Cl **116** *SC* **116.2.9** *P* **155** *L* **35** # 731

Dawe, Piers Nvidia

Comment Type **TR** *Comment Status* **R** *(Common) (bucket2)*

If IS stands for inter-sublayer (116.3) and and ISL for inter-sublayer link (178B), this would be ISLT. However, the "IS_" in the primitives has outlived its usefulness and should be removed, and optical PHYs do not have what one would recognise as training, even if there is a start-up protocol that uses training frames.

SuggestedRemedy

Find a better name for this, such as ISS (inter-sublayer startup), or remove 178B.

Response *Response Status* **U**

REJECT.

The acronyms ISL and ILT were chosen based a great deal of task force discussion and compromise. However, recent discussions have indicated some concern with the clarity of the naming and descriptions. Further work on this is necessary.

ILT is a mandatory feature for many PMD types so removing Annex 178B would not be an appropriate way to resolve the concern expressed in the comment regarding naming.

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

Cl **116** *SC* **116.3.3.3.1** *P* **161** *L* **4** # 165

Huber, Thomas Nokia

Comment Type **ER** *Comment Status* **A** *(bucket) ILT service interface*

The text regarding the values of the SIGNAL_OK parameter is not sufficiently clear in a number of aspects. As the first paragraph states, IN_PROGRESS and READY are only supported if ILT is supported. The paragraphs about the OK and FAIL values refer to "if the service interface supports the values IN_PROGRESS and READY", which is needlessly complex wording; the condition is more succinctly expresed as "if ILT is supported", rather than if the states that ILT uses are supported. Further, since the meanings of OK and FAIL are different depending on whether ILT is used, instead of saying 'here are four values of SIGNAL_OK', and embedding in those definitions the details of whether ILT is used or not, it would be more clear to say 'SIGNAL_OK has these values if ILT is used, and these values if ILT is not used'.

SuggestedRemedy

Replace the second through fifth paragraphs with this text (text spills beyond the bottom of the cell):
If ILT is not used:
A value of OK indicates that communication with the next lower sublayer is established (but does not guarantee that valid data is being presented to the next higher sublayer).
A value of FAIL indicates that the sublayer has not established commuication to the next lower sublayer, and data is not being presented to the next higher sublayer (the rx_symbol parameters are undefined).
If ILT is used:
A value of OK indicates that valid data is being presented by the sublayer to the next higher sublayer in the rx_symbol parameters.
A value of READY indicates that commuication is established with the next lower sublayer, but communication with the peer interface is not fully established yet. The rx_symbol parameters presented to the next higher sublayer do not respresent traffic data and might be invalid. Management intervention is not required.
A value of IN_PROGRESS indicates that the sublayer is establishing communication with the next lower subalyer. Data is not being presented by the sublayer to the next higher sublayer (the rx_symbol parameters are unspecified). Management intervention.is not required.
A value of FAIL indicates that an attempt to communicate with the next lower sublayer has failed. Data is not being presented to the next higher sublayer (rx_symbol parameters are unspecified)

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Note that this comment is proposing to rearrange the text so that it is easier to parse. The proposed changes are an improvement to the clarity of the draft.

Some of the details, such as the context of ILT, might be affected by resolution of other D2.0 comments.

Implement the suggested remedy with editorial license with consideration of other related

comments.

Cl **170** *SC* **170.4.3** *P* **207** *L* **7** # 684

Dawe, Piers — Nvidia

Comment Type **TR** *Comment Status* **R** *(Logic) (bucket2p)*

There should be major options for MAC rate, as in 81.5.2.3 and 171.9.3

SuggestedRemedy

Split this item into two

Response *Response Status* **U**

REJECT.
The current approach in 170.4.3 (800GbE and 1.6TbE) is consistent with subclause 117.5.3 (200GbE and 400GbE). The comment points out that 81.5.2.3 also defines two major options for the different MAC rates (40GbE and 100GbE) in a slightly different format, but an updated format was used for Clause 117 which is now being carried forward for PICS in 170.4.3.

Cl **171** *SC* **171.9.5.1** *P* **231** *L* **47** # 688

Dawe, Piers — Nvidia

Comment Type **TR** *Comment Status* **A** *(Logic) (bucket)*

For the PHY XS, this may be a misuse of "Transmit"

SuggestedRemedy

Use separate items for PHY XS and DTE XS

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

For the table in 171.9.5.1 change the text in the feature column for PICS items TF1 and TF2 from "Transmit 64B/66B encoder .." to "64B/66B encoder .."

For the table in 171.9.5.2 change the text in the feature column for PICS items RF13 and RF14 from "Receive 64B/66B decoder .." to "64B/66B decoder .."

Cl **175** *SC* **175.2.4.6** *P* **265** *L* **17** # 454

He, Xiang — Huawei

Comment Type **TR** *Comment Status* **A** *(Logic) AM padding*

The term "free running" is not defined clearly in the standard. One interpretation is that it is "continuously-running" whenever there is a clock (two adjacent pads are not continuous); another interpretation based on the context is that if we extract all the pads and concatenate them you will get a "continuously-running" PRBS9 sequence; and finally there is also an interpretation of the word "free" to be each PRBS9 segment could have its own random seed.
I understand this language was used in previous standards, and the pad is discarded on receive side, but there are testers out there testing these pad and warning bit slips if the don't match how the testers were designed. Explaning this to end users is very difficult especially to the non-English speaking regions. It would be a nice thing to define this clearly or define in a way that showing we really don't care.

SuggestedRemedy

Change "The initial value of the PRBS9 pattern generators may be any pattern other than all zeros." to "The initial value of the PRBS9 pattern generators in each pad may be any pattern other than all zeros."

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

The second paragraph of 175.2.4.6 does not make clear what is meant by a "free-running PRBS pattern" for the padding added to the alignment markers and what is acceptable if there is actually more than one interpretation. The current draft also states "The initial value of the PRBS9 pattern generators may be any pattern other than all zeros", which should be interpreted as the the state of the PRBS9 generators out of reset, not the initial state for each alignment marker, but is also somewhat ambiguous.

As currently written, it would be acceptable to allow the "free running pattern" to be continously updated in every clock cycle of an implementation or to allow a concatination of pad values to be a continuous PRBS9 pattern. However, it would not be a correct (or desirable) interpretation that every pad be allowed to have the same 133-bit pattern, which would be allowed with the change proposed in the suggested remedy since it would allow the pad of each alignment marker to have the same initial value.

In addition, the term "free running" should be hyphenated.

The CRG reviewed slides #28-33 of the editorial presentation at:
https://www.ieee802.org/3/dj/public/25_07/nicholl_3dj_01_2507.pdf

The consensus is to update 175.2.4.6 with option 3 as shown on slide #33 of nicholl_3dj_01_2507.

Cl **175** *SC* **175.2.4.6.1** *P* **266** *L* **10** # 694

Dawe, Piers — Nvidia

Comment Type **TR** *Comment Status* **R** *(Logic)*

This is a specification, not a school lecture. am_x is not an example, we are defining its name here. 179 linear fit has "define", which is better although we don't usually write in the imperative.

SuggestedRemedy

Change
Let am_x<119:0> be the alignment marker for PCS lane x, x=0 to 15, where bit 0 is the first bit transmitted.
to
The alignment marker for PCS lane x, where x=0 to 15, is defined as am_x<119:0>. Bit 0 is the first bit transmitted.
Make similar changes elsewhere.

Response *Response Status* **U**

REJECT.

This wording is identical to wording in other PCS subclauses describing AM insertion such as 91.5.2.6, 119.2.4.4.1, 119.2.4.4.2, 134.5.2.6, 152.5.3.6, and 161.5.2.6.1. There are many examples of the phrasing "Let <some variable> be or represent or equal something" throughout the base standard and amendments.

Cl **175** *SC* **175.2.4.10** *P* **272** *L* **13** # 37

Salvekar, Atul — Cadence Design Systems

Comment Type **ER** *Comment Status* **A** *(Logic) (bucket)*

Put in Generator Polynomial

SuggestedRemedy

Change "X^58 scrambler" to "G(x) =1 + x^39 + x^58"

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
The "X^58 scrambler" on this page is just a label for this functional block in the figure - using the polynomial itself as the block label would lose the reference that the block is the "scrambler". It would be more appropriate to use the name of the function as defined in the title of subclause 175.2.4.5 "Scrambler" on page 264. The polynomial to be used in the scrambler is defined in the text in that subclause by reference to Equation 49-1.

In figure 175-7, on page 272, change the block labels at line 12
from:
"X^58 scrambler"
to:
"Scrambler"

Cl **176C** *SC* **176C.6.4.2** *P* **727** *L* **9** # 535

Dudek, Mike — Marvell

Comment Type **TR** *Comment Status* **R** *(Electrical) C2C channel*

There isn't a minimum loss specified for the C2C channel. Inserting the the minimum channel loss from the KR interference tolerance test isn't appropriate.

SuggestedRemedy

Consider whether using the same minimum loss used for the interference tolerance test is appropriate. If so add to 176C.7.2. The recommended minimum channel insertion loss is 13dB.
On page 727 line 9 replace "using a channel with the minimum insertion loss specified in 178.9.3.4" with "using an amplitude tolerance test channel" Add a sentence to the end of the paragraph. The loss of the amplitude tolerance test channel including the package loss of the compliant transmitter used in the test is equal to the Test 1 loss in table 176C-5 .
If not then replace "using a channel with the minimum insertion loss specified in 178.9.3.4" with "using a minimal loss channel"

Response *Response Status* **U**

REJECT.

The suggested remedy includes an option that disconnects the minimum loss of the channel from the low-loss channel used in the receiver interference tolerance test.

There was general agreement to this direction but a detailed proposal is required. Future contribution in this area is encouraged.

Cl **176C** *SC* **176C.6.4.4** *P* **727** *L* **33** # 365

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *(Electrical) RLdc and RLcd*

The more critical return loss is common mode to differential, but for some reason in clause 176C instead RLcd is defined

SuggestedRemedy

Change RLcd to RLdc (common mode to differential)

Response *Response Status* **U**

REJECT.

Receiver differential-to-common mode return loss specified for KR and AUI C2C is consistent with prior specifications in the 802.3ck standard.
The comment states that RLdc is more critical, but does not explain why.
The comment does not provide sufficient justification to support the proposed change.
There is no consensus to implement the change suggested.

Cl **176D** *SC* **176D.6.3** *P* **745** *L* **38** # 352

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *(Electrical) VEC*

We currenlty have no effective output compliance test method for C2M or input caliburtion of stressor. We replaced VEC with with JRMS, EOJ, and J4U back in Sept 2024 and it has been more than 9 months without any proof that using jitter alone is sufficent for receive compliance.

SuggestedRemedy

TDECQ/EECQ already captrues the jitter as shown in ghiasi_3dj_01a_2409 but also captures amplitude penalty and the effect of PM to AM conversion in thre same way as receiver will observe the penalty. In COM we use reference equalizer to determine compliance, in 802.3ck we used VEC/VEO with a reference equalizer and in OIF Linear and RTLR we use EECQ with reference equalizer for compliance. We have not proven that discrete jitter measurements without a referecne equalizer is sufficent for C2M compliance. Task force need to investigate either show that current methdology works otherwise replace it with CKmethod or OIF EECQ before going to SA ballot.

Response *Response Status* **U**

REJECT.

It should be noted that the CRG has previously considered similar comments, the recent one being comment #261 against D1.3 (see <https://www.ieee802.org/3/dj/comments/D1p3/8023dj_D1p3_comments_final_clause.pdf#page=35>). As noted in the response to that comment, there was no support for the suggested changes. This by itself is not a reason to reject this comment, but it is relevant information on this topic.

The response also noted that TDECQ is not a specification of AUI-C2M, but of optical transmitters. Although TDECQ is irrelevant for AUI-C2M, it should be noted that the claims made in previous comments and repeated here (in the suggested remedy) have been refuted; there is no consensus that TDECQ of optical transmitters captures the effect of jitter (the referenced presentation was about EECQ, defined outside of 802.3 for linear optical modules, and used with a high-loss host channel; the resulting signal does not represent the output of optical PMDs defined in P802.3dj, nor the module output in C2M).

The C2M methodology of previous 802.3 projects, mentioned in the suggested remedy ("VEC/VEO"), assumes a transmitter with fixed equalization. The AUI-C2M specified in Annex 176D includes Tx equalization that is adjustable by the peer (host or module) receiver using ILT. Thus, a single "stressed eye" test signal calibrated with VEC/EH is irrelevant. The introduction of adjustable Tx equalization required a change in specification methodology; the well-established CR compliance methodology was adopted by comments #186-#189 against D1.0 (see <https://www.ieee802.org/3/dj/comments/D1p0/8023dj_D1p0_comments_final_id.pdf#page=42>).

Note that the EECQ method mentioned in the suggested remedy is not suitable for adjustable Tx equalization and is thus irrelevant for this project.

Tx jitter measurements and Rx jitter tolerance are part of the CR compliance methodology. Discrete jitter frequencies are used in jitter tolerance testing, to create a verifiable set of requirements, in several previous clauses.

The comment claims that "We currenlty have no effective output compliance test method for C2M or input caliburtion of stressor". These claims are counterfactual; output compliance is defined by Table 176D-2 and Table 176D-3, and input compliance is defined by Table 176D-4 and Table 176D-5. For both input and output, all parameters are testable using the methodology in 176D.8. Specifically, "stress" for input interference tolerance is calibrated using COM as specified in 176D.8.12.

This methodology of transmitter and receiver specifications has been shown to work by successful deployment of multiple generations of CR, KR, and C2C devices and links up to at 100 Gb/s with demonstrated interoperability across multiple products. The EECQ alternative mentioned in the suggested remedy has been used only for LPO, as defined by OIF, and was only recently ratified.

The comment does not provide any data to show that there is a problem that needs solving.

Cl **176D** *SC* **176D.6.4** *P* **746** *L* **38** # 353

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *(Electrical) VEC*

We currenlty have no effective output compliance test method for C2M or input caliburtion of stressor. We replaced VEC with with JRMS, EOJ, and J4U back in Sept 2024 and it has been more than 9 months without any proof that using jitter alone is sufficent for receive compliance.

SuggestedRemedy

TDECQ/EECQ already captrues the jitter as shown in ghiasi_3dj_01a_2409 but also captures amplitude penalty and the effect of PM to AM conversion in thre same way as receiver will observe the penalty. In COM we use reference equalizer to determine compliance, in 802.3ck we used VEC/VEO with a reference equalizer and in OIF Linear and RTLR we use EECQ with reference equalizer for compliance. We have not proven that discrete jitter measurements without a referecne equalizer is sufficent for C2M compliance. Task force need to investigate either show that current methdology works otherwise replace it with CKmethod or OIF EECQ before going to SA ballot.

Response *Response Status* **U**

REJECT.
Resolve using the response to comment #352.

Cl **176D** *SC* **176D.6.6** *P* **747** *L* **36** # 505

Dudek, Mike — Marvell

Comment Type **TR** *Comment Status* **A** *(Electrical) (bucketp)*

The input specifications are best measured at the input to the compliance board as is specified in 176D.6.1 page 744 line 23 and as is done for the host in section 176D.6.5 not at TP1a. (Note however that 176D.8.10 specifically calls out AC common mode voltage tolerance at TP1a).

SuggestedRemedy

Change from "specifications at TP1a" to "Specifictions at TP1"

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #141.

Cl **176D** *SC* **176D.7.1** *P* **748** *L* **25** # 654

Swenson, Norman — Nokia, Point2

Comment Type **ER** *Comment Status* **A** *(Electrical) Host connector*

Figure 176D-6 includes a connector, which is actually a mated connector, though that is not clear.

SuggestedRemedy

Draw a vertical line down the center of the rectangle labeled connector to indicate that both parts of the mated connector are included in the 28.2dB Host channel loss. Compare with figures 176D-4 and 176D-5. Change "Connector" to "Mated Connector" in the figure so it is clear that the loss of the mated connector is included on the Host channel loss.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
The current figure, which has no vertical line, results from the resolution of comment #115 against D1.1 (see <https://www.ieee802.org/3/dj/comments/D1p1/8023dj_D1p1_comments_final_clause.pdf#page=43>) and can be found in the related presentation <https://www.ieee802.org/3/dj/public/24_09/ran_3dj_03a_2409.pdf>.
The box in the figure is not a mated connector pair but only the connector in the host, which is part of the host channel for loss budgeting purposes, as indicated by the arrow at the top of the figure. Therefore, the vertical middle line, which existed in previous drafts, has been removed.
This figure matches the architectural diagram in Figure 176D-2.
However, the intent of the figure can be clarified in the text.

Add the following informative NOTE after Figure 176D-6:
NOTE---For loss budgeting purposes, the connector is considered part of the host.
Implement with editorial license.

Further contributions to improve clarity are encouraged.

Cl **176D** *SC* **176D.8.1** *P* **751** *L* **50** # 358

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *(Electrical) (bucket)*

Differential and common-mode signals are not defined in 93.8.1.3, just the figure is used for level definition.

SuggestedRemedy

Replace with, Differential and common-mode signal levels definition is given by 93.8.1.3.

Response *Response Status* **U**

REJECT.
Contrary to the statement in the comment, the differential and common-mode signals are explicitly defined in the first paragraph of 93.8.1.3:
"The differential output voltage v_di is defined to be SLi<p> minus SLi<n>. The common-mode output voltage v_cmi is defined to be one half of the sum of SLi<p> and SLi<n>".

Cl **176D** *SC* **176D.8.2** *P* **752** *L* **29** # 361

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *(Electrical) Tfx*

Line 30 says that "Tfx equal to twice the test fixture delay", statement is not clear.

SuggestedRemedy

Tfx for measurement of Host Input/Output is twice the HCB delay.
Tfx for measurement of Module Input/Output is twice the MCB delay.
Suggest to move Tfx into the table and make the above as footnotes in the table.
We shouldn't state in IEEE standard "Tfx is provided by the test fixture provider", what about if fixture suplier doesn't!

Response *Response Status* **U**

REJECT.
The test fixture delay is defined in detail in the second paragraph of 176D.8.2 for both host and module measurements. Based on these definitions, the statement should be clear. The suggested remedy does not match the second paragraph and would not improve clarity.
The statement that Tfx is provided by the test fixture provider" was added by the response to comment #199 against D1.1, see <https://www.ieee802.org/3/dj/comments/D1p1/8023dj_D1p1_comments_final_clause.pdf#page=77>. It should be understood as a requirement. The suggested remedy does not provide an alternative phrasing for this statement.

Cl **176D** *SC* **176D.8.2** *P* **752** *L* **50** # 360

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *(Electrical) ERL*

Not clear why Nbx is zero

SuggestedRemedy

Suggest to make Nbx=14 which number of fixed FFE taps

Response *Response Status* **U**

REJECT.
The host ERL definition is consistent with that of the CR host, as defined in 179.9.4.7. Comment #371 addressed the value of Nbx for CR hosts, but there was no consensus to make a change.

The module ERL definition is consistent with that of the CR cable assembly, as defined in 179.11.3. Nbx for CR cable assembly is also 0 and there was no comment suggesting a change.

There is no consensus to make a change.

Cl **176D** *SC* **176D.8.7** *P* **754** *L* **34** # 357

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

The dSNDR procedure for DUT measurement is missing

SuggestedRemedy

The module inputs at TP1 on each lane are driven by asynchronous signals created by PRBS31Q or
PCS data, with transmit equalization (see 176D.8.6) set to preset 1, and calibrated at the generator
output with target maximum steady-state voltage as specified in Table 176D-3 and transition time of
6 ps is used for measurement of DUT SNDR.

Response *Response Status* **U**

REJECT.
The addition of asynchronous signals at the host input in host SNDR measurement was added in response to comment #423 against D1.3, see <https://www.ieee802.org/3/dj/comments/D1p3/8023dj_D1p3_comments_final_clause.pdf#page=39>. The comment noted that the situation is different for module SNDR, since the output signal is stronger and the input interferer signals are weaker, and thus did not suggest adding the same requirement in this case. In consideration of that comment, the additional signals were added only to the host output SNDR measurement.

In this comment, the suggested remedy is to add the same signals for module SNDR measurement.

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

Cl **177** *SC* **177.4.5** *P* **333** *L* **20** # 699

Dawe, Piers — Nvidia

Comment Type **TR** *Comment Status* **R** *(Logic)*

x

SuggestedRemedy

Define

Response *Response Status* **U**

REJECT.
X, when used as the variable in a polynomial, is not defined in other clauses. This is common knowledge to implementers.

Cl **177** *SC* **177.4.5** *P* **333** *L* **25** # 701

Dawe, Piers — Nvidia

Comment Type **TR** *Comment Status* **R** *(Logic) (bucket2p)*

MSB

SuggestedRemedy

Define

Response *Response Status* **U**

REJECT.

MSB is defined in 1.5 and is used across the document. Although Galois field arithmetic has no mathematical MSB or LSB, they must be defined to ensure a correct implementation. For example, the order of the bits (MSB first or LSB first) impacts the syndrome calculation when implemeted as a shift register.

Cl **177** *SC* **177.4.5** *P* **333** *L* **30** # 702

Dawe, Piers — Nvidia

Comment Type **TR** *Comment Status* **A** *(Logic) matrix math*

big dot

SuggestedRemedy

Define

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Add definition for bit dot : "big dot" denotes matrix dot product. Make sure all "big dot"s are the same size.

Implement with editorial license.

Cl **177** *SC* **177.4.5** *P* **333** *L* **50** # 703

Dawe, Piers — Nvidia

Comment Type **TR** *Comment Status* **A** *(Logic) matrix math*

big dot

SuggestedRemedy

Define

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #702.

Cl **177** *SC* **177.4.5** *P* **334** *L* **1** # 704

Dawe, Piers — Nvidia

Comment Type **TR** *Comment Status* **A** *(Logic) matrix math*

^-1

SuggestedRemedy

Define

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Add definition for "^-1" as: "the superscript "-1" denotes a matrix inversion operator."

Each element is 1x8 with 8 elements that results in a square matrix. So an inverse operation is appropiate.

Implement with editorial license.

Cl **177** *SC* **177.5.5** *P* **339** *L* **5** # 282

Ren, Hao — Huawei

Comment Type **TR** *Comment Status* **R** *(Logic) FEC bin counters*

The number of Inner_FEC_codeword_error_bin_k counters can be decreased.
k = 0 should be ignored, because this counter value can be calculated from other counters.
Also in 802.3ck, k=0 is not set for RS-FEC error bin counter as in 161.6.17.

SuggestedRemedy

Change:
A set of four 32-bit counters where counter k counts once for each codeword received with exactly k bits corrected (flipped) when fas_lock is true (k = 0 to 3).
to:
A set of three 32-bit counters where counter k counts once for each codeword received with exactly k bits corrected (flipped) when fas_lock is true (k = 1 to 3).

Response *Response Status* **U**

REJECT.
Resolve using the response to comment #561.

Cl **178** *SC* **178.8.1** *P* **360** *L* **15** # 640

Swenson, Norman — Nokia, Point2

Comment Type **ER** *Comment Status* **A** *(Electrical) link diagram*

The test points in the figure are not the test points at which the OMD is spoecified. The PMD is specified at TP0v, which is not shown in the figure. The first sentence starting with "The test points" implies that these are the only test points.

SuggestedRemedy

Change the title of the section from "Specified Test Points" to "Referenced Test Points". Delete the word "The" at the beginning of the first sentence. Add a sentence after the first sentence that reads: "The PMD is specified at test points TP0v and TP5v (see 178.9.2.1 and 178.9.3.1)."

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #92.

Cl **178** *SC* **178.9** *P* **361** *L* **40** # 707

Dawe, Piers — Nvidia

Comment Type **TR** *Comment Status* **R** *ical) (bucketp) characteristics*

characteristics

SuggestedRemedy

specifications

Response *Response Status* **U**

REJECT.
The language in the header is consistent with prior electrical PMD clauses and with other subclauses in this draft.
There is no consensus to implement the change.

Cl **178** *SC* **178.9.2** *P* **361** *L* **47** # 708

Dawe, Piers — Nvidia

Comment Type **TR** *Comment Status* **R** *ical) (bucketp) characteristics*

characteristics

SuggestedRemedy

specifications

Response *Response Status* **U**

REJECT.
Resolve using the response to comment #707.

Cl **178** *SC* **178.9.2** *P* **361** *L* **53** # 709

Dawe, Piers — Nvidia

Comment Type **TR** *Comment Status* **R** *ıcketp) TX measurement filter*

fourth-order vs. 5th order BT4. And why 60 GHz?

SuggestedRemedy

Change to 5th order, 53.125 GHz

Response *Response Status* **U**

REJECT.
The comment lacks justification to support the suggested remedy.

Cl **178** *SC* **178.9.2** *P* **362** *L* **36** # 495

Dudek, Mike — Marvell

Comment Type **TR** *Comment Status* **R** *(Electrical) TX SNR_ISI*

The signal-to-residual-intersymbol-interference ratio is an additional effective transmitter noise source which is not included in the COM analysis beyond what is created with the reference package.

SuggestedRemedy

Change the specification to a difference signal-to-residual-intersymbol-interference with a value of 0 dB where the reference is the value of signal-to-residual-intersymbol-interference for the package claimed. Make the same change for C2C, C2M and CR where the reference is the COM module appropriate to the specification. (Or better complete the calculations and put in the value that matches).

Response *Response Status* **U**

REJECT.
The comment does not indicate a problem that needs to be solved. There is a minimum SNR_ISI specification for the purpose mentioned in the comment.
The suggested remedy is a new idea (difference SNR_ISI) that deviates from existing specifications, e.g. clauses 162 and 163, and would result in a lot of changes in the draft. It has insufficient justification for such changes and insufficiant details to implement.

The limit value of SNR_ISI may be worth additional examination to align it with the reference package. A contribition with explanation of the problem, and with a detailed proposal for changes, is encouraged.

Cl **178** *SC* **178.9.2.4** *P* **364** *L* **34** # 710

Dawe, Piers Nvidia

Comment Type **TR** *Comment Status* **R** *(Electrical) (bucketp) Tx N_v*

Nv = 400 ! That's ludicrously rare, 4^400 is 7e240. 100 is enough

SuggestedRemedy

Change Nv to 100 wherever it is 400 in this draft

Response *Response Status* **U**

REJECT.
The pulse response length is intended to measure the steady-state voltage, which may have a long settling time. Limiting the measurement length does not serve any purpose and may cause test fixture dependence.
The probability argument in the comment is irrelevant since in practice the transmit equalizer will likely not be in preset 1 anyway, and in that case v_f will never be encountered.
The comment lacks justification to support the suggested remedy.

Cl **178** *SC* **178.10.1** *P* **371** *L* **12** # 378

Ghiasi, Ali Ghiasi Qunatum/Marvell

Comment Type **ER** *Comment Status* **R** *I) (bucketp) COM parameters*

All symbols such as Cd(1) or Ls(1) the "(1)" seems like is superscript

SuggestedRemedy

Please make it inline

Response *Response Status* **U**

REJECT.

The numbers in parentheses are intended to be superscript. This is the convention used in all clauses in which COM is used (178, 179, 176C, 176D) and matches the parameter definitions in 178A and 93A.

There is no consensus to make the suggested change.

Cl **178** *SC* **178.10.1** *P* **371** *L* **15** # 712

Dawe, Piers Nvidia

Comment Type **ER** *Comment Status* **R** *I) (bucketp) COM parameters*

Indices that look like exponents, should be subscripts

SuggestedRemedy

Change C_d^(1) to C_d1 or Cd1, and so on

Response *Response Status* **U**

REJECT.

Resolve using the response to comment #378.

Cl **178** *SC* **178.10.1** *P* **371** *L* **25** # 713

Dawe, Piers Nvidia

Comment Type **ER** *Comment Status* **R** *(Electrical) (bucketp) COM*

Confusion between z and Z

SuggestedRemedy

As Z for impedance is very strongly established, use something other than z for length, such as L

Response *Response Status* **U**

REJECT.

Lowercase z is the symbol that is used to represent package trace lengths for several generations (e.g. Clauses 93, 137, 163).
L is commonly used to denote inductance, so it may also be considered confusing.

The proposed change would cause inconsistency with previous clauses and may cause confusion.

There is no consensus to make the suggested change.

Cl **178** *SC* **178.10.1** *P* **372** *L* **46** # 714

Dawe, Piers Nvidia

Comment Type **TR** *Comment Status* **R** *(Electrical) (bucketp) Jitter*

With a new COM, we can break away from old mistakes from the 8B/10B days. OIF did this years ago.

SuggestedRemedy

Change "Random jitter" to "Gaussian jitter", and sigma_RJ to sigma_GJ

Response *Response Status* **U**

REJECT.
"Gaussian jitter" appears in only 3 places in 802.3 and is never defined. The first instance is in 48B.1.2 which is titled "Random Jitter".
The suggested remedy deviates from established 802.3 terminology and would cause confusion, since the parameter sigma_RJ is used in multiple previous clauses.

There is no consensus to make the suggested change.

Cl **178** *SC* **178.10.1** *P* **372** *L* **46** # 715

Dawe, Piers Nvidia

Comment Type **TR** *Comment Status* **R** *(Electrical) (bucketp) Jitter*

Unrealistic jitter values

SuggestedRemedy

"RJ" should be increased and D-D jitter should be reduced

Response *Response Status* **U**

REJECT.

The suggested remedy provided in the comment lacks specific values to implement them.

Cl **178B** *SC* **178B.5.1** *P* **788** *L* **21** # 466

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **R** *(Common) ILT timers*

Having an unspecified time limit for rx_ready assertion (from entry to TRAIN_LOCAL) makes for unpredicatable link up behaviors. A time limit from the point at which TRAIN_LOCAL is entered to entry to TRAIN_REMOTE will improve predictability of operation which will facilitate predicatble device behaviors.

SuggestedRemedy

Presentation for a solution to be provided.

Response *Response Status* **U**

REJECT.

The following contribution was reviewed by the task force:
https://www.ieee802.org/3/dj/public/25_07/slavick_3dj_02_2507.pdf

An alternate proposal (per comment #420) in the following contribution was also reviewed:
<URL>/ran_3dj_02a_2505

Comment #420 proposes an alternate way to implement a timer.

Straw poll indicates that more work is needed to build a consensus position for the proposal in either slavick_3dj_02_2507 or ran_3dj_02a_2505.

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

Straw poll TF-6 Pick one (directional)
Straw poll TF-7 Chicago (directional)
I support add ILT timers as follows:
A: per slavick_3dj_02_2507
B: per ran_3dj_02a_2505
C: No changes in this regard
D: NMI
TF-6 -- A: 24 B: 13 C: 3 D: 28
TF-7 -- A: 26 B: 21 C: 15 D: 30

Cl **178B** *SC* **178B.5.3** *P* **789** *L* **24** # 376

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *(Common) ILT retimer*

Figure can improve for better representation

SuggestedRemedy

Suggest the folloiwng:
- CDR ouput add mux (Training/mission modes)
- Connect Training frame decode to training frame encode
- You can also create a new block called "Training State Machine" then connect training decode and encode to it.

Response *Response Status* **U**

REJECT.
Figure 178B-2 is a reference model meant specifically for illustrating the operation of a retimer, not a full functional diagram. Adding too much detail to this diagram will make it unreadable. This "state machine" would need to be connected to tx_mode and the USE_TX_CLOCK signals as well as the training frames.

The commenter is encouraged to provide a detailed proposal with illustration.

Cl **178B** *SC* **178B.5.3** *P* **789** *L* **44** # 421

Ran, Adee — Cisco Systems

Comment Type **TR** *Comment Status* **R** *(Common) ILT extender*

The text about training xMII extenders does not address the communication of the status variables isl_ready and remote_rts between interfaces (PMD to AUI and vice versa) when there is a PHY XS and PCS between them.
Ideally, this communication should be the same as the one defined in 178B.14.2.1 using adjacent_signal_ok, but the case of an extender is not covered by NOTE that describes what "adjacent" is.

Since this behavior is specific to PHYs attached to extenders, it should be specified in this subclause, preferably with a diagram.

SuggestedRemedy

Add a NOTE in 178B.5.3 stating that, for the purpose of adjacent_signal_ok, the adjacent interface of a PMD in a PHY attached to an xMII extender is the service interface of the PHY XS; and the adjacent interface of the AUI component above the PHY XS is the service interface of the PMD.
Add a figure to illustrate the communication of adjacent_signal_ok between the PMD and the AUI (across the PCS and PHY XS, and possibly other sublayers).

Response *Response Status* **U**

REJECT.

The CRG reviewed slides 24 to 28 in the following contribution:
https://www.ieee802.org/3/dj/public/25_07/brown_3dj_03a_2507.pdf

Straw poll TF-1 (below) shows strong consensus to define startup signaling that extends RS to RS.

However, the proposed solution does not provide sufficient detail to implement at this time. For instance, it is missing details for exchanging signals across the PCS service interface.

A detailed contribution on this subject is encouraged.

Straw poll #TF-1 (directional)
I support the direction of extending path start-up signaling (as proposed in D2.0 comment #421) from Reconciliation sublayer to Reconciliation sublayer.
Yes: 23
No: 1
Abstain: 20

Cl **178B** *SC* **178B.7** *P* **796** *L* **5** # 377

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *(Optical) ILT frames*

https://www.ieee802.org/3/dj/public/24_05/ghiasi_3dj_01a_2405.pdf looked at number of options for OLT such as Presets, FFE adjustment, OMA control, chirp, inner-outer eye adjustments, but at the time the Task Force decdied to just enable the basic OLT with pre-coder control. A vendor selected Preset can provide set of Presets optimized for example shorter/longer reacehs, lower OMA more linear or higher OMA less linear, higher peaking or less peaking

SuggestedRemedy

The enhancement to OLT issomehting that Task Force should consider specially that MMF will require enabling Presets. Just like E1 O1 should have 6 Presets, with default Preset 1 only meeting TDECQ, Presets 2-6 may have +1 dB TDECQ penalty.
Clasue 183 800GBASE-LR4 and possibly 800GBASE-FR4 are good candiate to have several presets to better mitigate dispersion penalties
See ghiasi_3dj_01_2507

Response *Response Status* **U**

REJECT.

The following contribution was reviewed by the CRG:
https://www.ieee802.org/3/dj/public/25_07/ghiasi_3dj_01a_2507.pdf

There is no consensus to make the proposed changes.

Cl **178B** *SC* **178B.14.3.4** *P* **809** *L* **4** # 460

Slavick, Jeff — Broadcom

Comment Type **TR** *Comment Status* **R** *(Common) ILT timers*

The duration of the quiet_timer breaks the time alloted during AN to begin sending negotiated rate data stream per 73.4.3.

SuggestedRemedy

Presentation of options to be supplied.

Response *Response Status* **U**

REJECT.

The following contribution was reviewed by the CRG:
https://www.ieee802.org/3/dj/public/25_07/slavick_3dj_01_2507.pdf

There is some agreement that further clarification and perhaps updates to the specifications are needed. However, further details and consensus building is required.

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

Cl **179** *SC* **179.1** *P* **384** *L* **35** # 718

Dawe, Piers — Nvidia

Comment Type **ER** *Comment Status* **R** *(Electrical) (bucketp)*

Tables 1 and 2, and 3 and 4, can be combined

SuggestedRemedy

Combine them into two, as Table 167-2, here and in other clauses

Response *Response Status* **U**

REJECT.
The associated clauses are significantly different between 200G/400G, 800G, and 1.6T, and therefore combination of the tables as suggested would make them less readable.

The tables are consistent with other PMD clauses in most previous PMD clauses.

There is no consensus to make the suggested change.

Cl **179** *SC* **179.9** *P* **393** *L* **19** # 719

Dawe, Piers — Nvidia

Comment Type **TR** *Comment Status* **R** *ical) (bucketp) characteristics*

PMD electrical characteristics

SuggestedRemedy

PMD electrical specifications

Response *Response Status* **U**

REJECT.
Resolve using the response to comment #708.

Cl **179** *SC* **179.9.4** *P* **393** *L* **43** # 734

Dawe, Piers — Nvidia

Comment Type **TR** *Comment Status* **R** *ical) (bucketp) characteristics*

Transmitter characteristics

SuggestedRemedy

Transmitter specifications

Response *Response Status* **U**

REJECT.
Resolve using the response to comment #708.

Cl **179** *SC* **179.9.4** *P* **394** *L* **25** # 735

Dawe, Piers Nvidia

Comment Type **TR** *Comment Status* **R** *(Electrical) CR host classes*

Bad names HL HN HH because H and L are ambiguous: loss or performance or length? Which loss?

SuggestedRemedy

Change to A B C, with A for best

Response *Response Status* **U**

REJECT.
The current names were included in the baseline proposal for passive copper cables, <https://www.ieee802.org/3/dj/public/23_11/tracy_3dj_01a_2311.pdf>. The proposal, excluding nomenclature, was adopted by motion #11 in the November 2023 meeting, see <https://www.ieee802.org/3/dj/public/23_11/minutes_3cwdfdj_2311_approved.pdf#page=26>.
The host class names from the baseline proposal were subsequently adopted by the response to comment #191 against D1.1. See <https://www.ieee802.org/3/dj/comments/D1p1/8023dj_D1p1_comments_final_clause.pdf#page=82>. They appear in multiple places in the draft and in several presentations.
Changing the naming scheme at this point would be disruptive.
The existing names are indicative of insertion loss (Low, Nominal, High).

There is no consensus to make the proposed changes.

Cl **179** *SC* **179.9.4.6** *P* **401** *L* **28** # 741

Dawe, Piers Nvidia

Comment Type **TR** *Comment Status* **R** *(Electrical) (bucketp) Jitter*

Dud jitter method. Turning off aggressor lanes is desperate

SuggestedRemedy

Don't attempt to isolate jitter

Response *Response Status* **U**

REJECT.

The suggested remedy does not provide sufficient detail to implement.

Cl **179** *SC* **179.9.4.6.1** *P* **402** *L* **1** # 738

Dawe, Piers Nvidia

Comment Type **ER** *Comment Status* **R** *(Electrical) (bucketp) jitter*

The standard should be written in English. The three-pronged magnet is pretentious, unfamiliar and unnecessary.

SuggestedRemedy

Change to: For each transition I in the set A:

Response *Response Status* **U**

REJECT.
The comment refers to the mathematical symbol ?.
This symbol appears 77 times in IEEE Std 802.3-2022, with instances spanning clause 21 to clause 144. Readers are assumed to be familiar with it. In case of doubt, It is defined in Table 21-1 as "Indicates membership".

There is no consensus to make the change.

Cl **179** *SC* **179.9.4.6.2** *P* **402** *L* **18** # 739

Dawe, Piers Nvidia

Comment Type **TR** *Comment Status* **R** *(Electrical) (bucketp) jitter*

J4u03 can't be measured for CR because of the losses in the host

SuggestedRemedy

Delete, combine with other impairments into EECQ

Response *Response Status* **U**

REJECT.

The suggested remedy does not provide sufficient detail to implement.

Cl **179** *SC* **179.9.4.6.3** *P* **402** *L* **43** # 742

Dawe, Piers — Nvidia

Comment Type **TR** *Comment Status* **R** *(Electrical) (bucketp) jitter*

EOJ03 should be included in SNDR or EECQ. It's not clear that we need a separate spec for it

SuggestedRemedy

Ensure that SNDR or EECQ include it (by telling the scope that the pattern is twice as long as it is), and delete

Response *Response Status* **U**

REJECT.
Even-odd jitter is a specification parameter for multiple generations of electrical transmitter specifications.
The comment does not indicate a problem that needs to be solved.
The comment does not provide sufficient justification to support the suggested remedy.
The suggested remedy does not provide sufficient detail to implement.

Cl **179** *SC* **179.9.4.7** *P* **403** *L* **5** # 743

Dawe, Piers — Nvidia

Comment Type **TR** *Comment Status* **R** *(Electrical) (bucketp) ERL*

mating interface discontinuity - ambiguous and not defined.

SuggestedRemedy

Clarify what this means

Response *Response Status* **U**

REJECT.
The existing text exists since D1.2 and originates from the response to comment #199 against D1.1. This response was a result of discussion in the CRG with consensus on the wording "excluding the mating interface discontinuity". See <https://www.ieee802.org/3/dj/comments/D1p1/8023dj_D1p1_comments_final_clause.pdf#page=77>.

There may be room for improvement of the wording, but the suggested remedy does not provide sufficient detail to implement. Additional work on this topic is encouraged.

Cl **179** *SC* **179.9.4.7** *P* **403** *L* **19** # 371

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *(Electrical) ERL (bucket2p)*

Not clear why Nbx is zero

SuggestedRemedy

Suggest to make Nbx=15 which number of fixed FFE taps

Response *Response Status* **U**

REJECT.
The existing N_bx value 0 is consistent with the CR PMD in 802.3ck (Clause 162).

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

There was no consensus to make a change.

Cl **179** *SC* **179.9.5.6** *P* **410** *L* **44** # 368

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *(Electrical) RLdc and RLcd*

The more critical return loss is common mode to differential, but for some reason in clause 179 instead RLcd is defined

SuggestedRemedy

Change RLcd to RLdc (common mode to differential)

Response *Response Status* **U**

REJECT.
Resolve using the response to comment #365.

Cl **179** *SC* **179.10.1** *P* **415** *L* **45** # 380

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **ER** *Comment Status* **R** *l) (bucketp) COM parameters*

All symbols such as Cd(1) or Ls(1) the "(1)" seems like is superscript

SuggestedRemedy

Please make it inline

Response *Response Status* **U**

REJECT.

Resolve using the response to comment #378.

Cl **179** *SC* **179.11.7** *P* **415** *L* **11** # 720

Dawe, Piers — Nvidia

Comment Type **TR** *Comment Status* **R** *(Electrical) CR host classes*

Add 4th host class:

SuggestedRemedy

CA-A	HL	HL, HN, HH or HH2	4
	HN	HL, HN, or HH	3
	HH	HL or HN	2
	HH2	HL	1

Response *Response Status* **U**

REJECT.
There is no definition of HH2.

The comment does not indicate a problem that needs to be solved.
The comment does not provide sufficient justification to support the suggested remedy.
The proposed change does not contain sufficient detail to implement.

Cl **179** *SC* **179.11.7.1** *P* **417** *L* **8** # 373

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *(Electrical) CR host classes*

Table 179-17 provide partial channel for different host classes, it would be helpful to also include the losses for the 3 partial channels

SuggestedRemedy

Host Partial HL Class loss = 1.72 dB
Host partial NL Class loss = 9.4 dB
Host partial HH Class loss = 14.35 dB
If one adds the MCB loss of 3.2 dB to the above value then that would give host channel see below and similar to Table 179A-1
Host HL Class loss = 4.9 dB
Host NL Class loss = 9.4 dB
Host HH Class loss = 14.35 dB
The above losses are the not max or min losses, some explanation why value in table 179-17 are chossen would be helpfull.
For the HH case if we go with Zp=140 mm will result in loss of 18.3 dB when MCB is included which inline to max loss in table 179A-1.

Response *Response Status* **U**

REJECT.

Slide 37 in the following contribution was reviewed by the CRG:
https://www.ieee802.org/3/dj/public/25_07/ran_3dj_01b_2507.pdf

The comment suggests adding the ILdd values corresponding to the partial host channel of each host class. That could be done by adding another row in Table 179-17.
However, the ILdd value is just a result of the existing information in the table, and is not a specification by itself. Thus, this row would only be informative. Moreover, it would not represent the whole host channel and thus would not be helpful for implementers (and might cause confusion).
The NOTE below the table includes references to the informative annexes where the recommended host channel ILdd values are listed.

Some further information might be helpful. However, detailed proposal is required.

Cl **179A** *SC* **179A.5** *P* **819** *L* **38** # 594

Kocsis, Sam — Amphenol

Comment Type **TR** *Comment Status* **R** *(Electrical) CR test fixture*

The MTF illustration in Figure 179A-1 allocates an informative reference of the MCB that is hard to validate.

SuggestedRemedy

Move the allocation marker to cover TP1-MCB Via, and align the allocation with the equations in 179B.3

Response *Response Status* **U**

REJECT.
Resolve using the response to comment #289.

Cl **179A** *SC* **179A.5** *P* **820** *L* **39** # 289

Heck, Howard — TE Connectivity

Comment Type **TR** *Comment Status* **R** *(Electrical) CR test fixture*

MCB loss specified in the lower left of Figure 179A-1 is not directly measurable as it is currently specified. Indirect measurement methods do not provide the necessary accuracy. The version of the figure in D1.4 was measureable and reverting back to it will resolve the problem. Equation 179B-2 requires modification to make it accurately represent the MCB insertion loss measured with the 2Xthru method

SuggestedRemedy

Change Figure 179A-1 back to the version that was in D1.4 in which the MCB loss was specified as 2.7dB to the MCB via. Change Equation 179B-2 to IL_catref = -0.0067*f^1.5+0.0309*f-0.2523*sqrt(f)+0.0868. Change the Ildd_catf curve in Figure179B-1 to match the updated equation. A supporting contribution is planned for presentation at the June 26 electrical ad hoc meeting.

Response *Response Status* **U**

REJECT.
A presentation related to the comment was reviewed in the P802.3dj ad hoc meeting: <https://www.ieee802.org/3/dj/public/adhoc/optics/0625_OPTX/ellison_3dj_adhoc_01_250626.pdf>
The presentation noted that the MCB cannot be verified directly against the current specifications (which include the connector) and that this can also lead to mated pairs with non-compliant HCBs.
The proposed change is to move the demarcation line of the MCB loss in Figure 179A-1 to exclude the MCB via and the connector (implicitly leaving 3.25 dB for the MCB via and connector) and change Equation 179B-2 to represent only the MCB transmission line. The changes are shown on slide 5 of ellison_3dj_adhoc_01_250626 (items 1 and 2, and the figure).

The discussion indicated a concern that this proposal would leave the receptacle (part of the MCB) unspecified and unverifiable, and would contradict the text in 179B.3.1 referring to Equation 179B-2 as "The insertion loss of the cable assembly test fixture PCB, test point, connector and any associated vias".

Additionally, the proposal is based on an assumption that the connector+via is always the same (e.g. 3.25 dB at 53.125 GHz), but this may vary between form factors and receptacle designs.

The following straw poll was taken
Straw poll #E-2 (directional)
I support the direction of the proposal in ellison_3dj_adhoc_01_250626 slide 5.
Y: 10 N: 17 NMI: 12

there was no consensus for making the proposed changes. Further contributions in this area would be welcome.

Cl **179A** *SC* **179A.5** *P* **821** *L* **4** # 658

Swenson, Norman — Nokia, Point2

Comment Type **TR** *Comment Status* **R** *:al) CR test fixture (bucket2p)*

What is the extra rectangle labeled Paddle/Wire Termination shown in Fig. 179A-2 that is not shown in the mated test fixtures in Fig 179A-1? It is not explained in the text.

SuggestedRemedy

Clarify

Response *Response Status* **U**

REJECT.
The rectangle and labels "Paddle/Wire Termination" serve as demarcation of the cable assembly and the host channel, in Figures 179A-1, 2, and 3. The "Paddle" and "Wire Termination" are structures associated with the cable assembly, and are not necessarily present in an HCB (or Mated Test Fixture). The labels are used to identify specific structures that are not documented elsewhere in the figure.

These figures provide illustration as appropriate within an informative Annex. Similar figures with the same features are included in in Annex 162A, added by IEEE Std 802.3ck.

The suggested remedy does not contain sufficient detail for the CRG to discuss a specific change. A detailed proposed change and consensus building are encouraged.

Cl **179B** *SC* **179B.2** *P* **823** *L* **27** # 44

Mellitz, Richard — Samtec

Comment Type **TR** *Comment Status* **R** *(Electrical) MTF - ILdd*

The Insertion loss equation uses a complicated set of coefficient powers (eq 179B-1) which do not appear to be tied to the physics of the test fixture design nor to compliance testing

SuggestedRemedy

Replace:
"The TP2 or TP3 test fixture (also known as Host Compliance Board) is required for measuring the transmitter and receiver specifications at TP2 and TP3. The TP2 and TP3 test points are illustrated in Figure 179-2."
with:
The TP2 or TP3 test fixture (also known as Host Compliance Board) is required for measuring the transmitter and receiver specifications at TP2 and TP3. The TP2 and TP3 test points have a normalize signal power between 0.46 and 0.52 V^2. The fit insertion loss is 3.8 dB.
The normalized signal power (P_signal) is calculated according to ### (slide 7 in mellitz_3dj_03_2505") with fb = 106.25 GHz, Tt = 6 ps, and fr = 0.55 × fb over the range fmin = 0.05 GHz to fmax = 67 GHz.
Remove section: 179B.2.1

Response *Response Status* **U**

REJECT.

Resolve using the response to comment #46.

Cl **179B** *SC* **179B.2.1** *P* **823** *L* **34** # 513

Dudek, Mike — Marvell

Comment Type **TR** *Comment Status* **R** *(Electrical) CR test fixture*

The loss needs to be better defined to be less ambiguous.

SuggestedRemedy

Insert the sentence "The cable assembly tested fixture loss is equal to the loss of the mated test fixture minus the loss of the specific TP2 or TP3 test fixture printed circuit board loss used when measuring the mated text fixture loss." between the 1st and 2nd sentences.

Response *Response Status* **U**

REJECT.
Resolve using the response to comment #289.
[Editor's note: Changed Page from 823 to 824]

Cl **179B** *SC* **179B.3** *P* **823** *L* **27** # 45

Mellitz, Richard — Samtec

Comment Type **TR** *Comment Status* **R** *(Electrical) MTF - ILdd*

The Insertion loss equation uses a complicated set of coefficient powers (eq 179B-2) which do not appear to be tied to the physics of the test fixture design nor to compliance testing.

SuggestedRemedy

Replace:
The cable assembly test fixture (also known as Module Compliance Board) is required for measuring the cable assembly specifications in 179.11 at TP1 and TP4. The TP1 and TP4 test points are illustrated in Figure 179-2.
With:
The TP1 or TP4 test fixture (also known as Host Compliance Board) is required for measuring the transmitter and receiver specifications at TP2 and TP3. The TP2 and TP3 test points have a normalize signal power between 0.41 and 0.47 V^2. The fit loss is 5.95 dB.
The normalized signal power (P_signal) is calculated according to ### (slide 7 in mellitz_3dj_03_2505") with fb = 106.25 GHz, Tt = 6 ps, and fr = 0.55 × fb over the range fmin = 0.05 GHz to fmax = 67 GHz.
Remove section: 179B.3.1

Response *Response Status* **U**

REJECT.
Resolve using the response to comment #46.

Cl **179B** *SC* **179B.3.1** *P* **824** *L* **33** # 601

Kocsis, Sam — Amphenol

Comment Type **TR** *Comment Status* **R** *(Electrical) CR test fixture*

Text says "cable assembly test fixture PCB, test point, ocnnector and any associated vias" has proven to be difficult to validate. Since the effects of the differences between an actual test fixture and the reference insertion loss are to be accounted for, the reference definition should be more tangible.

SuggestedRemedy

Replace "cable assembly test fixture PCB, test point, ocnnector and any associated vias" with "cable assembly test fixture, from the RF connector refrence plane to the MDI transition". Update Equation 179B-1 appropriately, and remove "PCB" from the other (2) instance in this section.

Response *Response Status* **U**

REJECT.
Resolve using the response to comment #289.

Cl **179B** *SC* **179B.4** *P* **825** *L* **3** # 46

Mellitz, Richard — Samtec

Comment Type **TR** *Comment Status* **R** *(Electrical) MTF - ILdd*

The Insertion loss specification uses a complicated reference line (eq 179B-3, 4, and 5) which does not appear to be tied to the physics of the test fixture design nor to compliance testing measurements. The reason for the 1.5 power term is not defined. The equation was developed as an average of measurements (kocsis_3dj_adhoc_01_250206). The normalized signal power is expected to track performance better than the specified frequency masks and reference lines

SuggestedRemedy

Replace:
"The TP2 or TP3 test fixture and the cable assembly test fixture are specified in a mated state illustrated in Figure 92-18. The mated test fixtures specifications are given below."
With:
The TP2 or TP3 test fixture and the cable assembly test fixture has a normalized signal power (P_signal) of the Insertion loss shall be between 0.31 and 0.34 V^2. The normalized signal power (P_signal) is calculated according to ### (slide 7 in mellitz_3dj_03_2505") with fb = 106.25 GHz, Tt = 6 ps, and fr = 0.55 × fb over the range fmin = 0.05 GHz to fmax = 67 GHz.
Remove section: 179B.3.1 to line 1 on page 825.
Keep the following lines:
The FOM_ILD and is calculated according to 93A.4 with fb = 106.25 GHz, Tt = 6 ps, and fr = 0.55 × fb. The fitted insertion loss and insertion loss deviation are computed over the range fmin = 0.05 GHz to fmax = 67 GHz. FOM_ILD shall be less than or equal to 0.15 dB.

Response *Response Status* **U**

REJECT.
The limit lines were adopted by comment #139 against D1.4 (see <https://www.ieee802.org/3/dj/comments/D1p4/8023dj_D1p4_comments_final_id.pdf#page=33> and the related presentation <https://www.ieee802.org/3/dj/public/25_03/sekel_3dj_01_2503.pdf>).

The comment points out that detailed physics behind the mated test fixture equations is not provided. However, such information has not been provided with numerous other limit-mask equations in previous clauses. It is unclear what problem with testing compliance of test fixtures.

The suggested remedy offers an alternative method using a "signal power" metric, but it is not clear how it improves the testability or the quality of test fixtures.
The suggested remedy mentions the contribution <https://www.ieee802.org/3/dj/public/25_05/mellitz_3dj_03_2505.pdf>.

Note that test fixtures are specified with a region around the reference ILdd, in order to limit variability in measurements of hosts, modules, and cables. It is not clear that the suggested remedy achieves that purpose.

Further data and consensus building on this idea are encouraged.

There was no consensus to implement the suggested changes.

Cl **179B** *SC* **179B.4.6** *P* **830** *L* **23** # 47

Mellitz, Richard — Samtec

Comment Type **TR** *Comment Status* **A** *(Electrical) MTF - ICN*

"Total integrated crosstalk noise voltage" and "MDFEXT integrated crosstalk noise voltage" is system use case dependent. Aft is not relevant. See "mellitz_3dj_03_2505"

SuggestedRemedy

Remove "Total integrated crosstalk noise voltage" lines (24)
Add section describing slide 7 on in "mellitz_3dj_03_2505" for SNR_MDFEXT.
Replace:
MDFEXT integrated crosstalk noise voltage (max)
with:
SNR_MDFEXT (min) of 40 dB
(slide 10 in mellitz_3dj_03_2505")

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
The comment provides an alternative method to specify far-end crosstalk (MDFEXT) allowance for a mated test fixture, as in the referenced contribution <https://www.ieee802.org/3/dj/public/25_05/mellitz_3dj_03_2505.pdf>
The comment does not demonstrate the benefits of the proposed method compared to the existing method, and does not replace the existing method completely (ie. current method still applies to MDNEXT).

There is no consensus to adopt the proposed method at this time.
However, there is consensus to remove the total integrated crosstalk noise specification.

Delete the row "Total integrated crosstalk noise voltage" from Table 179B-4.

Cl **180** *SC* **180.7.1** *P* **438** *L* **44** # 488

Kimber, Mark — Semtech

Comment Type **TR** *Comment Status* **R** *(Optical) Ceq*

Over equalizing transmitters can cause BER floor issues as shown in kimber_3dj_01a_2505. Keeping Ceq > 1 (0dB) helps to prevent Tx peaking.

SuggestedRemedy

Add additional specification line after TECQ specification.
Noise Enhancement Factor, Ceq (min) 1

Response *Response Status* **U**

REJECT.
Resolve using the response to comment #491.

Cl **180** *SC* **180.9.5** *P* **447** *L* **1** # 1

El-Chayeb, Ahmad — Keysight Technologies

Comment Type **TR** *Comment Status* **R** *(Common) TDECQ*

Current definition for TDECQ points to clause 121.8.5.1 where TDECQ is calculated at a pre-FEC target SER. This definition is not a very good indicator of link performance

SuggestedRemedy

Re-define TDECQ and extend it to CER (codeword error ratio) to have better correlation with link performance. CER TDECQ definition need to be technically and economically feasible. A subsequent presentation will be provided at a later ad-hoc meeting.

Response *Response Status* **U**

REJECT.

The following contribution was reviewed by the CRG:
https://www.ieee802.org/3/dj/public/25_07/chayeb_3dj_01b_2507.pdf

The proposal does not provide sufficient detail to implement.

However, based on the straw poll TF-8 there is strong interest for further work on this subject.

Straw poll TF-8 (directional)
I am interested in further refinement of the proposal for Codeword Error Rate TDECQ as described in chayeb_3dj_01c_2507.pdf as a replacement for TDECQ
Y: 51
N: 11
Abstain: 21

Cl **180** *SC* **180.9.5** *P* **447** *L* **24** # 721

Dawe, Piers — Nvidia

Comment Type **TR** *Comment Status* **R** *(Common) ser*

4.56 x 10^-4 and the related Q t value (see 121.8.5.3) is 3.428
-> Qt = 3.846, 1 dBe better "SNR" (but doesn't change xECQ by that much). (implied 9e-5 but that doesn't matter). do this less for SRS and URS. 10*log10(3.846/3.428) = 0.5

SuggestedRemedy

Change Qt to 3.846, 1 dBe better "SNR" (but doesn't change xECQ by that much). (implied 9e-5 but that doesn't matter). Don't change Qt for for SRS and URS. FYI 10*log10(3.846/3.428) = 0.5

Response *Response Status* **U**

REJECT.

There is some agreement that further work is needed.

There is no consensus to make the proposed changes.

Cl **180** *SC* **180.9.5** *P* **448** *L* **18** # 343

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **A** *(Common) taps*

Contribution https://www.ieee802.org/3/dj/public/25_05/chayeb_3dj_01_2505.pdf showed that for some weired FFE setting still one may have compliant TDECQ but BER can degrade with this 100G DSP likley due to timing recovery

SuggestedRemedy

Contribution https://www.ieee802.org/3/dj/public/24_07/ghiasi_3dj_02a_2407.pdf with data from several suppliers was used to set the limits for TDECQ. Limiting the taps can result in many good modules and we are not sure given that we have link training if this type of problem still exist for weired transmitter FFE settigns. Any limit on TDECQ FFE taps must not result in failing good moduels, looking at the data in Chayeb the following tap adjsutments will have minimum impact on module yield and will address the case of weired transmitter FFE casuing receive BER floor:
Change C(1) from 0.2 to to 0.1 and add following restriction Max C(1)-C(-1) taps=0.4
Other improvements are is to use Block TDECQ and functional hardware receiver
see https://www.ieee802.org/3/dj/public/25_05/ghiasi_3dj_03a_2505.pdf
see ghiasi_3dj_03_2507

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

The following contribution was reviewed by the CRG:
https://www.ieee802.org/3/dj/public/25_07/ghiasi_3dj_03c_2507.pdf

Add the following constraint in Table 180-15, Table 181-13, Table 182-15, and Table 183-14:
abs(c(1)-c(-1)) < 0.25 only if c(1) > 0

Implement with editorial license.

Straw Poll O-1 (pick one) and O-2 (chicago)
I support the following constraint:
A: abs(c(1)-c(-1)) < 0.3
B: abs(c(1)-c(-1)) < 0.25 only if c(1) > 0
C: -0.3 < c(1)-c(-1) < 0.15
D: no change
O-1: A: 6 B: 10 C: 6 D: 3
O-2: A: 8 B: 13 C: 10 D: 3

Cl **180** *SC* **180.9.5** *P* **448** *L* **23** # 508

Dudek, Mike — Marvell

Comment Type **TR** *Comment Status* **A** *(Common) taps*

It is shown in https://grouper.ieee.org/groups/802/3/dj/public/25_05/chayeb_3dj_01_2505.pdf (at 100G) that despite a passing TDECQ value, with non optimum Tx settings that require the reference receiver to have a large difference in value between the 1st precursor tap and the 1st postcursor tap, a receiver has excessive BER and post-FEC errors. It is not expected that well tuned transmitters will have this large difference in the reference equalizer tap values.

SuggestedRemedy

Add an extra requirement to table 180.15 that Abs(C(-1)-C(+1))<0.3 . Also to tables 181-13, 182-15 and 183-14

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #343.

Cl **181** *SC* **181.7.1** *P* **462** *L* **26** # 489

Kimber, Mark — Semtech

Comment Type **TR** *Comment Status* **R** *(Optical) Ceq*

Over equalizing transmitters can cause BER floor issues as shown in kimber_3dj_01a_2505. Keeping Ceq > 1 (0dB) helps to prevent Tx peaking.

SuggestedRemedy

Add additional specification line after TECQ specification.
Noise Enhancement Factor, Ceq (min) 1

Response *Response Status* **U**

REJECT.
Resolve using the response to comment #491.

Cl **181** *SC* **181.9.5** *P* **471** *L* **35** # 345

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **A** *(Common) taps*

Contribution https://www.ieee802.org/3/dj/public/25_05/chayeb_3dj_01_2505.pdf showed that for some weired FFE setting still one may have compliant TDECQ but BER can degrade with this 100G DSP likley due to timing recovery

SuggestedRemedy

Contribution https://www.ieee802.org/3/dj/public/24_07/ghiasi_3dj_02a_2407.pdf with data from several suppliers was used to set the limits for TDECQ. Limiting the taps can result in many good modules and we are not sure given that we have link training if this type of problem still exist for weired transmitter FFE settigns. Any limit on TDECQ FFE taps must not result in failing good moduels, looking at the data in Chayeb the following tap adjsutments will have minimum impact on module yield and will address the case of weired transmitter FFE casuing receive BER floor:
Change C(1) from 0.2 to to 0.1 and add following restriction Max C(1)-C(-1) taps=0.4
Other improvements are is to use Block TDECQ and functional hardware receiver
see https://www.ieee802.org/3/dj/public/25_05/ghiasi_3dj_03a_2505.pdf
see ghiasi_3dj_03_2507

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #343.

Cl **182** *SC* **182.7.1** *P* **487** *L* **9** # 490

Kimber, Mark — Semtech

Comment Type **TR** *Comment Status* **R** *(Optical) Ceq*

Over equalizing transmitters can cause BER floor issues as shown in kimber_3dj_01a_2505. Keeping Ceq > 1 (0dB) helps to prevent Tx peaking.

SuggestedRemedy

Add additional specification line after TECQ specification.
Noise Enhancement Factor, Ceq (min) 1

Response *Response Status* **U**

REJECT.
Resolve using the response to comment #491.

Cl **182** *SC* **182.9.5** *P* **498** *L* **18** # 347

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **A** *(Common) taps*

Contribution https://www.ieee802.org/3/dj/public/25_05/chayeb_3dj_01_2505.pdf showed that for some weired FFE setting still one may have compliant TDECQ but BER can degrade with this 100G DSP likley due to timing recovery

SuggestedRemedy

Contribution https://www.ieee802.org/3/dj/public/24_07/ghiasi_3dj_02a_2407.pdf with data from several suppliers was used to set the limits for TDECQ. Limiting the taps can result in many good modules and we are not sure given that we have link training if this type of problem still exist for weired transmitter FFE settigns. Any limit on TDECQ FFE taps must not result in failing good moduels, looking at the data in Chayeb the following tap adjsutments will have minimum impact on module yield and will address the case of weired transmitter FFE casuing receive BER floor:
Change C(1) from 0.2 to to 0.1 and add following restriction Max C(1)-C(-1) taps=0.4
Other improvements are is to use Block TDECQ and functional hardware receiver
see https://www.ieee802.org/3/dj/public/25_05/ghiasi_3dj_03a_2505.pdf
see ghiasi_3dj_03_2507

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #343.

Cl **183** *SC* **183.7.1** *P* **512** *L* **37** # 491

Kimber, Mark — Semtech

Comment Type **TR** *Comment Status* **R** *(Optical) Ceq*

Over equalizing transmitters can cause BER floor issues as shown in kimber_3dj_01a_2505. Keeping Ceq > 1 (0dB) helps to prevent Tx peaking.

SuggestedRemedy

Add additional specification line after TECQ specification.
Noise Enhancement Factor, Ceq (min) 1

Response *Response Status* **U**

REJECT.

Given the changes to the reference equalizer as noted in comment #384 , there is no consensus to make a change at this time. There is more than one candidate method to address the comment.

Further work using the new reference receiver is encouraged.

Cl **183** *SC* **183.9.5** *P* **522** *L* **18** # 349

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **A** *(Common) taps*

Contribution https://www.ieee802.org/3/dj/public/25_05/chayeb_3dj_01_2505.pdf showed that for some weired FFE setting still one may have compliant TDECQ but BER can degrade with this 100G DSP likley due to timing recovery

SuggestedRemedy

Contribution https://www.ieee802.org/3/dj/public/24_07/ghiasi_3dj_02a_2407.pdf with data from several suppliers was used to set the limits for TDECQ. Limiting the taps can result in many good modules and we are not sure given that we have link training if this type of problem still exist for weired transmitter FFE settigns. Any limit on TDECQ FFE taps must not result in failing good moduels, looking at the data in Chayeb the following tap adjsutments will have minimum impact on module yield and will address the case of weired transmitter FFE casuing receive BER floor:
Change C(1) from 0.2 to to 0.1 and add following restriction Max C(1)-C(-1) taps=0.4
Other improvements are is to use Block TDECQ and functional hardware receiver
see https://www.ieee802.org/3/dj/public/25_05/ghiasi_3dj_03a_2505.pdf
see ghiasi_3dj_03_2507

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #343.

Cl **184** *SC* **184.5.7** *P* **543** *L* **42** # 283

Ren, Hao — Huawei

Comment Type **TR** *Comment Status* **R** *(Logic) FEC bin counters*

The number of Inner_FEC_codeword_error_bin_k counters can be decreased.
k = 0 should be ignored, because this counter value can be calculated from other counters.
Also in 802.3ck, k=0 is not set for RS-FEC error bin counter as in 161.6.17.

SuggestedRemedy

Change:
A set of k+1 32-bit counters where k = 0 to 4.
to:
A set of k 32-bit counters where k = 1 to 4.

Response *Response Status* **U**

REJECT.

Resolve using the response to comment #561.

Cl **185** *SC* **185.1** *P* **556** *L* **40** # 418

Ran, Adee — Cisco Systems

Comment Type **TR** *Comment Status* **R** *(Common) ILT coherent*

In order to bring up a link that includes multiple ISLs, the functionality of ILT as specified by Annex 178B (specifically Figure 178B-7 and Figure 178B-8) is required across ISLs. This is true regardless of the PMD type, and even if the PMD does not use a training protocol, such as 800GBASE-LR1.

In PMDs that don't have a training protocol, the "quiet" and "local pattern" modes are the method of communicating the RTS to the peer. However, the local pattern is currently not defined.

SuggestedRemedy

Add 178B-ILT, Required as row in Table 185-1 (as in other PMD clauses)..

Add a subclauase under 185 defining the ILT functionality; it is as specified in Annex 178B, with mr_training_enable always set to false (since 800GBASE-LR1 doesn't have a training protocol). Specify that Inner FEC encoded PRBS31 test pattern defined in 184.6.1 (which may be generated by the inner FEC sublayer) is the pattern used when tx_mode has the value local_pattern (see 178B.14.3.1).

Response *Response Status* **U**

REJECT.

The following contributions were reviewed by the CRG:
https://www.ieee802.org/3/dj/public/25_07/ran_3dj_03a_2507.pdf
https://www.ieee802.org/3/dj/public/25_07/mi_3dj_01a_2507.pdf

Per straw poll TF-3 there is significant support for providing support for end-to-end path start-up in 802.3dj coherent PMDs.

Also, straw poll TF-4 indicates support in the direction in ran_3dj_03a_2507, but more details and consensus building required.

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

Straw poll TF-3 (directional):
I support adding support for end-to-end path start-up in 802.3dj coherent PMDs.
Yes: 33
No: 1
Abstain: 12

Straw poll TF-4 (directional):
I support the the direction of supporting end-to-end path start-up in 802.3dj coherent PMDs proposed in ran_3dj_03a_2507.
Yes: 22
No: 2
NMI: 16

Abstain: 10

Cl **185** *SC* **185.6.1** *P* **564** *L* **50** # 398

Mi, Guangcan Huawei Technologies Co., Ltd

Comment Type **TR** *Comment Status* **R** *(Optical) slew rate*

The Tx laser frequency slew rate is required to be measured at the stages of pre-acquisition and post acquisition and satisify the value defined in Table 185-5, however there is no definition of the term of acquisition in the draft. Though "acquisition" is a widely used term for coherent experts, it appears out of context in this draft. It may be able to relate to some of the Inner FEC behaviour or PMA behaviour, but it could use some explanation.

SuggestedRemedy

add definition of acquisition in the text where Tx laser frequency slew rate is defined. Looking for help from Coherent experts here.

Response *Response Status* **U**

REJECT.

The suggested remedy does not provide sufficient detail to implement. See also the response to comment #389.

Cl **187** *SC* **187.1** *P* **630** *L* **44** # 419

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **R** *non) ILT coherent (bucket2p)*

In order to bring up a link that includes multiple ISLs, the functionality of ILT as specified by Annex 178B (specifically Figure 178B-7 and Figure 178B-8) is required across ISLs. This is true regardless of the PMD type, and even if the PMD does not use a training protocol, such as 800GBASE-ER1 and 800GBASE-ER1-20.

In PMDs that don't have a training protocol, the "quiet" and "local pattern" modes are the method of communicating the RTS to the peer. However, the local pattern is currently not defined.

SuggestedRemedy

Add 178B-ILT, Required as row in Table 187-1 (as in other PMD clauses)..

Add a subclauase under 187 defining the ILT functionality; it is as specified in Annex 178B, with mr_training_enable always set to false (since 800GBASE-ER1/ER1-20 don't have a training protocol). Specify that the 800GBASE-ER1 FEC encoded PRBS31 test pattern defined in 186.2.3.12 (which may be generated by the 800GBASE-ER1 FEC sublayer) is the pattern used when tx_mode has the value local_pattern (see 178B.14.3.1).

Response *Response Status* **U**

REJECT.
Resolve using the response to comment #418.