Type **T** *Comment Status* **A** *MDI connector (E)*

The definitions of HCB and MCB leverage the definitions of TP2/TP3 and cable assembly test fixtures in 179B.2 and 179B.3 respectively. These definition refer to "MDI connectors" but this term is not used in the chip-to-module reference model. For clarity, it should be noted that references to the "MDI connector" in 179B.2 and 179B.3 are equivalent the host "connector" in the Annex 176D reference model.

SuggestedRemedy

Add a statement to 179D.6.2 clarifying that references to the MDI connetor in 179B.2 and 179B.3 correspond to the "connector" cited in the chip-to-module reference model.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add the following paragraph at the end of 176D.6.2:
The AUI-C2M connector mentioned in this annex is equivalent to the MDI connector in 179B.2 and 179B.3.

[Editor's note: change clause/subclause from 179D/179D.6.2 to 176D/176D.6.2]

Cl **176D** *SC* **176D.8.15** *P* **836** *L* **12** # 179

Healey, Adam — Broadcom Inc.

Comment Type **TR** *Comment Status* **A** *Amplitude tolerance (E)*

The transmitter output amplitude tolerance test calibrates the receiver input for a target steady-state voltage value. However, a transmitter with overshoot in the preset 1 configuration would have a differential peak-to-peak output amplitude greater than 1 V. Since a compliant transmitter must also meet a differential peak-to-peak output voltage limit of 1 V (see Table 176D-2), the resulting test condition would not be encountered in practice and would over-stress the receiver. The stress test signal must also be verified to have a differential peak-to-peak voltage less than or equal to 1 V for the preset 1 configuration.

SuggestedRemedy

Add a requirement that the differential peak-to-peak output voltage measured at TP1 must meet the requirements of Table 176D-2 for module testing. Add similar requirements to transmitter output amplitude tolerance tests in Clauses 178, Clause 179, Annex 176C, and for host testing in Annex 176D.

Response *Response Status* **C**

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

Cl **179** *SC* **179.9.4.6** *P* **429** *L* **42** # 181

Rysin, Alexander — NVIDIA

Comment Type **TR** *Comment Status* **R** *SNDR (E)*

SNDR limits for most of the presets cannot be met even with a test equipment PPG with practical host channels. Data obtained with an instrument-grade pattern generator and practical channels representing the different host classes was presented in rysin_3dj_01a_2509.

SuggestedRemedy

Revise the SNDR limits based on data collected with practical channels.

Response *Response Status* **U**

REJECT.
The comment refers to the contribution <https://www.ieee802.org/3/dj/public/25_09/rysin_3dj_01a_2509.pdf>, where SNDR measurements are on slides 5-8.
The presentation provided measured data for a specific implementation. It is unclear whether the measured devices (host boards and pattern generators) represent PMDs that could interoperate with minimum capability receivers, and whether the data indicates inability to meet the SNDR in all implementations.

The resolution of comment I-275 can improve the measured SNDR results.

The suggested remedy does not include sufficent detail to implement.

Cl **179** *SC* **179.9.4** *P* **424** *L* **21** # 182

Rysin, Alexander — NVIDIA

Comment Type **ER** *Comment Status* **A** *Jitter (E)*

The method for the random jitter measurement changed to phase-only (horizontal) jitter, yet the naming remained J_rms, similar to the previous, 12-edge method.

SuggestedRemedy

Replace J_rms with JH_rms here and in the explanatory subclauses 179.9.4.7 and 179.9.4.7.1.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement the suggested remedy in listed subclauses and other places that refer to J_RMS, with editorial license.

Cl **176D** *SC* **176D.6.4** *P* **821** *L* **36** # 183

Rysin, Alexander — NVIDIA

Comment Type **ER** *Comment Status* **A** *Jitter (E)*

The method for the random jitter measurement changed to phase-only (horizontal) jitter, yet the naming remained J_rms, similar to the previous, 12-edge method.

SuggestedRemedy

Replace J_rms with JH_rms here and in subclause 176D.6.8.10.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment I-182.

Cl **176D** *SC* **176D.6.5** *P* **822** *L* **38** # 184

Rysin, Alexander — NVIDIA

Comment Type **ER** *Comment Status* **A** *jitter (E)*

The method for the random jitter measurement changed to phase-only (horizontal) jitter, yet the naming remained J_rms, similar to the previous, 12-edge method.

SuggestedRemedy

Replace J_rms with JH_rms.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment I-182.

Cl **178B** *SC* **178B.8.2.1** *P* **885** *L* **26** # 186

Osorio, Luz Nokia

Comment Type **TR** *Comment Status* **A** *(B1) (CA)*

rts_status is missing from the Management Variables

SuggestedRemedy

Add per interface rts_status to the Management Variables (2 bits)

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #387.

Cl **178B** *SC* **178B.10** *P* **895** *L* **34** # 187

Osorio, Luz Nokia

Comment Type **ER** *Comment Status* **A** *(B1) (CA)*

The cross-reference note indicator "c" is not formated as a superscript for coef_sts

SuggestedRemedy

Fix formatting of note cross-reference

Response *Response Status* **W**

ACCEPT.

Cl **178B** *SC* **178B.10** *P* **895** *L* **37** # 188

Osorio, Luz Nokia

Comment Type **ER** *Comment Status* **A** *(B1) (CA)*

The cross-reference note indicator "b" is not formated as a superscript for local_tf_lock

SuggestedRemedy

Fix formatting of note cross-reference

Response *Response Status* **W**

ACCEPT.

Cl **178B** *SC* **178B.10** *P* **895** *L* **38** # 189

Osorio, Luz Nokia

Comment Type **TR** *Comment Status* **A** *(B1) (CA)*

Incorrect MDIO register/bit number for remote_tf_lock. It should 1.1420.9

SuggestedRemedy

Fix register reference

Response *Response Status* **W**

ACCEPT.

Cl **178B** *SC* **178B.10** *P* **895** *L* **40** # 190

Osorio, Luz Nokia

Comment Type **TR** *Comment Status* **R** *Management (CA) (B1)*

Incorrect MDIO register/bit number for local_rx_ready. The referenced MDIO bit is a training complete indicator. The title and the description of the bit are conflicting

SuggestedRemedy

Fix the register definition or point to the correct MDIO bit

Response *Response Status* **W**

REJECT.
The Receiver ready bit in the transmitted status field is the local_rx_ready

Cl **178B** *SC* **178B.10** *P* **895** *L* **40** # 191

Osorio, Luz Nokia

Comment Type **ER** *Comment Status* **A** *(B1) (CA)*

The cross-reference note indicator "c" is not formated as a superscript for local_rx_ready

SuggestedRemedy

Fix formatting of note cross-reference

Response *Response Status* **W**

ACCEPT.

Cl **178B** *SC* **178B.10** *P* **895** *L* **41** # 192

Osorio, Luz Nokia

Comment Type **TR** *Comment Status* **A** *(B1) (CA)*

Incorrect MDIO register/bit reference for remote_rx_ready. It should 45.2.1.163

SuggestedRemedy

Fix register reference

Response *Response Status* **W**

ACCEPT.

Cl **178B** *SC* **178B.10** *P* **895** *L* **41** # 193

Osorio, Luz — Nokia

Comment Type **TR** *Comment Status* **A** *Management (CA) (B1)*

Incorrect MDIO register/bit number for remote_rx_ready. The referenced MDIO bit is a training complete indicator. The title and the description of the bit are conflicting

SuggestedRemedy

Fix the register definition or point to the correct MDIO bit

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Chnage reference from 45.2.1.167 to 45.2.1.163.

Cl **178B** *SC* **178B.3** *P* **866** *L* **16** # 195

Mascitto, Marco — Infinera Canada Inc.,Nokia

Comment Type **TR** *Comment Status* **A** *(B1) (CA)*

The Physical Layer extends from RS to MDI, and includes the RS and MDI.

SuggestedRemedy

Extend the arrows representing the boundaries of the Physical Layer to include the MDI.

Response *Response Status* **W**

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

Cl **178B** *SC* **178B.5** *P* **867** *L* **34** # 196

Mascitto, Marco — Infinera Canada Inc.,Nokia

Comment Type **E** *Comment Status* **A** *(B1) (CA)*

The words "for the entire interface" makes the sentence confusing. The sentence also reads a bit awkward.

SuggestedRemedy

Replace:
The ILT function is composed of one per-interface ILT function for the entire interface and one per-lane ILT function for each lane associated with the interface.

With:
The ILT function within an interface is composed of:
- one per-interface ILT function, and
- n per-lane ILT functions, one for each of n lanes associated with the interface.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

Cl **178B** *SC* **178B.5** *P* **867** *L* **36** # 197

Mascitto, Marco — Infinera Canada Inc.,Nokia

Comment Type **TR** *Comment Status* **A** *(B1) (CA)*

An input is missing. The RTS function uses inputs from:
a) adjacent interface (via the service interface)
b) peer interface (via the ILT function)
c) its own per-interface ILT function
to transition to DATA mode.

SuggestedRemedy

Replace:
The RTS function uses inputs from the adjacent interface (via the service interface) and the peer interface (via the ILT function) to permit the ILT function to transition to DATA mode.

With:
The RTS function uses inputs from the adjacent interface (via the service interface), its peer interface (via the ILT function), and its per-interface ILT function to permit the ILT function to transition to DATA mode.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

Cl **178B** *SC* **178B.6** *P* **869** *L* **28** # 198

Mascitto, Marco — Infinera Canada Inc.,Nokia

Comment Type **E** *Comment Status* **A** *(B1) (CA)*

While the first sentence is technically correct, it may help the reader to list the control actions in the order in which they will occur.

SuggestedRemedy

Replace:
The RTS function facilitates the indication of the local interface readiness to switch to DATA mode (local_rts) to other interfaces (peer and adjacent) and controls the switch over of the transmitter clock source to its DATA mode clock (when necessary).

With:
The RTS function controls the switch over of the transmitter clock source to its DATA mode clock (when necessary) and facilitates the indication of the local interface readiness to switch to DATA mode (local_rts) to other interfaces (peer and adjacent).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

Cl **178B** *SC* **178B.7** *P* **870** *L* **9** # 199

Mascitto, Marco Infinera Canada Inc.,Nokia

Comment Type **E** *Comment Status* **A** *(B1) (CA)*

It may help the reader to place this sentence after the paragraph that follows, so that they are introduced to the three modes of operation before stating something specific about one of those modes.

SuggestedRemedy

Place the sentence which starts at line 9 after the paragraph that begins on line 13.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

Cl **178B** *SC* **178B.7** *P* **870** *L* **14** # 200

Mascitto, Marco Infinera Canada Inc.,Nokia

Comment Type **E** *Comment Status* **A** *(B1) (CA)*

To add clarity to TRAINING mode, it is suggested to use similar phrasing to LOCAL_PATTERN mode.

SuggestedRemedy

Replace:
TRAINING mode (tx_mode = training): training frames are sent between peer interfaces

With:
TRAINING mode (tx_mode = training): training frames are transmitted to the peer interface

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

Cl **178B** *SC* **178B.7.2** *P* **871** *L* **1** # 202

Mascitto, Marco Infinera Canada Inc.,Nokia

Comment Type **E** *Comment Status* **A** *(B1) (CA)*

Comma missing.

SuggestedRemedy

Add comma after the word "mode":
"When in TRAINING mode, the frame format [à]"

Response *Response Status* **C**

ACCEPT.

Cl **178B** *SC* **178B.7.2** *P* **871** *L* **7** # 203

Mascitto, Marco Infinera Canada Inc.,Nokia

Comment Type **E** *Comment Status* **A** *(B1) (CA)*

Comma missing.

SuggestedRemedy

Add comma after the word "mode":
"When in LOCAL_PATTERN mode, the pattern transmitted [à]"

Response *Response Status* **C**

ACCEPT.

Cl **178B** *SC* **178B.8.2.1** *P* **885** *L* **4** # 204

Mascitto, Marco Infinera Canada Inc.,Nokia

Comment Type **TR** *Comment Status* **A** *(B1) (CA)*

APSU is the behaviour that is observed on a path, not at an interface (see 178B.2 and 178B.4). mr_restart applies to an interface, not the entire path.

SuggestedRemedy

Replace the definition of mr_restart with:
Boolean variable used by management to restart the RTS and ILT functions.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

Cl **178B** *SC* **178B.8.3** *P* **887** *L* **3** # 207

Mascitto, Marco Infinera Canada Inc.,Nokia

Comment Type **E** *Comment Status* **A** *(B1) (CA)*

Sentence is a bit awkward.

SuggestedRemedy

Replace:
An interface using the E1 format implements one instance of each of the training control, the training frame lock and the coefficient update state diagrams, and their associated variables, functions, counters and timers defined in this subclause, independently for each lane.

With:
An interface using the E1 format implements one instance per lane of each of the training control, the training frame lock and the coefficient update state diagrams, and their associated variables, functions, counters and timers defined in this subclause.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

Cl **178B** *SC* **178B.8.3** *P* **887** *L* **7** # 208

Mascitto, Marco — Infinera Canada Inc.,Nokia

Comment Type **E** *Comment Status* **A** *(B1) (CA)*

Sentence is a bit awkward.

SuggestedRemedy

Replace:
An interface using the O1 format implements one instance of each of the training control and the training frame lock state diagrams, and their associated variables, functions, counters and timers defined in this subclause, independently for each lane.

With:
An interface using the O1 format implements one instance per lane of each of the training control and the training frame lock state diagrams, and their associated variables, functions, counters and timers defined in this subclause.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

Cl **180** *SC* **180.9.5** *P* **476** *L* **42** # 218

Maniloff, Eric — Ciena Corporation

Comment Type **TR** *Comment Status* **A** *OMA_outer (OI)*

OMA_Outer with pattern 6 (SSPRQ) has multiple runs of = 7 threes and = 6 zeroes. In order to obtain consistent measurements, all runs of 7's and 3's should be measured.

SuggestedRemedy

Change text to: ôWhen measured with pattern 6, OMA_outer is measured as the difference between the average optical launch power level P3, measured over the central 2 UI of the first 7 UI of
all runs of 7 threes or more, and the average optical launch power level P0, measured over the central 2 UI of the first 6 UI of all runs of 6 zeroes or more.ö. Make similar change in clause 181.9.5, 182.9.5, and 183.9.5

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

The following material was reviewed by the CRG
Slide 3 of https://www.ieee802.org/3/dj/public/26_05/alloin_3dj_01_2605.pdf
Slide 3 of https://www.ieee802.org/3/dj/public/26_05/rodes_3dj_03a_2605.pdf
Slide 6 of https://www.ieee802.org/3/dj/public/26_05/chayeb_3dj_01a_2605.pdf

The proposed remedy was first brought in a contribution in March plenary https://www.ieee802.org/3/dj/public/26_03/alloin_3dj_01a_2603.pdf. A straw poll was conducted (https://www.ieee802.org/3/dj/public/26_03/motions_3dj_2603.pdf):
Straw Poll # 6
I support the addition of the proposed clarification to the OMA_outer definition when measured using a SSPRQ as outlined in alloin_3dj_01a_2603 slide 13.
Result: Y: 61 N: 11

The straw poll result indicated consensus on the proposed remedy.

Implement the suggested remedy with editorial license.

Cl **180** *SC* **180.9.15** *P* **491** *L* **18** # 226

Maniloff, Eric — Ciena Corporation

Comment Type **TR** *Comment Status* **A** *Rx sensitivity - SHE (OI)*

Current text for block error extrapolation performs a linear fit from 1 to n. Because this is unlikely to be linear, it would be more accurate to only extrapolate over the 4 highest bins with sufficient counts.

SuggestedRemedy

Replace: "If the statistical projection is modeled accurately by a linear fit extrapolation, a means to
provide statistical projection of the measured histograms (see174A.9.3) in order to reduce test time
follows. Extrapolate the measured histogram to Hm(i)(16) using a line determined by a linear fit of
log10(Hm(i)(k)), for k = 1 to n, where n is the largest value of k, where all bins from 0 to n have a count
greater than 2."

With

"If the statistical projection is modeled accurately by a linear fit extrapolation, a means to provide statistical projection of the measured histograms (see174A.9.3) in order to reduce test time follows. Extrapolate the measured histogram to Hm(i)(16) using a line determined by a linear fit of log10(Hm(i)(k)), for k = n-3 to n, where n is the largest value of k, where all bins from n-3 to n have a count greater than 2." Make similar changes in Clauses 181, 182, 183.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This comment suggests to add more details to the extrapolation method of the block error histogram measurement for receiver sensitivity and SRS. Another method was proposed in comment #I-296.

The following contribution was reviewed by the CRG.
https://www.ieee802.org/3/dj/public/26_05/maniloff_3dj_01b_2605.pdf

The following contributions provide measured data supporting the proposal in maniloff_3dj_01b_2605:
https://www.ieee802.org/3/dj/public/26_05/rodes_3dj_02a_2605.pdf
https://www.ieee802.org/3/dj/public/26_05/wang_3dj_01_2605.pdf

Replace the current note in 180.9.15, 180.9.16, 181.9.15, 181.9.16, 182.9.15, 182.9.16, 183.9.15, and 183.9.16 to the following:
"Note – In order to predict whether a receiver meets the BLER requirement in a short test time, extrapolation of the measured histogram (see 174.A.9.3) to Hm(16) can be performed. One way of doing this is using a linear fit of log10(Hm(k)) for k = (n-2) to n, where these values of k are the three highest bins having a count of 10 or more. If the slope of the histogram over the measured bins is increasing, it might be an indication of not meeting the BLER requirement. To verify that the slope is not increasing, the values of (log10(Hm(k))-log10(Hm(4))/(k-4) should be less than (log10(Hm(4))-log10(Hm(2))/2 for each k greater than 4."

Implement with editorial license.

Cl **185** *SC* **185.5.1** *P* **626** *L* **5** # 227

Maniloff, Eric — Ciena Corporation

Comment Type **T** *Comment Status* **A** *Block diagram (OC)*

The label for TP1 and TP2 on Fig 185-3 are not correct, TP1 and TP4 do not beliong in this figure

SuggestedRemedy

Remove TP1 and TP4

Response *Response Status* **C**

ACCEPT.

Cl **185** *SC* **185.5.1** *P* **626** *L* **5** # 228

Maniloff, Eric — Ciena Corporation

Comment Type **E** *Comment Status* **A** *Block diagram (OC)*

Labels and locations in Fig 185-3 are inconsistent with other clauses.

SuggestedRemedy

Modify Fig 185-3 to align with Fig 185-2. Move "Inner FEC." Inside box. Change Optical transmitter label to PMD transmit function. Add PMD_signal_detect

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In Figure 185-3
Change "Optical transmitter" to "PMD Transmit Function" and "Optical receiver" to "PMD Receive Function".
Add PMD_signal_detect from the PMD Receive Function
To align with the other optical PMD clauses change "Inner FEC transmit function" to "Inner FEC Transmit Function"and "Inner FEC receive function" to "Inner FEC Receive Function"and move labels into their respective boxes.

With editorial license.

Cl **185** *SC* **185.10** *P* **640** *L* **15** # 229

Maniloff, Eric — Ciena Corporation

Comment Type **ER** *Comment Status* **A** *(B1) (OC)*

Control Variable Reset is labeled improperly

SuggestedRemedy

Change "Reset" to "PMD_reset"

Response *Response Status* **W**

ACCEPT.

Cl **185** *SC* **185.10** *P* **640** *L* **30** # 230

Maniloff, Eric — Ciena Corporation

Comment Type **ER** *Comment Status* **A** *PMD variables (OC) (B1)*

Status variables "fault" "Transmit fault" and "receive fault" are labeled improperly

SuggestedRemedy

Change to "PMD_fault", "PMD_transmit_fault", and "PMD_receive_ fault"

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
In Table 185-18 change
"Fault" to "PMD fault"
"Transmit fault" to "PMD transmit fault"
"Receive fault" to "PMD receive fault"
For Global PMD signal detect change the variable reference to "185.5.4"
Add a new row with variable name "PMD signal detect", variable reference "187.5.5", MDIO number "1.10.1" and MDIO reference "45.2.1.9.6"
In Tables 180-21, 181-14, 182-19 and 183-17 change "PMD_global_transmit_disable" to "Global_PMD_transmit_disable"
In Tables 180-22, 181-15, 182-20 and 183-18 change "PMD_global_signal_detect" to "Global_PMD_signal_detect"
With editorial license

Cl **187** *SC* **187.5.1** *P* **701** *L* **8** # 231

Maniloff, Eric — Ciena Corporation

Comment Type **T** *Comment Status* **A** *Block diagram (OC)*

The label for TP1 and TP2 on Fig 187-3 are not correct, TP1 and TP4 do not beliong in this figure

SuggestedRemedy

Remove TP1 and TP4

Response *Response Status* **C**

ACCEPT.

Cl **187** *SC* **187.5.1** *P* **701** *L* **8** # 232

Maniloff, Eric — Ciena Corporation

Comment Type **E** *Comment Status* **A** *Block diagram (OC)*

Labels and locations in Fig 187-3 are inconsistent with other clauses.

SuggestedRemedy

Change Optical transmitter label to PMD transmit function and Optical receiver to "PMD receive function". Add PMD_signal_detect

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
In Figure 187-3
Change "Optical transmitter" to "PMD Transmit Function" and "Optical receiver" to "PMD Receive Function".
Add PMD_signal_detect from the PMD Receive Function
To align with the other optical PMD clauses change "ER1 PMA transmit function" to "ER1 PMA Transmit Function" and "ER1 PMA receive function" to "ER1 PMA Receive Function" and move labels into their respective boxes.

With editorial license.

Cl **187** *SC* **187.10** *P* **714** *L* **9** # 233

Maniloff, Eric — Ciena Corporation

Comment Type **ER** *Comment Status* **A** *(B1) (OC)*

Control Variable Reset is labeled improperly

SuggestedRemedy

Change "Reset" to "PMD_reset"

Response *Response Status* **W**

ACCEPT.

Cl **187** *SC* **187.10** *P* **714** *L* **20** # 234

Maniloff, Eric — Ciena Corporation

Comment Type **ER** *Comment Status* **A** *Block diagram (OC)*

Labels and locations in Fig 187-3 are inconsistent with other clauses.

SuggestedRemedy

Change Optical transmitter label to PMD transmit function and Optical receiver to "PMD receive function". Add PMD_signal_detect

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

!! updated 2025/5/6

The commenter indicated that the comment and suggested remedy field were erroneously entered and that they were intended to be the same as for comment #230 except directly at Clause 187 instead of Clause 185. The clause, subclause, page, and line numbers are as intended. The response to this comment addresses the commenter indicated intent.

In Table 187-16 change
"Fault" to "PMD fault"
"Transmit fault" to "PMD transmit fault"
"Receive fault" to "PMD receive fault"
For "Global PMD signal detect" change the variable reference to "187.5.4"
Add a new row with variable name "PMD signal detect", variable reference "187.5.5", MDIO number "1.10.1" and MDIO reference "45.2.1.9.6"

With editorial license

Cl **185A** *SC* **185A.2.3** *P* **948** *L* **8** # 235

Maniloff, Eric — Ciena Corporation

Comment Type **TR** *Comment Status* **A** *ETCC (OC)*

The low pass filter has minimal impact on ETCC, and can be removed

SuggestedRemedy

Remove the Bessel-Thomson filter from the reference DSP. This will also remove 185.A.2.3.2

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
In Figure 185A-4 remove the box for "Low-pass filter" and delete subclause 185A.2.3.2.

Cl **185A** *SC* **185A.2.3.5** *P* **948** *L* **52** # 236

Maniloff, Eric — Ciena Corporation

Comment Type **TR** *Comment Status* **A** *ETCC (OC)*

The T spaced filter is inconsistent with typical implementations. T/2 -spaced equalization does not mitigate transmitter impairments more effectively in this context; its primary benefit is to support the clock recovery algorithm when residual symbol timing error is present. Moving to T/2-spaced taps makes the processing less dependent on the specific clock recovery implementation and therefore more robust and algorithm-agnostic.

SuggestedRemedy

Change the reference equalizer tap spacing from T-spaced to T/2-spaced.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Resolved using the response to comment #237.

Cl **185A** *SC* **185A.2.3.5** *P* **948** *L* **52** # 237

Maniloff, Eric — Ciena Corporation

Comment Type **T** *Comment Status* **A** *ETCC (OC)*

The current ETCC methodology already requires a preprocessing stage to recover the transmitted pattern for subsequent BER measurement. Given that the transmitted sequence is already available within the processing flow,using known data symbols for equalizationis a natural and consistent extension of the existing methodology. Data-aided equalization is also more representative of practical system operation, and it generally provides faster convergence and more reliable equalizer adaptation than blind methods. This is an optional implementation but it would be preferable to specify this.

SuggestedRemedy

Add text to the reference equalizer in 185A.2.3.7 to indicate that the adaptation may be based on known data symbols.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Comment #236 request that the equalizer sampling is T/2 spaced rather than T spaced.

The suggested remedy incorrectly states to add text to 185A.2.3.7.
In 185A.2.3.5 change:
"A reference equalizer based on a 2×2 multiple-in multiple-out (MIMO) filter with an adaptive T-spaced feed-forward equalizer, where T is the symbol period, is used for polarization demultiplexing and channel equalization. Polarization demultiplexing may be performed as a separate processing step."
To
"A reference equalizer based on a 2×2 multiple-in multiple-out (MIMO) filter with an adaptive T/2-spaced feed-forward equalizer, where T is the symbol period, is used for polarization demultiplexing and channel equalization. Adaptation of the reference equalizer may be based on data symbols recovered during pre-processing. Polarization demultiplexing may be performed as a separate processing step."

Implement with editorial license.
[Editor's note: changed line from 8 to 52.]

Cl **179B** *SC* **179B.4.1** *P* **909** *L* **11** # 238

Heck, Howard — TE Connectivity

Comment Type **TR** *Comment Status* **R** *ILdd fit (E)*

Prior contributions (e.g. https://ieee802.org/3/dj/public/26_03/lusted_3dj_02a_2603.pdf) have proposed tightening the range of the min/max specs by using fitted insertion loss and accounting for differences between the fitted insertion loss of an actual test fixture and the reference insertion loss.

SuggestedRemedy

Change page 909, line 18 to
ILdd(f) is the fitted insertion loss in dB at frequency f

Change page 907, line 32 to
The effects of differences between the fitted insertion loss of an actual test fixture and the reference insertion loss are to be accounted for in the measurements.

A supporting presentation is planned.

Response *Response Status* **U**

REJECT.
The CRG reviewed the contribution
<https://www.ieee802.org/3/dj/public/26_05/heck_3dj_01b_2605.pdf>.
There is no consensus to make a change to the draft.

The discussion following the presenation included the following:
- Concerns about tightening the insertion loss limits (measured or fitted).
- Support for the direction of de-embedding measured test fixture s-parameters and re-embedding S-parameters based on the reference loss curves.
- The presentation does not include S-parameters based on the reference loss curves, but there is a path to calculate these.
- Slides 7 and 8 of heck_3dj_01b_2605 include a possible change to the draft, but the CRG recommends more work on this area towards a complete proposal.

See also the response to comment I-169.

Cl **179** *SC* **179.11.4** *P* **444** *L* **22** # 239

Heck, Howard — TE Connectivity

Comment Type **TR** *Comment Status* **A** *Modal ERL (E)*

Straw poll #12 from the March plenary showed consensus for adding modal ERL as a method for limiting mode conversion in cable assemblies.

SuggestedRemedy

Implement the proposal in https://ieee802.org/3/dj/public/26_03/mellitz_3dj_02_2603.pdf for copper cables using the pass/fail requirement contained on slide 3 of https://ieee802.org/3/dj/public/26_03/mellitz_3dj_03a_2603.pdf.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment I-156.

Cl **179B** *SC* **179B.3.1** *P* **907** *L* **34** # 240

Heck, Howard — TE Connectivity

Comment Type **TR** *Comment Status* **R** *MDI connector (E)*

There may be multiple configurations of MDI connectors (SMT right angle 1x1, Stacked SMT right angle 2x1, Cabled host, Vertical SMT, etc) which can introduce different high speed perfromance variabilities. It is requested that this clause reference a specific configuration to minimize variations between MCB suppliers.

SuggestedRemedy

Add text: A single port 1x1 SMT right angle MDI connector is normative for the MCB specifications. Other connector configurations are informative.

Response *Response Status* **U**

REJECT.
Per the style manual, "Interspersed normative and informative text is not allowed".

There was no consensus to make the proposed change.

Cl **176D** *SC* **176D.6.4** *P* **820** *L* **36** # 242

Ghiasi, Ali — Ghiasi Quantum LLC,Marvell Semiconductor, Inc.

Comment Type **TR** *Comment Status* **R** *C2M methodology (E)*

Comments submitted against D2.x requested demonstration that using transmitter out test parameters with SNDR are sufficient for interoperability. These explicit jitter value either will are too strengthen or too relaxed from the point of what receiver cares!

SuggestedRemedy

The established method in CK VEO and VEC has direct correlation to what receiver can tolerate, the EECQ is another test developed in the OIF Linear and RTLR is a composite test that determines goodness/badness from the perspective of the receiver.
TF either need to demonstrate that the current jitter limits is sufficient for interoperability otherwise consider adding VEO/VEC or EECQ.
Other standards that typically follow IEEE in this case plan to continue with VEC/VEO and some major customers also not convinced what we have for C2M is sufficient and likely will create their own specifications

Response *Response Status* **U**

REJECT.
The comment does not indicate any problem with the existing specification. Rather, it requests a demonstration that it is "sufficient for interoperability". This is a call for action, and is not implementable in the draft.

The existing methodology has been in place since D1.1 (based on the response to comment #186 against D1.0). It is aligned with the KR/CR methodology due to the addition of ILT to C2M interfaces. The methods mentioned in the suggested remedy are specified for fixed-waveform signals and do not take into account the effect of variable transmitter equalization.
Measurement data of the currently specified parameters with existing test equipment has been provided in several contributions. No such data for the suggested alternative methods has been contributed.
A methodology change will have a widespread impact on the draft, since input specifications (receiver tolerance tests) are aligned with the transmitter specified paramters for calculation of COM. It would risk the project schedule.

The suggested remedy does not provide sufficient detail for the CRG to understand the proposed changes and for the editors to implement.

Cl **176D** *SC* **176D.7.1** *P* **824** *L* **25** # 243

Ghiasi, Ali — Ghiasi Quantum LLC,Marvell Semiconductor, Inc.

Comment Type **TR** *Comment Status* **R** *C2M reference channel (E)*

Should make it clear that host and module chnanel include any packages

SuggestedRemedy

Replace Host channel with "Host channel and package"
Replace Module channel with "Module channel which may include a package"

Response *Response Status* **C**

REJECT.
The host channel is explicitly defined and depicted as being bookended by TP0d/TP5d, which represent output and input "at the device-to-package interface" (176D.7).
Similarly the module channel is bookended by TP1d/TP4d with a similar definition.
The details of internal host and module structure are implementation dependent and are irrelevant for their specifications.
The proposed wording change does not improve the technical clarity or accuracy of the text.

Cl **176D** *SC* **176D.7.2** *P* **825** *L* **41** # 244

Ghiasi, Ali — Ghiasi Quantum LLC,Marvell Semiconductor, Inc.

Comment Type **TR** *Comment Status* **A** *C2M reference channel (E)*

Given HCB has a loss of ~3.8 dB adding a module will increase the loss to 34.1 dB

SuggestedRemedy

Not a clean option here some options that can be considered:
- Adjust host partial channel loss by up to 2.1 dB (not a good option)
- Not to use module package maybe the simplest option
- Another viable option is to use 4 mm package with partial module PCB adjsuted for total of 3.8 dB loss
see ghiasi_3dj_01_2605

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by the response to comment I-174.

Cl **176D** *SC* **176D.7.2** *P* **825** *L* **49** # 245

Ghiasi, Ali — Ghiasi Quantum LLC,Marvell Semiconductor, Inc.

Comment Type **TR** *Comment Status* **A** *C2M reference channel (E)*

Module packages if exist are core-less

SuggestedRemedy

In case of core-less package you just have stack via through the ABF layers, suggest replacing 1.8 mm with 0.25 mm.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The resolution of comment I-174 removed the module's device package model altogether.

Resolved using the response to comment I-174.

Cl **176D** *SC* **176D.7.2** *P* **825** *L* **26** # 246

Ghiasi, Ali — Ghiasi Quantum LLC,Marvell Semiconductor, Inc.

Comment Type **TR** *Comment Status* **A** *C2M reference channel (E)*

Host package model in the is package B and not calling the package host class B disconnects one from the knowledge in CL 178/179

SuggestedRemedy

Add to the name , host class B

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
There are no package or host classes for AUI-C2M, and moreover, "host class B" in the suggested remedy is not defined anywhere else.
The device package model for the host is based on the "package class B" model defined in Table 176C-9, Table 178-14, and Table 179-19, but with a single "Transmission line 1 length" unlike the other tables.
Since there is also a different "package class A" model, the similarity to "class B" is worth mentioning in an informative NOTE at the bottom of Table 176D-6.

Change the existing note to "NOTE 1" and add the following note:
NOTE 2-the host device package model is similar to the "class B" device package model defined in Table 176C-9 but with a specific value for "Transmission line 1 length".

Cl **176D** *SC* **176D.7.2** *P* **824** *L* **41** # 269

Ghiasi, Ali — Ghiasi Quantum LLC,Marvell Semiconductor, Inc.

Comment Type **TR** *Comment Status* **R** *C2M reference channel (E)*

COM reference model provided is module-chip and only used for interference tolerance, but current transmitter relies on jitter output which is incomplete not having a reference COM model

SuggestedRemedy

Create an ASIC-Module COM model and also a Module-ASIC COM model. If there is interest in TF, I can provide it COM models.

Response *Response Status* **U**

REJECT.
The COM reference model applies to both host-to-module and module-to-host channels. The direction may require different inputs to the analysis (s-parameter files, port order, and possibly 802.3 COM tool configuration sheets) but these are not part of the standard.
The COM reference model is not used in jitter measurement.

The suggested remedy does not include sufficient detail to implement.

Cl **179** *SC* **179.9.4.2.1** *P* **425** *L* **17** # 270

Ghiasi, Ali — Ghiasi Quantum LLC,Marvell Semiconductor, Inc.

Comment Type **TR** *Comment Status* **R** *(withdrawn) (CG)*

Defining just the corner frequency of CRU is not sufficent for accurate measurment

SuggestedRemedy

change to: (CRU) with a corner frequency of 4 MHz and a slope of 20 dB/decade with maximum CRU jitter transfer peak of =0.3 dB.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **179** *SC* **179.9.4.2.1** *P* **430** *L* **33** # 271

Ghiasi, Ali — Ghiasi Quantum LLC,Marvell Semiconductor, Inc.

Comment Type **TR** *Comment Status* **R** *(withdrawn) (CG)*

Defining just the corner frequency of CRU is not sufficent for accurate measurment

SuggestedRemedy

change to: (CRU) with a corner frequency of 4 MHz and a slope of 20 dB/decade with maximum CRU jitter transfer peak of =0.3 dB.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **179** *SC* **179.9.4.7.1** *P* **430** *L* **22** # 272

Calvin, John — Keysight Technologies

Comment Type **TR** *Comment Status* **A** *Jitter (E)*

For the Jrms decomposition method, the highly prescriptive text of "using the method described in this subclause" should be softened to permit "equivalent implementations" as would be required in an under sampled measurement system (Equivalent Time /DCA platform)

SuggestedRemedy

Replace the text at line 22 from "using the method described in this subclause" to "using the method described in this subclause or equivalent"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Equivalent methods of measurements are implicitly allowed.
However, there are other places in the draft where explicit statements about equivalent methods are mentioned:
In the specification of TDECQ in 180.9.6.1: "Other equivalent measurement implementations may be used with suitable calibration."
In the SRS setup descriptions in 181.9.16 and 183.9.16: "alternative test setups that generate equivalent stress conditions may be used"

Change "using the method described in this subclause" to "using the method described in this subclause or equivalent methods" in 179.9.4.7.1 and 179.9.4.7.2.

Cl **179** *SC* **179.9.4.7.2** *P* **430** *L* **52** # 273

Calvin, John — Keysight Technologies

Comment Type **TR** *Comment Status* **A** *Jitter (E)*

For the JH4U decomposition method, the highly prescriptive text of "using the method described in this subclause" should be softened to permit "equivalent implementations" as would be required in an under sampled measurement system (Equivalent Time /DCA platform)

SuggestedRemedy

Replace the text at line 52 from "using the method described in this subclause" to "using the method described in this subclause or equivalent"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment I-272.

Cl **176D** *SC* **176D.6.4** *P* **821** *L* **34** # 274

Calvin, John — Keysight Technologies

Comment Type **TR** *Comment Status* **R** *SNR_ISI (E)*

SNRISI has a limit of 26dB. The pass/fail statistics gathered on early system/switch designs are having trouble passing this number. Particularly any host with a HH channel ranges from 24-25dB and fails current specifications.

SuggestedRemedy

A presentation will be offered to support this comment. Propose changing the 26dB target value for SNRISI to 24dB would offer margin on systems that are known to interoperate, but are failing this spec.

Response *Response Status* **U**

REJECT.
No related presentation was provided for review at the CRG meeting.
The comment does not provide sufficient evidence to support the proposed changes.

Cl **179** *SC* **179.9.4.6** *P* **429** *L* **45** # 275

Calvin, John — Keysight Technologies

Comment Type **TR** *Comment Status* **A** *SNDR (E)*

Signal-to-noise-and-distortion ratio has recently settled on a revised set of values depending on presets (Table 179-9). The SNDR method still exhibits a strong dependency on overall channel loss, and reduces in value as a function of higher loss. Systems with a HH channel range in SNDR values of around 29dB, which is well short of the required 33.5 needed for Preset 1. The systems interop well, with reasonable BLER values, but fail SNDR.

SuggestedRemedy

Examine methods to make Psignal and Sigma e found in equation 179-8 more channel loss resilient. POJ methods may be applied here. The interop report out: https://www.ieee802.org/3/dj/public/26_01/calvin_3dj_01a_2601.pdf Page 22 shows SNDR values in 7 our of 12 test cases fail the SNDR limits. Alternately the table values found in Table 179-9 could be backed off 1.5dB across the board for all presets.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In 179.9.4.2.1, change N_p from 400 to 700.

The CRG reviewed the contribution <https://www.ieee802.org/3/dj/public/26_05/calvin_3dj_01a_2605.pdf>.
CRG discussion following the the presentation included:
- The POJ methods" mentioned in the suggested remedy are not covered by the presentation and there isn't sufficient detail for the CRG to understand the proposed change.
- Relaxing the SNDR limits would impact the link budget unless COM parameters are also changed, which would affect cable assembly compliance.
- Examples of failing the specifications do not necessarily indicate that it is impossible to meet them.

Cl **176D** *SC* **176D.6.4** *P* **821** *L* **22** # 276

Calvin, John — Keysight Technologies

Comment Type **TR** *Comment Status* **R** *C2M specs (E)*

Vf minimum value of .372 still fails the majority of early designs.

SuggestedRemedy

The interop report out:
https://www.ieee802.org/3/dj/public/26_01/calvin_3dj_01a_2601.pdf Page 23 shows 9 out of 12 modules failing Vf. We either need to review the measurement methodology in Vf (which is not new) or consider further reduction of the Vf values to 350mV.

Response *Response Status* **C**

REJECT.
The comment refers to host output v_f (based on the value 0.372) but the data in the presentation referred to in the suggested remedy is for module output (subject of comment #I-277).
The comment does not provide sufficient justification to support the suggested remedy.
[Editor's note: changed Clause/Subclause from 179D/179D.6.4 to 176D/176D.6.4]

Cl **176D** *SC* **176D.6.5** *P* **822** *L* **23** # 277

Calvin, John — Keysight Technologies

Comment Type **TR** *Comment Status* **R** *C2M specs (E)*

Vf minimum value of .389V still fails the majority of early designs.

SuggestedRemedy

The interop report out:
https://www.ieee802.org/3/dj/public/26_01/calvin_3dj_01a_2601.pdf Page 23 shows 9 out of 12 modules failing Vf. We either need to review the measurement methodology in Vf (which is not new) or consider further reduction of the Vf values to 350mV.

Response *Response Status* **U**

REJECT.
The v_f specification is an important component of the COM analysis that supports the loss budget of 32 dB for C2M applications. Reducing the minimum v_f would undermine this analysis and prevent interoperability with worst-case hosts.
The information in the referenced presentation does not justify reducing the v_f limits. It shows that some of the tested modules met the requirements. Devices that failed the requirements might have not been configured correctly or might be non-compliant.
[Editor's note: changed clause/subclause/page from 179D/179D.6.3/821 to 176D/176D.6.5/822]

Cl **178B** *SC* **178B.1** *P* **865** *L* **35** # 278

D'Ambrosia, John — Futurewei Technoogies, U.S. Subsidiary of Huawei

Comment Type **TR** *Comment Status* **A** *APSU conditions (CA)*

This note appears to be in conflict with the implementation in the standard itself - NOTEùAUI components and PMDs that are not specified to support the ILT function or the RTS function as defined in this annex may include equivalent capabilities, however this is beyond the scope of this standard.

However, looking at Table 116-3 as an example, all of these PHY types (not based on 200 Gb/s signaling) - 200GBASE-KR2 / KR4 / CR2 / CR4 have 2 notes -
b: Mandatory for 200GAUI1-C2C
c: Conditional

This is in conflict with the note in 178B.1, as it is noted that:this is beyond the scope of this standard."
If it is beyond the scope of the standard, then it should not be noted.

SuggestedRemedy

Any PHYs that are based on 100 Gb/s should delete any entires in the 178B column - it is beyond the scope of the standard.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment #280.

Cl **116** *SC* **116.1.4** *P* **164** *L* **163** # 279

D'Ambrosia, John — Futurewei Technoogies, U.S. Subsidiary of Huawei

Comment Type **TR** *Comment Status* **A** *APSU conditions (CA)*

For ILT / RTS entry - APSU can not be described as mandator for any 200Gb/e, 400 Gb/s, or 800 Gb/s PHY as the PHY might be implemented using a 100 Gb/s based AUI.

SuggestedRemedy

Change all PHY type / clause correlation tables where any PHY based on 200 Gb/s signaling needs the ILT/RTS column to be changed from "M" to "C", as it might be implemented with a 100Gb/s based AUI.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment #280.

Cl **116** *SC* **116.1.4** *P* **163** *L* **20** # 280

D'Ambrosia, John — Futurewei Technoogies, U.S. Subsidiary of Huawei

Comment Type **ER** *Comment Status* **A** *APSU conditions (CA)*

Annex 178B is described in the clause as ILT/RTS. Annex 178B is about APSU, which RTS / ILT are functions of, but could cause reader confusion, as support of APSU means support of both functions. Furthermore, when looking at PMD functional specifications, it is denoted as APSU, not ILT/RTS

SuggestedRemedy

Change "RTS / ILT" to "APSU" in Table 116-3 and all PHY type clause correlation tables.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The following contribution was reviewed by the CRG:
https://www.ieee802.org/3/dj/public/26_05/dambrosia_3dj_02_2605.pdf

Implement the proposed changes on slides 5 and 6 of dambrosia_3dj_02_2605 with editorial license.

Cl **118** *SC* **118.1** *P* **184** *L* **40** # 281

D'Ambrosia, John — Futurewei Technoogies, U.S. Subsidiary of Huawei

Comment Type **TR** *Comment Status* **A** *APSU conditions (CA)*

An extender is considered to be an ISL and should be denoted in Table 118-a, as a physical layer clause assocated with 200GMII Extender

SuggestedRemedy

Add table entry in Tabe 118-a
178B - APSU Conditional Note F
Note F - Required when implementing a 200GMII Extender based on 200GAUI-1 C2C or 200GAUI-1 C2M only.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment #280.

Cl **118** *SC* **118.1** *P* **185** *L* **28** # 282

D'Ambrosia, John — Futurewei Technoogies, U.S. Subsidiary of Huawei

Comment Type **TR** *Comment Status* **A** *APSU conditions (CA)*

An extender is considered to be an ISL and should be denoted in Table 118-b, as a physical layer clause assocated with 400GMII Extender

SuggestedRemedy

Add table entry in Tabe 118-b
178B - APSU Conditional Note F
Note F - Required when implementing a 400GMII Extender based on 400GAUI-2 C2C or 400GAUI-2 C2M only.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment #280.

Cl **171** *SC* **171.1** *P* **225** *L* **22** # 283

D'Ambrosia, John — Futurewei Technoogies, U.S. Subsidiary of Huawei

Comment Type **TR** *Comment Status* **A** *APSU conditions (CA)*

An extender is considered to be an ISL and should be denoted in Table 171-1, as a physical layer clause assocated with 800GMII Extender

SuggestedRemedy

Add table entry in Tabe 171-1
178B - APSU Conditional Notee
Note E - Required when implementing a 800GMII Extender based on 800GAUI-4 C2C or 800GAUI-4 C2M only.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment #280.

Cl **171** *SC* **171.1** *P* **226** *L* **20** # 284

D'Ambrosia, John — Futurewei Technoogies, U.S. Subsidiary of Huawei

Comment Type **TR** *Comment Status* **A** *APSU conditions (CA)*

An extender is considered to be an ISL and should be denoted in Table 171-1a, as a physical layer clause assocated with 1.6TMII Extender

SuggestedRemedy

Add table entry in Tabe 171-1a
178B - APSU Conditional Notee
Note C - Required when implementing a 1.6TMII Extender based on 1.6TAUI-8 C2C or 1.6TAUI-8 C2M only.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment #280.

Cl **178** *SC* **178.1** *P* **381** *L* **48** # 285

D'Ambrosia, John — Futurewei Technoogies, U.S. Subsidiary of Huawei

Comment Type **TR** *Comment Status* **A** *APSU conditions (CA)*

Note e states the following -
ILT and RTS functions are mandatory for the 200GBASE-KR1 PMD and 200GAUI-1 C2C.

However, this is incomplete. It is also necessary for the 200GMII Extender if based on a 200GAUI-1.

SuggestedRemedy

Add note "e" to 200GAUI-1 C2C entry.
Add note "f" to 200GMII Extender entry -
f. If the 200GMII Extender is based on a 200GAUI-1,it shall support APSU, as defined in 178B.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment #280.

Cl **178** *SC* **178.1** *P* **382** *L* **31** # 286

D'Ambrosia, John — Futurewei Technoogies, U.S. Subsidiary of Huawei

Comment Type **TR** *Comment Status* **A** *APSU conditions (CA)*

Note e states the following -
ILT and RTS functions are mandatory for the 400GBASE-KR2 PMD and 400GAUI-2 C2C.

However, this is incomplete. It is also necessary for the 400GMII Extender if based on a 400GAUI-2.

SuggestedRemedy

Add note "e" to 400GAUI-2 C2C entry.
Add note "f" to 400GMII Extender entry -
f. If the 4400GMII Extender is based on a 400GAUI-2,it shall support APSU, as defined in 178B.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment #280.

Cl **118** *SC* **118** *P* **184** *L* **1** # 287

D'Ambrosia, John — Futurewei Technoogies, U.S. Subsidiary of Huawei

Comment Type **TR** *Comment Status* **A** *APSU conditions (CA)*

A 200GMII Extender shall support APSU if based on 200GAUI-1

SuggestedRemedy

Add a normative statement that a A 200GMII Extender shall support APSU if based on 200GAUI-1

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment #280.

Cl **118** *SC* **118** *P* **184** *L* **1** # 288

D'Ambrosia, John — Futurewei Technoogies, U.S. Subsidiary of Huawei

Comment Type **TR** *Comment Status* **A** *APSU conditions (CA)*

A 400GMII Extender shall support APSU if based on 400GAUI-2

SuggestedRemedy

Add a normative statement that a A 400GMII Extender shall support APSU if based on 400GAUI-2

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment #280.

Cl **171** *SC* **171.3.3** *P* **233** *L* **8** # 289

D'Ambrosia, John — Futurewei Technoogies, U.S. Subsidiary of Huawei

Comment Type **TR** *Comment Status* **R** *APSU conditions (CA)*

A 800GMII Extender shall support APSU if based on 800GAUI-4.

However, it states here
The TXLS and RXLS signals and tx_link_status variable are only required if the PHY 800GXS is part of a
Physical Layer that supports autonomous path startup (APSU) (Annex 178B).

This would apply to 800GAUI-8, which is not what Annex 178B states.

SuggestedRemedy

Modify this statement -
The TXLS and RXLS signals and tx_link_status variable are only required if the PHY 800GXS is part of a
Physical Layer that supports autonomous path startup (APSU) (Annex 178B).

To

The TXLS and RXLS signals and tx_link_status variable shall be implemented if the PHY 800GXS is supporting a 800GAUI-4.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **171** *SC* **171.3.3a** *P* **234** *L* **10** # 290

D'Ambrosia, John — Futurewei Technoogies, U.S. Subsidiary of Huawei

Comment Type **TR** *Comment Status* **R** *APSU conditions (CA)*

A 1.6TGMII Extender shall support APSU if based on 1.6TAUI-8.
However, it states here
The TXLS and RXLS signals and tx_link_status variable are only required if the PHY 1.6TXS is part of a
Physical Layer that supports autonomous path startup (Annex 178B).

SuggestedRemedy

Modify this statement -
The TXLS and RXLS signals and tx_link_status variable are only required if the PHY 1.6TXS is part of a
Physical Layer that supports autonomous path startup (Annex 178B).

To

The TXLS and RXLS signals and tx_link_status variable shall be implemented if the PHY 1.6TXS is supporting a 1.6TAUI-8.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **176D** *SC* **176D.8.2** *P* **828** *L* **24** # 291

Dudek, Michael — Marvell

Comment Type **T** *Comment Status* **R** *C2M methodology (E)*

Two synchronous samples per UI is potentially insufficient to find the peak to peak voltage if there is significant overshoot in the signal.

SuggestedRemedy

Change to four samples per UI at least when the sampling is synchronous.

Response *Response Status* **C**

REJECT.
There was no consensus to make a change.

Cl **176D** *SC* **176D.7.1** *P* **824** *L* **37** # 292

Dudek, Michael Marvell

Comment Type **E** *Comment Status* **A** *A176D figures (E)*

In figure 176D-6 the note includes "to the center of the edge connector of the module " whereas in Figure 179A-1 it says "The point of demarcation between the MCB and HCB is the
mating point of the MDI connector." and in 179B.2.1 and 179B.3.1 it says "the mating point of the MDI connector". These points should be the same.

SuggestedRemedy

Change "to the center of the edge connector of the module" to "to the mating point of the host connector"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Comment I-107 suggests modifying Figure 176D-6 in a different way, which would remove the NOTE (see
<https://www.ieee802.org/3/dj/public/26_03/ran_3dj_03a_2603.pdf#page=10>).
Resolved using the response to comment I-107.

Cl **180** *SC* **180.9.7** *P* **484** *L* **1** # 294

Dudek, Michael Marvell

Comment Type **TR** *Comment Status* **A** *TDECQ_CER (OI)*

Although the concept behind TDECQcer is promising results presented to date are not sufficiently repeatable (in a reasonable test time) to provide value to the specification

SuggestedRemedy

Delete TDECQcer from the draft (i.e. clauses 180, 181, 182, and 183).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment #I-71.

Cl **180** *SC* **180.9.15** *P* **491** *L* **22** # 295

Dudek, Michael Marvell

Comment Type **E** *Comment Status* **A** *Rx sensitivity (OI)*

This comment is a re-submission of comment #101 against D2.3 where it was ruled out of scope but encouraged to be resubmitted. It would be better to describe the precoding before the details of the BLER test in this Receiver Sensitivity and stressed receiver sensitivity sub sections.

SuggestedRemedy

Move "Precoding (see 176.7.1.2) is enabled if the receiver requests precoding using the ILT function." to page 491 line 10. Also in 180.9.16. Make the equivalent changes in clauses 181, 182 and 183 .

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment #I-44.

Cl **180** *SC* **180.9.15** *P* **491** *L* **18** # 296

Dudek, Michael Marvell

Comment Type **T** *Comment Status* **A** *Rx sensitivity - SHE (OI)*

The note could be misinterpreted as suggesting extrapolation is also needed for higher probabilites resulting in failures with random errors where the measurements meet the requirement without extrapolation

SuggestedRemedy

Insert "for Hm(i)(k) less than 10^-6"before "Extrapolate the measured histogramà..." Also in 180.9.16. Make the equivalent changes in clauses 181, 182 and 183 .

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the response to comment #I-226.

Cl **179** *SC* **179.9.4.7** *P* **430** *L* **11** # 297

Dudek, Michael Marvell

Comment Type **TR** *Comment Status* **A** *Jitter (E)*

This comment is a re-submission of comment #105 on D2.3. With the change to using JH4u, amplitude noise is no longer creating jitter therefore disabling the other lanes should not be done as any true phase noise introduced by the other lanes should be included.

SuggestedRemedy

Delete "JH4u and"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Based on straw poll #TF-5 there is support for the suggested remedy.

Implement the suggested remedy with editorial license.

Straw poll #TF-5 (directional)
I would support the suggested remedy to comment I-297.
Y: (change to enable adjacent transmitters)
N: (keep adjacent transmitters off)
Y: 20 N: 10

Cl **176D** *SC* **176D.6.5** *P* **821** *L* **22** # 298

Dudek, Michael Marvell

Comment Type **TR** *Comment Status* **A** *C2M specs (E)*

As discussed in healey_3dj_01_2601 the module loss allocated in the budget does not align with Rpeak and Vf specifications and the module input interference and jitter tolerance calibration

SuggestedRemedy

Implement the changes proposed in healey_3dj_01_2601

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved using the responses to comments I-174 and I-175.
[Editor's note: changed line from 25 to 22]

Cl **178** *SC* **178.13** *P* **405** *L* **53** # 300

Dudek, Michael Marvell

Comment Type **T** *Comment Status* **A** *PMD variables (E)*

The notes to the tables 179-23 and 179-24 correctly apply to CR, but these tables are normatively referenced by clause 178 where these CR PMD references do not apply but should be replaced by other references.

SuggestedRemedy

In 178.13 Change ôThe PMD control and status variables are identical to those defined in 179.14.ô to ôThe PMD control and status variables are identical to those defined in 179.14, with the exception that references to CR PMDÆs are replaced by references to the equivalent KR PMDÆsô.

Response *Response Status* **C**

ACCEPT.

Cl **179C** *SC* **179C.1** *P* **919** *L* **4** # 301

Dudek, Michael Marvell

Comment Type **TR** *Comment Status* **A** *MDI connector (E)*

Annex 180A provides normative requirements for which fibers should be used when connectors are not fully utilized. Whereas for the equivalent situation for CR there is just a "recommendation" with the use of "should". This was discussed in the March Plenary in ran_3dj_02a_2603

SuggestedRemedy

Implement the change to 179C.1 on slide 7 of ran_3dj_02a_2603

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved using the response to comment I-114.

Cl **180** *SC* **180.9.16** *P* **492** *L* **42** # 302

Dudek, Michael Marvell

Comment Type **TR** *Comment Status* **A** *Stressed Rx sensitivity (OI)*

The frequency of the sinusoidal amplitude interferer in the stressed Rx test is not specified. If it's period is significantly longer than a FEC code-word it will cause significant degradation in BLER for the same BER and TECQ due to it significantly increasing the probability of correlated errors

SuggestedRemedy

Add an addional exception at line 42. "- The frequency of the sinusoidal interferer is greater than 200MHz. Add the same exception to 181.9.16 , 182.9.16 and 183.9.16

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Slides 9 and 10 in the following contribution were reviewed by the CRG:
https://www.ieee802.org/3/dj/public/26_05/issenhuth_3dj_01_2605.pdf

Based on straw poll TF-2 there is clear consensus to make the proposed change.

Implement the suggested remedy with editorial license.

Straw poll TF-2 (directional):
I support resolving comment #302 with the suggested remedy.
Y: 47
N: 10

Cl **179** *SC* **179.9.4.3** *P* **428** *L* **27** # 303

Dudek, Michael Marvell

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

The parameter is called "Level separation mismatch ratio" in table 179-7. but the heading and definition in 179.9.4.3 are called "Transmitter linearity" which is the section title of the reference called in 120D.3.1.2 where RLM is defined. Electrical tables in clause 178, 179, 176C and 176D all have the parameter "Level separation mismatch ratio." The parameters in 178, 179, 176C reference 179.9.4.3, but 176D references 176D.8.6 which is titled "Level Separation mismatch ratio" and does not use "transmitter linearity" in the section. Consistency would be good.

SuggestedRemedy

Change the title of 179.9.4.3 from "Transmitter linearity" to "Level separation mismatch ratio" and also in text on page 428 line 29

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The specified parameter is indeed the level separation mismatch ratio.
Implement the suggested remedy to make subclause titles and table entries consistent across the draft, with editorial license.

Cl **176D** *SC* **176D.8.7** *P* **830** *L* **1** # 304

Dudek, Michael Marvell

Comment Type **E** *Comment Status* **A** *(B1) (E)*

missing "and"

SuggestedRemedy

Change "step size coefficient" to "step size and coefficient"

Response *Response Status* **C**

ACCEPT.

Cl **179** *SC* **179.9.4.7.2** *P* **431** *L* **38** # 305

Dudek, Michael Marvell

Comment Type **TR** *Comment Status* **R** *Jitter (E)*

For calculating JH4u from Djdd and RJrms Q4 is used with a value of 3.891 approximating Q(Q4) of 5x10^-5 (equation 179-13). However for the calculation of ADD and sigmaRj from JH4u and Jrms in the interference tolerance test in 179.9.5.3.3 Q4d is used with a value of 3.719. approximating Q(Q4d)-1x10^-4 . That means that Add is not equal to Djdd. and sigmaRJ is not equal to RJRMS. This seems strange. (Note the same Q4d is also used in 178.9.3.4.2)

SuggestedRemedy

Reconcile this difference. Change "Q4" to "Q4d" with value 3.719 in 4 places in 179.9.4.7.2 and change the Q value to 1x10^-4.

Response *Response Status* **U**

REJECT.
Equations (179-17) and (179-18) are solutions of standard deviation from a measured quantile, and use Q4d.
The term Q4d is consistent with Q3d defined in 162.9.5.3.3, which was changed from Q3 by the resolution of comment #209 against 802.3ck D2.0 (see <www.ieee802.org/3/ck/comments/draft2p0/8023ck_D2p0_final_closedcomments.pdf#page=45> and related contributions <https://www.ieee802.org/3/ck/public/adhoc/apr14_21/hidaka_3ck_adhoc_01_041421.pdf> and <https://www.ieee802.org/3/ck/public/21_05/li_3ck_02c_0521.pdf>).

The calculation in Equation (179-13) uses Q4 to convert the parameters of the Dual Dirac model to the 5e-5 quantile on each side, to calculate the "all but 1e-4" range. This is a different calculation and it can be tested to yield a sufficiently accurate result. Using Q4d would yield the 1e-4 quantile, which would result in "all but 2e-4" range instead.

There was no consensus to make the suggested change.

Cl **178** *SC* **178.9.2** *P* **389** *L* **32** # 306

Dudek, Michael Marvell

Comment Type **T** *Comment Status* **A** *TX EQ (E)*

The reference 179.9.2.4 is only appropriate for the coefficient step size. The values at minim and maximum state should not be referencing 179.9.2.4 they should reference the Coefficient ranges in 179.9.4.2.5

SuggestedRemedy

Add the appropriate references to 179.9.4.2.5. as is done in Table 179-7. Make the same change in table 176C-2

Response *Response Status* **C**

ACCEPT.

[Editor's note: CC: 178, 176C]

Cl **179** *SC* **179.9.4** *P* **424** *L* **24** # 309

Dudek, Michael Marvell

Comment Type **T** *Comment Status* **A** *Jitter (E)*

With the change from J4U to JH4u this jitter parameter is no longer expected to be dependent on channel loss and therefore there shouldn't be different values for different host classes and should match the value allocated to the die.

SuggestedRemedy

Remove the different host classes and have a single value of 0.118

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Note that 0.118 is the JH4u limit for module output in Table 176D-3 which assumes the lowest insertion loss to the measurement point (approx. 9 dB).
CR host channels assume (approx.) 12, 17, and 22 dB.

Implement the suggested remedy with editorial license.

Cl **178** *SC* **178.9.2** *P* **389** *L* **43** # 310

Dudek, Michael Marvell

Comment Type **T** *Comment Status* **A** *Jitter (E)*

With the change from J4U to JH4u this jitter parameter is no longer expected to be dependent on channel loss and therefore there shouldn't be different values for different package classes and should match the value allocated to the die

SuggestedRemedy

Remove the different package classes and have a single value of 0.118 Make the same change in 176C

Response *Response Status* **C**

ACCEPT.

Cl **176D** *SC* **176D.6.4** *P* **821** *L* **38** # 311

Dudek, Michael Marvell

Comment Type **T** *Comment Status* **R** *jitter (E)*

With the change from J4U to JH4u this jitter parameter is no longer expected to be dependent on channel loss and therefore there shouldn't be different values for the host and module and the value should match the value allocated to the die

SuggestedRemedy

In table 176D-2 change JH4U value to 0.118

Response *Response Status* **C**

REJECT.
The adopted JH4u measurement is intended to reduce the effect of channel loss on the measurement.
However, data provided with the JH4u proposal (see <https://www.ieee802.org/3/dj/public/25_11/calvin_3dj_01a_2511.pdf#page=8>) suggests that in some cases there is still a higher JH3u in measurements after 31 dB compared to the same transmitter after 12 dB.
Therefore, keeping a relaxed limit for host output JH4u after 32 dB, as in D3.0, may be justified.

Comment #I-297 is related and suggests that transmitters on other lanes should be active in JH4u measurement. JH4u is likely sensitive to additive noise too and results would likely degrade even if the phase jitter is the same. Data supporting the proposed change has not been provided.

There was no consensus to make the proposed change.

Cl **176D** *SC* **176D.6.4** *P* **821** *L* **33** # 312

Dudek, Michael — Marvell

Comment Type **TR** *Comment Status* **R** *SNDR (E)*

The SNDR for the host output is measured with the worst case next agressor after the major loss of the channel. (i.e. close to the end of the channel). It is unrealistic and unnecessary to meet the values at the CR test point

SuggestedRemedy

Change the requirement (just for the host output) from "Table 179-9" to 27.5dB. On line 17 Delete "The minimum SNDR requirements in Table 179û9 apply for both module output and host output."

Response *Response Status* **U**

REJECT.

The CRG discussion indicated concerns about the proposed change, and lack of data to support it.

There was no consensus to make a change.

Cl **176D** *SC* **176D.8.13.1** *P* **833** *L* **39** # 313

Dudek, Michael — Marvell

Comment Type **TR** *Comment Status* **A** *Test channel calibration (E)*

The test channel for both Host test and Module itest L is just a mated test board. The loss value in Table 176D-11 is 9+/-2dB but the Mated test board loss given in 179B does not match this. (The value wasn't changed here when the MCB loss was changed).

SuggestedRemedy

Change "9+/-2" dB to "8+/-2" dB, or better delete the numbers and replace with "note a" rewording note a to "The test channel consists of mated MCB and HCB with no frequency-dependent attenuator."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Notes within tables are informative. Table footnotes are normative but need something to be attached to.
It is preferable to require that the actual pair of mated test fixtures used in the test is subject to some IL requirement.

Change "9+/-2" dB to "8+/-2" dB.

Cl **177** *SC* **177.5.8** *P* **367** *L* **38** # 317

Nicholl, Gary — Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **A** *(B1) (L)*

To ensure that the the convolutional deinterleaver shall correctly perform the inverse function of the convolutional interleaver function, it is important that the convolutional deinterleaver is aligned to the 120-bit block structure in the same way as the convolution interleaver.

The alignment between the convolution interleaver and the 120-bit block structure in the transmit direction is defined by the following sentence in 177.4.3:
"The first RS-FEC symbol-quartet within a 120-bit block is always from delay line 0."

Need a similar sentence in the receive direction, to ensure that the first RS-FEC symbol-quartet within a 120-bit block is always sent to delay line 0.

SuggestedRemedy

Add the following sentence at the end of the second paragraph of 177.5.8:
"The first RS-FEC symbol-quartet (40 bits) within a 120-bit block received from the 120-bit block demultiplexer is sent to Delay Line 0."

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #413.

Cl **179C** *SC* **179C.2.3** *P* **926** *L* **34** # 324

Kocsis, Sam — Amphenol Corporation

Comment Type **TR** *Comment Status* **A** *Normative references (Bx) ?*

This section is the primary place to use the normative reference SFF-8665.

SuggestedRemedy

Add sentence "The combination of connector, cage, and module that can be used to create a QSFP224 solution is defined in SFF-8665, Rev x.x.x, yyyy-mm-dd."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The implementation of a "QSFP224" solution requires a specific set combination of components.
Those components are defined in SFF-TA-1027. The reference to SFF-8665 is redundant and the backwards compatibility of older QSFP+ hardware is not applicable. The reference to SFF-8665 does not appear anywhere else in the document and can be removed in subclause 1.4.

Delete the reference to SFF-8665 in subclause 1.4.
Impelment with editorial license.

Cl **179B** *SC* **179B.5.4** *P* **917** *L* **41** # 333

Kocsis, Sam — Amphenol Corporation

Comment Type **TR** *Comment Status* **A** *(B1) (E)*

Table 179B-5 does not exist.

SuggestedRemedy

Remove Item TF8 from the table.

Response *Response Status* **W**

ACCEPT.

Cl **179C** *SC* **179C.1** *P* **918** *L* **15** # 334

Kocsis, Sam — Amphenol Corporation

Comment Type **ER** *Comment Status* **A** *(B1) (E)*

The reference to "multi-lane" connectors is not necessary.

SuggestedRemedy

Remove the sentence "The SFP-DD224, QSFP224, QSFP-DD1600, and OSFP1600 are also referred to as multilane
connectors.".

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
The distinction made by this sentence is not used anywhere, so it is not necessary.
Note that comment #345 suggests removal of SFP224, which would make all connectors multi-lane.
Implement the suggested remedy with editorial license.

Cl **178A** *SC* **178A.2** *P* **863** *L* **28** # 347

Kocsis, Sam — Amphenol Corporation

Comment Type **TR** *Comment Status* **A** *SCMR_CH definition (B1) (E)*

The lack of nomenclature around the terms of sigma_ts and VCMch used in calculating SCMR_CH can be confusing for the reader.

SuggestedRemedy

Add the following "nomenclature" to clarify the terms. sts is "the channel-induced differential timing noise" calculated using Equation (178A-56) and Equation (178A-57).
VCMch is "the channel-generated common-mode voltage" calculated using Equation (178A-58) through Equation (178A-60).

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
In 178A.2, define sigma_ts to be the "RMS value of the signal" and VCM_CH to be the "common-mode peak-to-peak voltage at the channel output due to channel differential-mode to common-mode conversion".
Implement with editorial license.

Cl **179B** *SC* **179B.4.1** *P* **910** *L* **24** # 348

Kocsis, Sam — Amphenol Corporation

Comment Type **TR** *Comment Status* **A** *FOM_ILD (E)*

In an effort to reduce the variability across mated test fixtures, the FOM_ILD should be computed with a rise time of 5ps, consistent with other metrics in Annec 179B.

SuggestedRemedy

Update Tt from 6ps to 5ps.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The CRG discussion clarified that this change is tightening the test fixture requirements. There was no objection to the suggested remedy.

Implement the suggested remedy.

Cl **179A** *SC* **179A.1** *P* **900** *L* **15** # 349

Kocsis, Sam — Amphenol Corporation

Comment Type **ER** *Comment Status* **R** *(B1) (E)*

missing "the"

SuggestedRemedy

Change sentence from "This annex provides information on transmitter, receiver, and channel parameters associated with test points
TP0d and TP5d", to "This annex provides information on the transmitter, receiver, and channel parameters associated with test points
TP0d and TP5d"

Response *Response Status* **W**

REJECT.
The sentence is correct as written (this annex addresses some parameters, not necessarily all parameters). It is consistent with 162A.1, 136A.1, and 92A.1

Cl **179A** *SC* **179A.1** *P* **900** *L* **23** # 350

Kocsis, Sam — Amphenol Corporation

Comment Type **ER** *Comment Status* **A** *(B1) (E)*

missing "the"

SuggestedRemedy

Change sentence from "TP0d is
depicted in link block diagram of Figure 179û2." to "TP0d is
depicted in the link block diagram of Figure 179û2."

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
change from
"TP0d is depicted in link block diagram of Figure 179-2"
to
"TP0d is depicted in Figure 179-2"
Apply a similar change in 179A.3 for TP5d.

Cl **179A** *SC* **179A.1** *P* **900** *L* **40** # 351

Kocsis, Sam — Amphenol Corporation

Comment Type **ER** *Comment Status* **A** *(B1) (E)*

missing " ".

SuggestedRemedy

Change "3.45dB" to "3.45 dB".

Response *Response Status* **W**

ACCEPT.

Cl **176D** *SC* **176D.8.13.2** *P* **832** *L* **6** # 352

Ghiasi, Ali — Ghiasi Quantum LLC,Marvell Semiconductor, Inc.

Comment Type **TR** *Comment Status* **R** *(B1) (E)*

The description for host test is not clear enough for average reader

SuggestedRemedy

Create a figure starting with Figure 176D-7b but add module package, host package, and partial host channel

Response *Response Status* **W**

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

Cl **176D** *SC* **176D.8.13.2** *P* **832** *L* **8** # 353

Ghiasi, Ali — Ghiasi Quantum LLC,Marvell Semiconductor, Inc.

Comment Type **TR** *Comment Status* **R** *(B1) (E)*

The description for module test is not clear enough for average reader

SuggestedRemedy

Create a figure starting with Figure 176D-8b but add module package and host package

Response *Response Status* **W**

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

Cl **176D** *SC* **176D.6.4** *P* **821** *L* **37** # 354

Ghiasi, Ali — Ghiasi Quantum LLC,Marvell Semiconductor, Inc.

Comment Type **TR** *Comment Status* **R** *C2M methodology (E)*

TP1a has no composite eye penalty

SuggestedRemedy

Add EECQ per definition in the OIF 112G-RTLR with max limit of 9 dB and following exceptions BT4 filter 60 GHz, reference equalizer per definition in table 176D-7

Response *Response Status* **U**

REJECT.
Resolved using the response to comment I-242.

Cl **176D** *SC* **176D.8.13.1** *P* **833** *L* **44** # 355

Ghiasi, Ali — Ghiasi Quantum LLC,Marvell Semiconductor, Inc.

Comment Type **TR** *Comment Status* **R** *C2M methodology (E)*

Interference penalty has no composite measurable penalty and given COM may differ from actual stress generator may result in under/over stress test condition

SuggestedRemedy

Add EECQ per definition in the OIF 112G-RTLR with max limit of 9 dB and following exceptions BT4 filter 60 GHz, reference equalizer per definition in table 176D-7

Response *Response Status* **U**

REJECT.
Resolved using the response to comment I-242.

Cl **178B** *SC* **178B.8.2.1** *P* **885** *L* **18** # 356

Slavick, Jeff — Broadcom Inc

Comment Type **T** *Comment Status* **A** *Variables (CA) (B1)*

Rewording the 2nd sentence defining remote_rts behavior can help the reader understand its behavior better.

SuggestedRemedy

Change: "If mr_training_enable is true and the ôcontinue trainingö bit of the control field of received training frames on all lanes of the interface is zero then remote_rts is set to true, otherwise it is set to false."
To: "If mr_training_enable is true then remote_rts is set to true when the received training frames on all lanes of the interface have the ôcontinue trainingö bit set to zero (see 178B.7.4.2), otherwise it is set to false."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

Cl **169** *SC* **169.1.4** *P* **205** *L* **19** # 357

Slavick, Jeff — Broadcom Inc

Comment Type **TR** *Comment Status* **R** *(B1) (CA)*

In the copper tables ILT/RTS is listed as conditional for PHYs that don't use 178B but with a footnote stating it's mandatory for 800GAUI-4 C2M/C2C. Currently these PHYs don't use ILT/RTS, so the conditional value is based on the existence of a 800GAUI-4 being present.

SuggestedRemedy

In Table 169-3a Add a new footnote that says "Mandatory for 800GAUI-4 C2C and 800GAUI-4 C2M." and replace the footenote b in the 178B column with a reference to this new footnote.

Response *Response Status* **W**

REJECT.
The requirement for ILT/RTS is conditional upon there being an 800GAUI-4 in the PHY. Thus these are marked with C with footnote "b" pointing us to the PMD clause.
The PMD clause repeats that ILT/RTS is conditional with the footnote 'd": "ILT and RTS functions are mandatory for the 800GAUI-4 C2C and 800GAUI-4 C2M."
Thus the information request by the comment and suggested remedy is already provided.
The approach taken was to avoid these summary tables in 169 from blowing up with special cases for the various PMD types. Instead, the special cases are taken care of in the PMD clause.

Cl **177** *SC* **177.5.5** *P* **366** *L* **42** # 361

Slavick, Jeff — Broadcom Inc

Comment Type **TR** *Comment Status* **A** *(B1) (L)*

The definition of the bin_counters in Clause 177 and 184 are not entirely accurate. It states that they count for exactly k corrected bits, but then the highest bin also increments if you changed k or more bits.
Also, stating bin_0 is counting codewords received with no detectable errors would be useful to clarify its behavior.

SuggestedRemedy

Implement the changes shown in https://www.ieee802.org/3/dj/public/26_01/opsasnick_3dj_01b_2601.pdf slides 13 and 14

Response *Response Status* **W**

ACCEPT.

Cl **178B** *SC* **178B.10** *P* **895** *L* **37** # 362

Slavick, Jeff — Broadcom Inc

Comment Type **ER** *Comment Status* **A** *(B1) (CA)*

MDIO mapping table for local_tf_lock has a non-superscript for b. It's written as 151.1b

SuggestedRemedy

Make the b a reference to the footnote b

Response *Response Status* **W**

ACCEPT.

Cl **45** *SC* **45.2** *P* **76** *L* **45** # 364

Slavick, Jeff — Broadcom Inc

Comment Type **TR** *Comment Status* **A** *(B1) (L)*

The register address for Reserved section after 1.1478 appears to be a typo for the first address.

SuggestedRemedy

Change "1.4479 through 1.1499" to "1.1479 through 1.1499"

Response *Response Status* **W**

ACCEPT.

Cl **116** *SC* **116.2.9** *P* **170** *L* **53** # 366

Slavick, Jeff — Broadcom Inc

Comment Type **E** *Comment Status* **A** *(B1) (CG)*

The list of PHYs and AUIs are ordered in PMD first then AUI last rather than 200G then 400G. I would think makes more sense to list all 200G then all 400G.

SuggestedRemedy

Move 200GAUI-C2C and 200G-C2M before 400G-KR2 and perhaps insert an empty line before doing the 400G list.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
A space in a dashed list would be rather odd. It is not necessary to provide an accurate list. Also, conventionally we list interfaces types by Medium length.
Move the 200GAUI-1 C2C/C2M to start of list and 400GAUI-2 C2C/C2M just before 400GBASE-KR2.

Cl **169** *SC* **169.2.10** *P* **207** *L* **7** # 367

Slavick, Jeff — Broadcom Inc

Comment Type **E** *Comment Status* **A** *(B1) (CG)*

The order of the PHY list intermixes DR and FR.

SuggestedRemedy

Move 800G-FR4-500 to be after 800G-FR4

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
By convention we normally list by medium length, not by medium/modulation type. Instead, move 800GAUI-4 C2C/C2M to start of list.

Cl **178B** *SC* **178B.8.2.4** *P* **886** *L* **18** # 369

Slavick, Jeff — Broadcom Inc

Comment Type **TR** *Comment Status* **A** *State diagrams (B1) (CA)*

As shown in https://ieee802.org/3/dj/public/26_03/slavick_3dj_03_2603.pdf Figure 178B-9 could be simplified. During the March plenary some feedback indicated the desire to retain the isl_ready check from SWITCH_CLOCK to FORWARD_RTS. However, local_rts is really an indicator of Yes we're transmitting on mission mode clock. isl_ready is a condition of both local and peer Rx (in training mode) are happy and that has no bearing on the transmitters state. The edits proposed related to https://ieee802.org/3/dj/public/26_03/slavick_3dj_01_2603.pdf cover the concerns that were raised.

SuggestedRemedy

Update Figure 178B-9 per https://ieee802.org/3/dj/public/26_03/slavick_3dj_03_2603.pdf slide 3

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #206.

Cl **174** *SC* **174.1.4** *P* **272** *L* **18** # 370

Slavick, Jeff — Broadcom Inc

Comment Type **T** *Comment Status* **R** *(B1) (CG)*

Is footnote b necessary for 1.6T given all PMDs require it to be present. Yes RTS may not be possible if you have 1.6TAUI-16, but you need to read the spec to know that so what clarification is being made that would otherwise be missed?

SuggestedRemedy

Remove footnote b from Table 174-2 and 174-3.

Response *Response Status* **C**

REJECT.
It is always mandatory for the PMD and for 1.6TAUI-8 but not for 1.6TAUI-16. A clarification for the latter is provided in each PMD clause.

Cl **176** *SC* **176.7.1.2** *P* **341** *L* **18** # 371

Slavick, Jeff — Broadcom Inc

Comment Type **TR** *Comment Status* **A** *ILT reference (L) (B1)*

Figure 178B-10 does not have a state named LINK_READY. It is now named PATH_READY.

SuggestedRemedy

Change LINK_READY to PATH_READY

Response *Response Status* **W**

ACCEPT.

Cl **176** *SC* **176.7.1.2** *P* **341** *L* **22** # 372

Slavick, Jeff — Broadcom Inc

Comment Type **TR** *Comment Status* **A** *(B1) (L)*

ILT is run for both settings of mr_training_enable so stating ILT is disabled is not accurate. In 178B.7 we refer to it as training enabled and training disabled.

SuggestedRemedy

Change "ILT is disabled" to "training is disabled"

Response *Response Status* **W**

ACCEPT.

Cl **177** *SC* **177.5.1.1** *P* **364** *L* **34** # 374

Slavick, Jeff — Broadcom Inc

Comment Type **TR** *Comment Status* **A** *(B1) (L)*

ILT is run for both settings of mr_training_enable so stating ILT is enabled is not accurate. In 178B.7 we refer to it as training enabled and training disabled.

SuggestedRemedy

Change "ILT is enabled" to "training is enabled"

Response *Response Status* **W**

ACCEPT.

Cl **177** *SC* **177.5.1.1** *P* **364** *L* **36** # 375

Slavick, Jeff — Broadcom Inc

Comment Type **TR** *Comment Status* **A** *(B1) (L)*

ILT is run for both settings of mr_training_enable so stating ILT is disabled is not accurate. In 178B.7 we refer to it as training enabled and training disabled.

SuggestedRemedy

Change "ILT is disabled" to "training is disabled"

Response *Response Status* **W**

ACCEPT.

Cl **179** *SC* **179.8.2** *P* **420** *L* **44** # 377

Slavick, Jeff — Broadcom Inc

Comment Type **TR** *Comment Status* **A** *(B1) (E)*

ILT has two data generation modes TRAINING and LOCAL_PATTERN. The training pattern gen is not necessarily the source of the LOCAL_PATTERN stream of symbols.

SuggestedRemedy

In 179.8.2, 180.5.2, 181.5.2, 182.5.2, 183.5.2
Change: "When operating in TRAINING mode, the PAM4 symbol stream on each lane is taken from the output of the training pattern generator in the ILT function (see 178B.7.3.3)."
To: "When operating in TRAINING mode, the PAM4 symbol stream on each lane is provided by the ILT function (see 178B.7)."

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Implement the suggested remedy with editorial license in all indicated locations and elsewhere if necessary.
[CC 179, 180, 181, 182, 183]

Cl **179** *SC* **179.8.4** *P* **421** *L* **26** # 378

Slavick, Jeff — Broadcom Inc

Comment Type **TR** *Comment Status* **A** *(B1) (E)*

remote_rts is a RTS function variable not an ILT function variable.

SuggestedRemedy

change ILT to RTS

Response *Response Status* **W**

ACCEPT.

[Editor's note: Changed line from 27 to 26]

Cl **179** *SC* **179.8.9** *P* **422** *L* **27** # 380

Slavick, Jeff — Broadcom Inc

Comment Type **TR** *Comment Status* **A** *(B1) (E)*

What pattern is sent when tx_mode = local_pattern should apply regardless of the state of mr_training_enable

SuggestedRemedy

In 179.8.9, 180.5.12, 181.5.12, 182.5.12, 183.5.12
Remove "when mr_training_enable is false and"

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
The phrase is indeed not required.
The effect of local_pattern in conjunction with mr_training_enable should be based on definitions in Annex 176B rather than in the PMD clauses.

In the indicated locations, change from
"When mr_training_enable is false and tx_mode = local_pattern"
to
"When tx_mode = local_pattern"
Implement with editorial license.
[CC 179, 180, 181, 182, 183]

Cl **179** *SC* **179.8.10** *P* **422** *L* **36** # 381

Slavick, Jeff — Broadcom Inc

Comment Type **TR** *Comment Status* **A** *ILT (B1) (CA)*

If we're going to call out ILT needs to be reset, so should RTS.

SuggestedRemedy

change "ILT function" to "ILT and RTS functions"

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
The proposed change in the suggested remedy improves the accuracy of the draft. Note that similar text is not provided in the PMD reset subclauses in clauses 180 through 183, though it is equally relevant there.

Implement the suggested remedy in 179.8.10.
Also, in 180.5.6, 181.5.6, 182.5.6, 183.5.6, and other places as appropriate add the following text:
"PMD reset shall reset the ILT and RTS functions associated with the PMD (see <ref>)"
with the appropriate reference.
Implement with editorial license.
[CC 178, 179, 180, 181, 182, 183]

Cl **176C** *SC* **176C.4** *P* **797** *L* **3** # 382

Slavick, Jeff — Broadcom Inc

Comment Type **E** *Comment Status* **A** *(B1) (E)*

The acronym RTS has already be referred to.

SuggestedRemedy

In 176C.4 and 176D.4: Change "ready-to-send (RTS)" to "RTS"

Response *Response Status* **C**

ACCEPT.

Cl **178B** *SC* **178B.7.7** *P* **880** *L* **42** # 383

Slavick, Jeff — Broadcom Inc

Comment Type **TR** *Comment Status* **A** *(B1) (CA)*

Now that we specify a specific pattern to transmit when training is disabled (local_pattern), an implementation could potentially do auto polarity correction.

SuggestedRemedy

Change: "NOTEùPolarity detection and correction is not available when training is disabled."
To: "NOTEùWhen training is disabled support of polarity detection and correction is implementation dependent."

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

Cl **178B** *SC* **178B.10** *P* **895** *L* **22** # 384

Slavick, Jeff — Broadcom Inc

Comment Type **TR** *Comment Status* **A** *Management (CA) (B1)*

Table 178B-6 says its control variables but many status variables are listed in it.

SuggestedRemedy

Move the following from Table 178B-6 to Table 178B-7:
training_status
coef_sts
ic_sts
local_tf_lock
remote_tf_lock
local_rx_ready
remote_rx_ready
remote_rts

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

Cl **45** *SC* **45.2.1.96** *P* **90** *L* **0** # 385

Slavick, Jeff — Broadcom Inc

Comment Type **TR** *Comment Status* **A** *(B1) (L)*

The descriptions for 45.2.1.96 point to the ILT clauses and we haven't added 178B to those lists.

SuggestedRemedy

Update the following clauses to be:
45.2.1.96.1 Receiver status 0 (1.151.0)
This bit maps to the state variable rx_trained as defined in 72.6.10.3.1, local_trained in 136.8.11.7.1 and local_rx_ready in 178B.8.3.1.
45.2.1.96.2 Frame lock 0 (1.151.1)
This bit maps to the state variable frame_lock as defined in 72.6.10.3.1 and local_tf_lock in 136.8.11.7.1 and 178B.8.3.1.
45.2.1.96.3 Startup protocol status 0 (1.151.2)
This bit maps to the state variable training as defined in 72.6.10.3.1, 136.8.11.7.1 and 178B.8.3.1.
45.2.1.96.4 Training failure 0 (1.151.3)
This bit maps to the state variable training_failure as defined in 72.6.10.3.1, 136.8.11.7.1 and 178B.8.3.1.

Response *Response Status* **W**

ACCEPT.

Cl **178B** *SC* **178B.10** *P* **895** *L* **22** # 386

Slavick, Jeff — Broadcom Inc

Comment Type **TR** *Comment Status* **A** *Management (CA) (B1)*

Bit 151.2 is mapped to the variable "training" for the other two startup protocols.

SuggestedRemedy

Change training_status to training.

Response *Response Status* **W**

ACCEPT.

Cl **178B** *SC* **178B.10** *P* **895** *L* **0** # 387

Slavick, Jeff — Broadcom Inc

Comment Type **TR** *Comment Status* **A** *Management (CA) (B1)*

training_status and rts_status are not mapped to MDIO registers.

SuggestedRemedy

Assign the bits in Table 45-133c as follows:
1.1476.14:13 | rts_status | 0 - FAIL, 1 - IN_PROGRESS, 2- READY, 3 - OK
1.1476.11:10 | training_status | 0 - FAIL, 1-IN_PROGRESS , 2 - READY, 3-OK
In Table 178B-7 add rows for rts_status and training_status referencing those bit assignments.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license.
[Editor's note: CC 178B, 45]

Cl **180** *SC* **180.9.6.4** *P* **480** *L* **32** # 392

Swenson, Norman — Nokia Corporation,Norman Swenson Consulting,Point

Comment Type **ER** *Comment Status* **A** *TDECQ (Bx) (OI)*

"The test pattern specified for TDECQ (see Table 180û13)à" The test pattern for TDECQ is not specified in Table 180-13. It is specified in Table 180-14 in combination with Table 180-13.

SuggestedRemedy

Change Table 180-13 to Tables 180-13 and 180-14.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change
"The test pattern specified for TDECQ (see Table 180-13) is transmitted repetitively"
to
"The test pattern specified for TDECQ (see Table 180-14) is transmitted repetitively"

Cl **177** *SC* **177.1** *P* **354** *L* **4** # 398

Opsasnick, Eugene Broadcom Inc.

Comment Type **E** *Comment Status* **A** *(B1) (L)*

In Figure 177-2, the input and output UNITDATA signals at the top of figure use the index "i" to represent n input lanes and output lanes. "n" is defined on the previous page, but "i" is not defined until later in the subclause. On the bottom of the figure the UNITDATA input & output lanes are indexed as "*_0:n-1". This is more consistent with the representation of a variable number of I/O lanes as shown in other clauses (e.g. Figure 176-2 on page 321).

SuggestedRemedy

In Figure 177-2 on page 354:

change:
"FEC:IS_UNITDATA_i.request"
to:
"FEC:IS_UNITDATA_0:(n-1).request"

change:
"FEC:IS_UNITDATA_i.indication"
to:
"FEC:IS_UNITDATA_0:(n-1).indication"

Response *Response Status* **C**

ACCEPT.

Cl **171** *SC* **171.6.1** *P* **235** *L* **48** # 399

Opsasnick, Eugene Broadcom Inc.

Comment Type **E** *Comment Status* **A** *(B1) (L)*

Lines 48-51 on page 236 contain one very long run-on sentence that should be broken up into separate sentences. It might also be better to separate the equation from the definition of the variables.

SuggestedRemedy

Replace the text in 171.6.1 with:
"The variable tx_am_sf is set as follows:
tx_am_sf<2:0> = {FEC_degraded_SER + rx_local_degraded,0,0}

FEC_degraded_SER and rx_local_degraded are defined in 172.2.6.2.2 for DTE 800GXS and in 175.2.5.3 and 175.2.5.5 for DTE 1.6TXS. The "+" symbol denotes a logical OR."

Response *Response Status* **C**

ACCEPT.

Cl **171** *SC* **171.6.2** *P* **236** *L* **4** # 400

Opsasnick, Eugene Broadcom Inc.

Comment Type **ER** *Comment Status* **A** *(B1) (L)*

Lines 4-7 on page 236 contain one very long run-on sentence that should be broken up into separate sentences. It might also be better to separate the equation from the definition of the variables.

It is also very confusing to assign this "TX" variable from the RX inputs. It should be explained that the "tx_am_sf" variable is actually propaging in the RX direction.

SuggestedRemedy

Replace the text in 171.6.2 with:
"The variable tx_am_sf is set as follows:
tx_am_sf<2:0> = {RXRD,RXLD, 0}

RXRD and RXLD are signals from the PCS on the PCS service interface. They are are defined in 172.1.5.1 for the PHY 800GXS and in 175.1.4.1 for the PHY 1.6TXS. Note that for the PHY XS, the tx_am_sf variable is used in the alignment markers of the data propagating in the RX direction towards the MAC.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Replace the text in 171.6.2 with:

"The variable tx_am_sf is set as follows:
tx_am_sf<2:0> = {RXRD,RXLD, 0}

RXRD and RXLD are signals from the PCS on the PCS service interface. They are are defined in 172.1.5.1 for the PHY 800GXS and in 175.1.4.1 for the PHY 1.6TXS."

Cl **178** *SC* **178.14.4.2** *P* **409** *L* **42** # 401

Opsasnick, Eugene Broadcom Inc.

Comment Type **E** *Comment Status* **A** *(B1) (E)*

in the table row for PC10 "Training", the Value/Comment column capitalizes the value TRUE. The rest of 802.3dj seems to always keep Boolean values "true" and "false" in lower case, even though the base standard, IEEE802.3-2022, seems to have a mix of uppercase and lowercase.

SuggestedRemedy

Change "TRUE" to "true" on line 42 of page 409.

Response *Response Status* **C**

ACCEPT.

Cl **176** *SC* **176.4.4.2** *P* **332** *L* **38** # 402

Opsasnick, Eugene Broadcom Inc.

Comment Type **ER** *Comment Status* **A** *(B1) (L)*

The paragraph starting at line 38 on page 332 contains cross-references for variable definitions and defines the value of x for four separate PMA types. It is very wordy and hard to follow. The text can be cleaned up with the addtion of a simple table.

SuggestedRemedy

Replace the text of the second paragraph of 176.4.4.2 with the following text and a new table (Table 176-n) as described below.

Change:
"Any constants, variables, functions, or counters used in the above Clause 119 state diagram which are not defined in the following subclauses shall use the values and definitions from 119.2.6.2 for the 200GBASE-R 8:1 PMA and 400GBASE-R 16:2 PMA, the values and definitions from 172.2.6.2 for the 800GBASE-R 32:4 PMA, and the values and definitions from 175.2.6.2 for the 1.6TBASE-R 16:8 PMA. The variable x in the definitions of 119.2.6.2 is used as an index for the PMA service interface lane number and shall use the values of x = 0 to 7 for the 200GBASE-R 8:1 PMA, x = 0 to 15 for the 400GBASE-R 16:2 PMA, x = 0 to 31 for the 800GBASE-R 32:4 PMA, and x = 0 to 15 for the 1.6TBASE-R 16:8 PMA."
To:
"Any constants, variables, functions, or counters used in the above Clause 119 state diagram which are not defined in the following subclauses shall use the values and definitions of the variables defined in the subclauses referenced in Table 176-N. The index variable x in these definitions is used to indicate the PMA service interface lane number and shall take the values as specified in Table 176-N."

Table 176-N:
column headers:
PMA type | variable references | x
---
4 rows with these entries:
200GBASE-R 8:1 | 119.2.6.2 | 0 to 7
400GBASE-R 16:2 | 119.2.6.2 | 0 to 15
800GBASE-R 32:4 | 172.2.6.2 | 0 to 31
1.6TBASE-R 16:8 | 175.2.6.2 | 0 to 15

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #79.

Cl **177** *SC* **177.4.2** *P* **358** *L* **15** # 403

Opsasnick, Eugene Broadcom Inc.

Comment Type **ER** *Comment Status* **A** *(B1) (L)*

At end of the second paragraph, there is an extra instance of the word "table".

SuggestedRemedy

Replace:
"... are shown in table Table 177-3."
with:
"... are shown in Table 177-3."

Response *Response Status* **W**

ACCEPT.

Cl **186** *SC* **186.7.2** *P* **689** *L* **39** # 404

Opsasnick, Eugene Broadcom Inc.

Comment Type **TR** *Comment Status* **A** *(B1) (L)*

The Status variable "FEC_hi_ser" is missing from Table 186-8.

SuggestedRemedy

Add variable FEC_hi_ser to Table 186-8. Also add it to a bit definitions in Clause 45 if needed.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #11

Cl **186** *SC* **186.4.3** *P* **685** *L* **26** # 407

Opsasnick, Eugene Broadcom Inc.

Comment Type **TR** *Comment Status* **A** *(B1) (L)*

In state diagram Figure 186-19, the assignment "mfas_lock<x> <= false" in the state 5_BAD is redundant with the same assignment in the LOSS_OF_ALIGNMENT state.

See comment #386 against D2.2 (https://www.ieee802.org/3/dj/comments/D2p2/8023dj_D2p2_comments_final_id.pdf) which removed similar assignments from the state diagrams 186-17 and 186-19. This figure is simliar to those and was just missed in the D2.2 comment, and it should be cleaned up now. Note that one fiigure was removed in D2.3 -- Figures 186-19 and 186-20 in Draft 2.2 became Figures 186-18 and 186-19 in Draft 2.3, respectively.

SuggestedRemedy

Remove "mfas_lock<x> <= false" from the 5_BAD state in Figure 186-19.

Response *Response Status* **W**

ACCEPT.

Cl **186** *SC* **186.4.3** *P* **686** *L* **1** # 408

Opsasnick, Eugene Broadcom Inc.

Comment Type **TR** *Comment Status* **R** *state diagram (L) (B1)*

State diagram Figure 186-20 is used for the RX alignment marker location field syncing. As stated in another comment, the statement to "start multiframe_counter" is missing. The state diagram also requires either 8 non-zero values or 5 zero values in a row to match in order to use the new value, but this should not be necessary since the AML value used is after FEC correction. This state diagram is actually two state diagrams that interact and the interaction is not very clear. This process could be simplified to use the aml_value as-is unless the expected RAML location it is part of an uncorrectable codeword. The state diagram can then be simplified and made easier to understand.

SuggestedRemedy

Simplify and make more clear the state diagram figure 186-20 for alignment marker location tracking. A consensus presentation with changes for this state daigram is planned.

Response *Response Status* **W**

REJECT.
The commenter indicated that a related consensus presentation will not be available for the CRG meeting.
The suggested remedy does not provide sufficient detail to implement.

Cl **178B** *SC* **178B.8.3.1** *P* **887** *L* **24** # 409

Opsasnick, Eugene Broadcom Inc.

Comment Type **E** *Comment Status* **A** *Variables (CA) (B1)*

It would be much easier for the reader if the text values of all enumerated variables used in the state diagrams were written in upper case. Note that several variables already use upper case for their enumerated values such as lane_training_status and local_mc_mode and all enumerated variables in 178B.8.2.1.

SuggestedRemedy

In 178B.8.3.1, put the enumerate values in upper case for these variables:
coef_req, coef_sts, ic_req, ic_sel, ic_sts, tx_mode.
In both the variable definitions and when used in the state diagrams or text.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

Cl **120** *SC* **120.1.1** *P* **199** *L* **22** # 410

Opsasnick, Eugene Broadcom Inc.

Comment Type **E** *Comment Status* **R** *(B1) (L)*

The last paragraph on 120.1.1 that defines how the terms SM-PMA and BM-PMA are used in this clause is unecessary since those terms are not used at all in Clause 120. But it should still be noted that this clause defines the bit-muxing PMAs since there is now a new clause which define the SM-PMAs. This is clearly stared in the previous paragraph.

SuggestedRemedy

In 120.1.1, remove the last paragraph:
"When necessary to differentiate the bit-multiplexing PMA (BM-PMA) types defined in this clause from the symbol-multiplexing PMA (SM-PMA) types defined in Clause 176, the term BM-PMA is used. Within this clause the term PMA refers specifically to the BM-PMA."

Response *Response Status* **C**

REJECT.
This paragraph is necessary to provide terminology to reference the bit-multiplexing PMA or BM-PMA. It clarifies that PMA used in this clause is the BM-PMA that is reference in other clauses. Finally, as worded, it avoids having to rename PMA throughout this clause to BM-PMA as otherwise might be necessary.

Cl **120** *SC* **120.1.1** *P* **199** *L* **19** # 411

Opsasnick, Eugene Broadcom Inc.

Comment Type **TR** *Comment Status* **A** *(B1) (L)*

The first sentence states that this clause defines bit-multiplexing for 200GE and 400GE implementations. But there is no indication of when this type of lane multiplexing is needed. Add some color for the reader so this single statement makes sense, Especially since the Clause title implies it is used for all 200/400 type PMAs.

SuggestedRemedy

In 120.1.1change the the first paragraph
from:
"This clause specifies the Physical Medium Attachment (PMA) sublayer types that use bit-multiplexing for 200GBASE-R and 400GBASE-R Physical Layer implementations."
To:
"This clause specifies the Physical Medium Attachment (PMA) sublayer types that use bit-multiplexing for 200GBASE-R and 400GBASE-R Physical Layer implementations. Bit-multiplexing is used for 200GBASE-R PMA interfaces of 8, 4, and 2 lanes, and for 400GBASE-R PMA interfaces of 16, 8 and 4 lanes. Symbol-muxing, as defined in Clause 176, is used for 200GBASE-R PMA interfaces of 1 lane, and for 400GBASE-R PMA interfaces of 2 lanes."

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
It would be helpful provide a bit more clarity on the scope of PMA types defined in this clause. However, it would be overstepping to define PMA types defined in other clauses. Instead add the following sentence only:
"Bit-multiplexing PMAs defined in this clause include 200GBASE-R PMA with interfaces of 8, 4, and 2 lanes, and 400GBASE-R PMA with interfaces of 16, 8, and 4 lanes."

Cl **120** *SC* **120.1.4** *P* **200** *L* **7** # 412

Opsasnick, Eugene Broadcom Inc.

Comment Type **TR** *Comment Status* **A** *(B1) (L)*

The numbered items 2, 3, and 4 in the list of item b) define the AUIs that run at 25G/lane, 50G/lane, and 100G/lane, respectively. These terms are used in the later list items 5 to 10. Those later list items also refer the AUI types that run at 200G/lane. There should be new item (5) added after item (4) to define these new AUI types.

SuggestedRemedy

In 120.1.4, add a new item between list items 4 and 5 (a new #5), and update the numbering on the rest of the list accordingly.
New list item 5:
"5) 200GAUI-1 is a 106.25 GBd single lane PAM4 physical instantiation of the 200 Gb/s connection. 400GAUI-2 is a 106.25 GBd by 2 lane PAM4 physical instanttiation of the 400 Gb/s connection."

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
The referenced list is for AUIs that are affiliated with the BM-PMA defined in Clause 120. It would therefore not be appropriate to add 200GAUI-1 and 400GAUI-2 the that list. However, it would be helpful to point the reader to where these are defined.
Change item 7 to the following (adding references to the PMD clauses and AUI annexes):
"7) For a PHY that includes a 200GAUI-1 interface (see Annex 176C and Annex 176D) or a 200GBASE-KR1 (see Clause 178), 200GBASE-CR1 (see Clause 179), 200GBASE-DR1 (see Clause 180), or 200GBASE-DR1-2 (see Clause 182) PMD, the signaling rate range for the output of any 200GAUI-8, 200GAUI-4, or 200GAUI-2 PMA within the PHY shall be limited to ±50ppm (see 176B.4)."
Similarly change items 8 through 10.
Implement with editorial license.

Cl **177** *SC* **177.5.8** *P* **367** *L* **14** # 413

Opsasnick, Eugene Broadcom Inc.

Comment Type **TR** *Comment Status* **A** *(B1) (L)*

177.5.8 "Convolutional deinterleaver" does not give any information regarding the relationship of the120-bit block inputs from the 120-bit block distribution (multiplexer) to the 40-bit symbol-quartets distributed to each of the three delay lines. 177.4.3 requires that the first RS-FEC quartet within a 120-bit block is always from delay line 0. A similar statement should be added to 177.5.8.

SuggestedRemedy

In 177.5.8, Add this text to the end of the second paragraph:
"Symbol quartets of data from the120-bit block multiplexor are distributed sequentially to delay line 0, delay line 1, and delay line 2. The first 40-bit symbol quartet of each 120-bit block is always aligned to delay line 0."

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Add the following text at the end of the second paragrph of 177.5.8:
"RS-FEC Symbol-quartets from the120-bit block multiplexor are distributed sequentially to delay line 0, delay line 1, and delay line 2. The first 40-bit RS-FEC symbol-quartet from each 120-bit block is always aligned to delay line 0."

Cl **178A** *SC* **178A.1.8.1** *P* **854** *L* **36** # 414

Swenson, Norman Nokia Corporation,Norman Swenson Consulting,Point

Comment Type **ER** *Comment Status* **A** *Quantizer defintion (B1) (E)*

The quantizer is actually a 1UI (T-spaced) sampler and quantizer. This should be explicitly stated.

SuggestedRemedy

Change "The input to the feed-forward filter is the output of the quantizer." to "The input to the feed-forward filter is the output of the quantizer, which samples and quantizes its input at 1 UI intervals.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
The "quantizer" is first introduced in 178A.1.7 and is illustrated in Figure 178A-7. Additional descriptive text should be added where the block is first introduced.
In 178A.1.7, change the first sentence from "...at the output of the quantizer." to "...at the output of the quantizer which samples the signal and noise once per unit interval and quantizes the amplitude to discrete levels."
In 178A.1.8.1, change the second sentence from "...is the output of the quantizer." to "...is the output of the quantizer (see Figure 178A-7)."
Implement with editorial license.

Cl **180** *SC* **180.1** *P* **457** *L* **49** # 416

Dawe, Piers J G NVIDIA

Comment Type **ER** *Comment Status* **A** *editorial (B1) (CG)*

This says "are required according to the guidelines in 176B.5.1"; 176B.5.1 says "require". So it's not guidelines.

SuggestedRemedy

Delete "the guidelines in": up to 4 times per PMD clause.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
In Table 180-1 footnote b, delete "the guidelines in".
Repeat for other similar tables in clause 178 through 183, 185, and 187.
[Editor's note: CC: 178 through 183, 185, 187]

Cl **170** *SC* **170.4.3** *P* **223** *L* **7** # 422

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **A** *(B1) (L)*

800GMII and 1.6TMII are different; a prospective customer reading a PICS is entitled to know which is being offered.

SuggestedRemedy

Create major options (not exclusive) for 800GMII and 1.6TMII

Response *Response Status* **W**

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

Cl **178** *SC* **178.10.1** *P* **401** *L* **16** # 424

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **R** *(Bx) ?*

This table contains "C_d^(1)", "C_d^(2)" and so on. A superscript denotes either exponentiation or some sort of footnote or reference, yet the former would not be consistent with the units and the latter are missing. Computer programs don't have variable names containing superscript, and such names are difficult for humans too.

SuggestedRemedy

Change to C_d1", "C_d2" and so on. Similarly R_d and so on
Scrub the draft for unnecessary superscript notation, so that it does not appear outside 178A.1, Channel Operating Margin.

Response *Response Status* **U**

REJECT.

The format of the die capacitance symbol is consistent with the convention specified in 178A and used in 179, 176C, and 176D.
It is also consistent with similar symbols defined in Annex 93A.

There is no consensus to make the suggested changes.

[CC: 178, 179, 176C, 176D]

Cl **178** *SC* **178.10.1** *P* **403** *L* **25** # 425

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **R** *Jitter (E)*

This says "Random jitter, RMS", "sigma_RJ" yet it is clear by inspection that what is meant is Gaussian jitter, and the its cause (random, known cause, or unknown cause) is not the point. A new COM definition is our chance to follow OIF and break with this old name from 8B/10B times which in the age of scrambled coding is inaccurate and encourages sloppy thinking.

SuggestedRemedy

Change "Random jitter, RMS", "sigma_RJ" to "Gaussian jitter, RMS", "sigma_GJ" throughout. Add notes as necessary pointing out that similar quantities in older clauses (Annex 93A for example) use the old names.

Response *Response Status* **U**

REJECT.
Resolved using the response to comment I-426.

Cl **179** *SC* **179.9.4.7** *P* **448** *L* **8** # 426

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **R** *Jitter (E)*

This says "Random jitter, RMS", "sigma_RJ" yet it is clear by inspection that what is meant is Gaussian jitter, and the its cause (random, known cause, or unknown cause) is not the point. A new COM definition is our chance to follow OIF and break with this old name from 8B/10B times which in the age of scrambled coding is inaccurate and encourages sloppy thinking.

SuggestedRemedy

Change "Random jitter, RMS", "sigma_RJ" to "Gaussian jitter, RMS", "sigma_GJ" throughout. Add notes as necessary pointing out that similar quantities in older clauses (Annex 93A for example) use the old names.

Response *Response Status* **U**

REJECT.
The term "random jitter" and associated symbols has been used in several previous places in 802.3.
The suggested change is a matter of preference.

There was no consensus to make the suggested changes.

[Editor's note: changed Page/Line from 403/25 to 448/8]
[CC: 178, 179, 176C, 176D, 178A]

Cl **176D** *SC* **176D.8.2** *P* **828** *L* **31** # 427

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **A** *(Bx) ?*

This says "For compliance testing, it is sufficient to measure it from a square wave output with a period of at least 128 UI". There is no such square wave in this spec, and no alternative is offered. "At least" makes the measurement arbitrary. The nonlinear processes in the transmitter are not in their normal state - 128 UI is much more extreme than the SONET CID. 802.3 is not a compliance test spec; we define parameters not write test definitions. As the measurement doesn't need the scope to lock to the signal, one can just look at the envelope of a scrambled idle or scrambled RF signal; this avoids over- or under-measurement.
I wonder whether this could be done with PRBS13Q.

SuggestedRemedy

Change "For compliance testing, it is sufficient to measure it from a square wave output with a period of at least 128 UI, while lanes not under test transmit PRBS31Q" to "with the lane under test transmitting pattern 7 (e.g. idle, RF, or a one-lane portion of one of these), while lanes not under test transmit pattern 7 (e.g. other lanes from a common PCS) or PRBS31Q.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Straw poll #TF-7 indicated general support for the comment.
Change from
"For compliance testing, it is sufficient to measure it from a square wave output with a period of at least 128 UI, while lanes not under test transmit PRBS31Q"
to
"For compliance testing, it is sufficient to measure it with the lane under test transmitting scrambled idle, while lanes not under test transmit either scrambled idle or PRBS31Q".

Implement with editorial license.

Straw poll #TF-6 (directional)
For the differential peak-to-peak value, I would support the suggested remedy (with possible editorial changes).
Y: 10
N: 5

Cl **176D** *SC* **176D.8.3** *P* **829** *L* **2** # 428

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **A** *(Bx) ?*

This says "the test fixture delay is defined as the propagation delay between the coaxial connector on the test fixture and the host-facing connection, excluding the mating interface discontinuity". The test fixture has two mating interfaces per lane, one at the coaxial connector and the other at the host-facing connection, each of which can have a discontinuity. It is not stated which one is to be excluded.

SuggestedRemedy

Please clarify. Three places.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change from
"excluding the mating interface discontinuity"
To
"excluding the discontinuity at the HCB-to-host mating interface".

Implement with editorial license.

Cl **180** *SC* **180.3** *P* **462** *L* **10** # 430

Dawe, Piers J G NVIDIA

Comment Type **ER** *Comment Status* **A** *editorial (B1) (OI)*

parameter of the PMD:IS_SIGNAL.request provides

SuggestedRemedy

parameter of the PMD:IS_SIGNAL.request *primitive* provides
Four clauses

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Indeed in the same page, the service interface primitives are referenced both with or without the word primitive. E.g.
The SIGNAL_OK parameter of the PMD:IS_SIGNAL.indication *primitive* corresponds to the variable
rts_status of the ready-to-send (RTS) function (see 180.5.12), as defined in 178B.8.2.1.
vs
When SIGNAL_OK is either IN_PROGRESS or FAIL, the rx_symbol parameters of PMD:IS_UNITDATA_i.indication on all lanes are unspecified.
Remedy:
Add primitive to where appropriate with editorial license to make the draft consistent.

Cl **180** *SC* **180.5.1** *P* **464** *L* **9** # 434

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **A** *TP2 figure (OI)*

Sometimes this diagram is taken too literally leading to a belief that the 2 to 5 m patch cord and TP2 are part of a service link. They are not; optical cabling may include a variety of connectors (not the type used on test equipment), patch panels, and maybe optical switches, the length of any first patch cord is not regulated, and there may be no accessible TP2.

SuggestedRemedy

Either: remove TP2 from the medium, and show the patch cord and TP2 (connected to test equipment) as an alternate;
or: at line 2 normative text), add: While TP2 and the patch cord for transmitter measurements and tests are shown in Figure 180-2, they are not part of the medium. The transmit MDI is connected to the medium for use, or to the patch cord and TP2 transmitter measurements and tests.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement the second option: at line 2 normative text), add:

"While TP2 and the patch cord for transmitter measurements and tests are shown in Figure 180-2, they are not part of the medium. The transmit MDI is connected to the medium for use, or to the patch cord and TP2 for transmitter measurements and tests."

Implement with editorial license and over all optical clauses.

Cl **180** *SC* **180.5.5** *P* **466** *L* **1** # 437

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **R** *signal_detect (OI)*

This text, which has been modified from text for 1000BASE-LX and 1000BASE-SX, says: "Implementations need to provide adequate margin between the input optical power level at which the PMD_signal_detect_i variable is set to 1 and the inherent noise level of the PMD". This could be read as a pseudo-requirement that (for decreasing signal strength), the SD should trip before the signal is too noisy to use, or after - the direction of the margin is not indicated. Actually, too noisy to use is not the requirement. The inherent noise level of the PMD is not on the same scale as the input optical power level, and for SD based on average optical power, it is barely relevant.
The paragraph would be more use in a copper clause.
"need" should be avoided.

SuggestedRemedy

Say what we actually mean: NOTE--Implementors should ensure that the PMD_signal_detect_i variable is not incorrectly set to 1 by the action of the inherent noise level of the PMD, including the effects of crosstalk, power supply noise, etc.
Or better, delete the paragraph. It is only an attempt at guidance to designers, and confusing.
Six clauses.

Response *Response Status* **U**

REJECT.

Strawpoll O-2 (directional) Chicago rules
I support
1: Leave text as is
2: Change text per suggested remedy per I-437
3: Delete the paragraph

1: 6
2: 5
3: 7

Strawpoll O-3 (directional) Pick one
I support
1: Leave text as is
2: Change text per suggested remedy per I-437
3: Delete the paragraph

1: 10
2: 1
3: 5

No consensus to make a change.

Cl **180** *SC* **180.7.1** *P* **468** *L* **27** # 438

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **A** *editorial (B1) (OI)*

This is an underlined less than symbol

SuggestedRemedy

Use a less than or equal symbol. Scrub the draft.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license.

Cl **180** *SC* **180.7.1** *P* **468** *L* **36** # 440

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **R** *TFSEH (OI)*

The transmitter functional symbol error histogram method tests transmitter-receiver pairs, not just transmitters. Depending on the receiver used, a transmitter could be falsely failed or falsely passed. The FEC bin 8 criterion is not connected to the FLR objective of this project, nor to a target such as OIF's 1e-15 effective BER. Extrapolation from bin 8 to bins 14-16 which are the ones that matter, is lacking. Although the idea of counting errors can be useful for deploying links in volume where the implementation of transmitter and receiver (technology, supplier, revision) really are paired, 802.3 is an interoperability standard.

SuggestedRemedy

Remove this row from this table. Remove row from Table 180-14. Move 180.9.9 to an annex.
Four clauses.

Response *Response Status* **U**

REJECT.

This comment is proposing to remove the "Transmitter functional symbol error histogram" parameter as a mandatory requirement for all PMDs defined in Clauses 180 through 183. Instead, make it informative specification.

A previous poll to determine support for removing this feature was taken by the CRG at the November 2025 Plenary meeting during Working Group ballot. The poll showed high support for retaining the TFSEH feature at the time.
See the response to comment #138 in the following document:
https://www.ieee802.org/3/dj/comments/D2p2/8023dj_D2p2_comments_final_id.pdf

Based on straw poll TF-4, there is no consensus to make the proposed change.

Straw poll TF-3 (directional):
I support adopting the suggested remedy to comment #440.
Y: 33
N: 16

Concern was expressed over the language and meaning of this straw poll so the poll was repeated with better clarifying language in TF-4.

Straw poll TF-4 (directional):
I support adopting the suggested remedy (as provided by commenter) to comment #440.
Y: 20 (change to informative specification)
N: 41 (retain as mandatory specification)

Cl **180** *SC* **180.7.1** *P* **468** *L* **42** # 442

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **R** *ER and MPI (OI)*

The extinction ratio limit is there to protect the receiver from MPI. MPI can get worse at low extinction ratio, when it happens (rarely - fading) but for PAM4 this is a fairly weak function. On the other hand ECQ improves with low extinction ratio (linearity), differently for different technologies but it always happens (not fading). Also, RF power and supply voltage can be reduced at lower extinction ratio.

SuggestedRemedy

Reduce the extinction ratio limit from 3.5 dB to 3 dB.
The definition of TDECQ, which is already channel-dependent, can be modified to include MPI, similar to Eq. 95-3; if so, increase the TDECQ limit by 0.1 dB for the reference case in tables 180-9 and 180-12. The definition of TECQ and SECQ, where the optical channel is negligible, are not changed. The receiver sensitivity is lowered by 0.1 dB.
Or, TDECQ can remain without MPI: receiver sensitivity and stressed receiver sensitivity are lowered by 0.1 dB.
Apply this to all IMDD clauses. I can imagine that it would this would be particularly helpful for 800GBASE-LR4 where a low extinction ratio will enable a good chromatic dispersion penalty.

Response *Response Status* **W**

REJECT.
The comment proposes to reduce the limit of extinction ratio to 3dB. However, no data or simulation analysis has been provided indicating that 3.5dB can not be supported by current modulator technology, nor any data showing 3dB is sufficient for worst case of the link , particularly in high loss and penalty cases such as LR4. Thererfore, the limit of ER should remain the same until further evidence be presented to the task force.

The power budget is built with dedicated penalty allocation for MPI and DGD for the past two PAM4 signaling rates. Changing to include penalty in TDECQ as the proposed remedy could cause unecessary confusion to the industry.
TDECQ measurement setup (Figure 180-9) could not emulate the MPI effect, i.e. the channel that the optical signal passes follows the requriement specified in Table 180-15 with minimum insertion loss, and not necessarily the mulltiple reflection from the multiple connenctions or splices as in the case of real application.

Regarding the alternate approach, the current power budget and (receiver sensitiviy-OMA_min) already takes into account of MPI penalty. -0.1-(-3.4) = 3.3dB, which includes 3dB(max. IL) and 0.1dB MPI and 0.2dB DGD penalty.

There was interest expressed in this topic. Further contributions on this topic are encouraged.

Cl **180** *SC* **180.7.1** *P* **468** *L* **47** # 444

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **A** *editorial (B1) (OI)*

It's not RINxxOMA, it's RINxOMA, as defined in 1.4.515. Same name for a thing, every time (style manual, 10.1 Homogeneity).

SuggestedRemedy

Change RINxxOMA to RINxOMA, 25 times (plus contents). Change "xx dB" to "x dB", 5 times. Change " "xx" " to x (in italics, no quotation marks, as in the base standard), four times.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
The parameter name "RINxOMA" is used in 9 clauses in the base standard including: 52, 58, 68, 75, 140, 141, 151, 158, and 160; while only clauses 122 and 139 use "RINxxOMA". The defiinition in 1.4.515 is RINxOMA where x in "RINxOMA" and in "x db" is non-italic. Use of italic and non-italic, for x in "x dB" is otherwise inconsistent in the base standard.
Throughout the draft, change all instances of RINxxOMA to RINxOMA and change "xx dB" to "x dB" with "x" not italic in both cases.
[Editor's note: CC: 180, 181, 182, 183]

Cl **180** *SC* **180.7.2** *P* **470** *L* **7** # 446

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **R** *ER and MPI (OI)*

Tweaking the receiver sensitivities for MPI accounting (see another comment).

SuggestedRemedy

Change the receiver sensitivity from -3.4, -4.3 + TECQ to -3.5, -4.4 + TECQ. Change the stressed receiver sensitivity from -0.9 to -1.
Similarly in other IMDD clauses.

Response *Response Status* **W**

REJECT.

Resolved using the response to comment #442.

Cl **180** *SC* **180.8** *P* **458** *L* **24** # 449

Dawe, Piers J G NVIDIA

Comment Type **ER** *Comment Status* **R** *editorial (B1) (OI)*

There is an informative reference to ITU-T G.652 (08/2024) here. ITU-T G.652 (08/2024) does not appear in Annex A, bibliography. 1.3, normative references, has only:
ITU-T Recommendation G.652, 2016--Characteristics of a single-mode optical fibre and cable.

SuggestedRemedy

Preferably, delete "2016".
Scrub the draft for missing and out-of-date references.

Response *Response Status* **W**

REJECT.
Annex A is in the base standard 802.3-2022. changing the reference in the base standard may affect multiple existing specifications. The need of updating bibliography in Annex A will need to be addressed in 802.3 maintenance process.
For 802.3dj, keep the reference as is in the footnote:
b The dispersion specifications are based on the statistical link design methodology documented in Appendix I of Recommendation ITU-T G.652 (08/2024), over the wavelength range 1304.5 nm to 1317.5 nm.
Note that this referenced Appendix of ITU-T G.652 is the statistical link design method for chromatic dispersion and PMD, which was brought in the discussion in 802.3dj and evolved into an appendix of ITU-T standard. It wouldn't have been captured in the base standard of 802.3.
Retaining the date is necessary to differentiate between the previous and new version.
No other out of date references have been identified by the CRG.
However, a normative reference to ITU-T G.652 (08/2024) is required.
Add a reference to ITU-T G.652 (08/2024) in subclause 1.3.
Implement with editorial license.
[Editor's note: changed page/line from 472/48 to 458/24]

Cl **180** *SC* **180.9.2** *P* **476** *L* **5** # 452

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **R** *Reference Rx (OI)*

The choice of fourth-order Bessel-Thomson response is a historical accident. Fifth order rolls off a bit steeper at high frequencies, which is more realistic, and has no other significant difference. The better roll-off leads to better measurements. This is also true for measurements where reflections at an instrument's electrical connectors are a concern. This is our chance to make the change, as the industry transitions to a new speed and new test equipment.

SuggestedRemedy

Change fourth-order to fifth-order throughout the draft.

Response *Response Status* **U**

REJECT.

The BT filter response is used to bound the implementation of a reference reciever, which typically are implemented in test equipement. Fourth order BT response has been used in previous signaling rates, changing it to a fifth order BT response may require re-validation of existing implementations.

No evidence has been provided in the comment showing that the current spec as is will cause false result of transmitter characteristic measurements.

Cl **180** *SC* **180.9.2** *P* **476** *L* **5** # 453

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **A** *editorial (B1) (OI)*

This sentence extends over 4 lines and it is hard to parse. It can be divided cleanly. Also we should be clear whether it's the Bessel-Thomson response that should not exceed, or what.

SuggestedRemedy

IEEE Std 802.3db has a partial fix but use the wording in IEEE Std 802.3dk: change: at least 1.3 x 106.25 GHz, and at frequencies above 1.3 Î 106.25 GHz, the response should ... to: at least 1.3 x 106.25 GHz. At frequencies above 1.3 Î 106.25 GHz, *its* response should ...
Four clauses.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
The text as written has a few issues. Per Figure 180-7, the reference receiver also includes a CRU, the response is due to the combination of OE and scope, and the grammar in the sentence lacking.
Change the text in 180.9.2 to the following:
The reference receiver is composed of an O/E converter, a clock recovery unit (CRU), and a pattern-triggered oscilloscope as shown in Figure 180-7.
The combined frequency response of the O/E converter and oscilloscope has a 3 dB bandwidth of approximately 53.125 GHz with a fourth-order Bessel-Thomson response for frequencies up to at least 1.3 x 106.25 GHz and a response no higher than -20 dB for frequencies greater than 1.3 x 106.25 GHz.
The CRU has a corner frequency of 4 MHz and a slope of 20 dB/decade. The CRU may be implemented in hardware or software depending on oscilloscope technology.

Cl **180** *SC* **180.9.3** *P* **476** *L* **29** # 454

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **A** *editorial (B1) (OI)*

There are multiple patterns allocated for this parameter in Table 180-14. The patterns are not defined there; they are defined by reference in Table 180-13.

SuggestedRemedy

Change "using the test pattern defined in Table 180-14" to "using a test pattern as in Table 180-14" or to "using one of the test patterns given in Table 180-14". Similarly in 180.9.4 and other optical clauses.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Implement "using one of the test patterns given in Table 180-14".
Implement with editorial license to update other instances in optical PMD clauses, 180, 181, 182, 183

Cl **180** *SC* **180.9.6.2** *P* **478** *L* **32** # 458

Dawe, Piers J G NVIDIA

Comment Type **ER** *Comment Status* **A** *editorial (B1) (OI)*

Table layout

SuggestedRemedy

Make the table full width. Make the first two columns wide enough for the equations. The feature to "size columns to contents" with table full width might do this.

Response *Response Status* **W**

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

Cl **180** *SC* **180.9.6.2** *P* **478** *L* **37** # 459

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **A** *editorial (OI)*

This says "does not significantly stress the tester receiver". tester receiver is the wrong term; it's called reference receiver as in the figure above. It's an oscilloscope; a small or no signal will not stress it, a very large one might. The intention was to advise the reader that with too much loss, the uncertainty in the noise of the scope (not the noise itself, which is accounted for) would degrade the measurement. But this is trying to teach the test engineer how to do his job.

SuggestedRemedy

Delete the column, and with it note b.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change
"The value "Minimum" implies that the test channel insertion loss should be sufficiently low that it does not significantly stress the tester receiver."

to

"The value "Minimum" implies that the test channel insertion loss does not excessively degrade the signal to noise ratio of the measurement."

With editorial license.

Cl **180** *SC* **180.9.6.3** *P* **479** *L* **7** # 460

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **A** *Reference equalizer (B1) (OI)*

This says "This reference equalizer ... does not imply any particular receiver equalizer implementation." Clearly that is not the case; it says "The reference equalizer is a 15-tap, T-spaced, feed-forward equalizer (FFE), followed by a 1-tap decision feedback equalizer (DFE)..." That's particular.

SuggestedRemedy

Change "does not imply any particular receiver equalizer implementation" to "does not imply that a compliant product should contain any particular receiver equalizer implementation".

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Change "does not imply any particular receiver equalizer implementation"
To: "does not imply any particular receiver equalizer architecture in a compliant implementation"
Implement with editorial license.

Cl **180** *SC* **180.9.6.4** *P* **481** *L* **26** # 471

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **A** *TDECQ-histogram(B1) (OI)*

A histogram is a table of value, count pairs. A histogram *window* is a box on the scope screen.

SuggestedRemedy

Change "The precise time position of the pair of histograms is adjusted to minimize TDECQ while keeping the histograms spaced 0.1 UI apart."
to: "The precise time position of the pair of histogram windows is adjusted to minimize TDECQ while keeping the histogram windows spaced 0.1 UI apart."

Response *Response Status* **W**

ACCEPT.

Cl **180** *SC* **180.9.6.4** *P* **482** *L* **1** # 475

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **A** *editorial (B1) (OI)*

These are not functions: unlike the Gaussian probability density function mentioned later, there is no smooth formula. They are distributions, from measurement.

SuggestedRemedy

Change "cumulative probability function" to " cumulative probability distribution", several times.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Implemented suggested changes in all 6 instances in 802.3dj, all on page 482.

Cl **180** *SC* **180.9.7.1** *P* **485** *L* **47** # 479

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **A** *TDECQ_CER (OI)*

Mass is defined in kilograms, scientifically. This TDECQ_CER method is about statistics, it has nothing to do with mass. The if ... then ... if equation 180-19 is a lookup, not a function worthy of the name.

SuggestedRemedy

Change "the probability mass function (PMF) for the number of symbol errors is" to "the probability of the number of symbol errors, P_n(e, sigma) is"

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Resolved using the response to comment #I-71.

Cl **180** *SC* **180.9.9** *P* **487** *L* **13** # 480

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **R** *TFSEH (OI)*

This functional symbol error histogram method tests transmitter-receiver pairs. As the receiver is not calibrated, and subject to much more possible variation than a CRU/scope, it tests transmitter-receiver pairs, not transmitters.

SuggestedRemedy

Remove spec row from Table 180-7. Remove row from Table 180-14. Move 180.9.9 to an annex.
Four clauses.

Response *Response Status* **U**

REJECT.
Resolved using the response to comment #I-440.

Cl **180** *SC* **180.9.12** *P* **490** *L* **4** # 490

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **A** *extinction ratio (OI)*

The definition of extinction ratio can be simplified, and it should be made 100% consistent with the definition of OMA, which is changing.

SuggestedRemedy

Change "The extinction ratio of a PAM4 optical signal is defined as the ratio of the average optical launch power level P3, measured over ... waveforms captured at the output of the reference receiver defined in 180.9.2.
to "The extinction ratio of a PAM4 optical signal is defined as the ratio of the average optical launch power levels P3 and P0, as defined for OMA_outer (see 180.9.5). In Table 180-14, change the row "Outer optical modulation amplitude (OMA_outer)"
to "Outer optical modulation amplitude (OMA_outer) and extinction ratio" and delete the separate row for extinction ratio.
Subclause 180.9.12 could be combined with180.9.5 also.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Change
"The extinction ratio of a PAM4 optical signal is defined as the ratio of the average optical launch power level P3, measured over ... waveforms captured at the output of the reference receiver defined in 180.9.2."
to
"The extinction ratio of a PAM4 optical signal is defined as the ratio of the average optical launch power levels P3 and P0, as defined for OMA_outer (see 180.9.5).

With editorial license.

Cl **180** *SC* **180.9.13** *P* **490** *L* **44** # 491

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **A** *RINxxOMA (OI)*

"linear units" is ambiguous: it could be field or equivalent, or power or equivalent. One is the square of the other, both are "linear".

SuggestedRemedy

Change "linear units" to "milliwatts", twice

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved using the response to comment #492.

Cl **180** *SC* **180.9.14** *P* **490** *L* **47** # 492

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **A** *RINxxOMA (OI)*

"on a region in a place in the pattern that is selected to minimize the measurement error": too cryptic, and without a second opinion, one does not know which region/place has the minimum error. Actually, what one can do is minimize the apparent N0 or N3, not the (unknown) error. It is not clear how many UI wide a "place" is. Compare 179.9.4.6 for SNDR "Measure the RMS deviation from the mean voltage at a fixed low-slope point in runs of at least 6 consecutive identical PAM4 symbols, where the focus is on the rule not the purpose". "A region in a place": tautology. One can't measure N3 and N0 at the same place.

SuggestedRemedy

Change "N0 and N3 are measured in linear units on a region in a place in the pattern that is selected to minimize the measurement error."
to "N0 and N3 are each measured in milliwatts in a histogram window placed so that the slope of the waveform across the histogram window is negligible. These might be 1 UI wide or narrower, and they are expected to give lower readings for N0 or N3 than other positions or wider histogram windows."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement the suggested remedy with editorial license.

Cl **178B** *SC* **178B** *P* **865** *L* **7** # 494

Dawe, Piers J G NVIDIA

Comment Type **ER** *Comment Status* **A** *(B1) (CA)*

Put the abbreviation in the title as we do for PMD, PMA, PCS...

SuggestedRemedy

Autonomous path startup (APSU) functions for electrical and optical interfaces

Response *Response Status* **W**

ACCEPT.