Cl **180** *SC* **180.9.7.1** *P* **488** *L* **47** # 1

Maniloff, Eric Ciena

Comment Type **TR** *Comment Status* **A** *TDECQCER (O)*

Discrepancy in optical modulation amplitude used for OMAouter – TDECQCER penalty computation in link budget:
To compute the link budget the transmitter penalty (TDECQCER) per equation 180-25 is to be subtracted from the OMAouter measured per SC 180.9.5. However, in SC 180.9.7.1, equation 180-26 suggests using OMATDECQ as the reference level of the ideal PAM4 signal for computation of the transmitter penalty (TDECQCER). In case, OMAouter measured per SC 180.9.5 and OMATDECQ computed per SC 180.9.7.1 differ, the quantity OMAouter- TDECQCER used in the link budget will be incorrect.

SuggestedRemedy

In equation 180-26, substitute OMATDECQ with OMAouter (measured per SC 180.9.5) in the report of the TDECQCER penalty.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

A similar change was adopted in comment #4 for TDECQ. This comment proposes to do the same for TDECQ_CER.

In Equation 180-26 and on page 488 line 52 change "OMA_TDECQ" to "OMA_outer".

Also on page 488 line 52...
Change "is measured as defined in 180.9.5 except using waveforms captured at the output of the reference equalizer,"
To: "is measured as defined in 180.9.5"

Cl **180** *SC* **180.9.9** *P* **489** *L* **47** # 2

Maniloff, Eric Ciena

Comment Type **TR** *Comment Status* **A** *TFSEH (O)*

For symbol errors ≥ 9 Table 180-18 specifies flat counts, consistent with a pre FEC BER ~2.3E-4. This implies that a transmitter could have a large error floor and still pass the test. It would be preferable to specify the actual probabilities consistent with a value of ~1e-26 or include no values with an informative note indicating these bins should have no measured occurances.

The measurement time to determine the probabilities for k≥9 in unreasonably long for the 2.4e-5 BER defined in this clause.

SuggestedRemedy

Update the values in Table 180-18 for symbol errors ≥ 9 to remove the flat mask. Remove these values and include a note that these bins should record zero counts.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #9.

Cl **175** *SC* **175.2.5.3** *P* **298** *L* **32** # 3

Maniloff, Eric Ciena

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

Currently hi_ser is defined as being calculated based on the number of symbol errors detected in consecutive non-overlapping blocks of 8192 codewords for 1.6TBASE-R.

In 400GbE, hi_ser was based on 8192 codewords. In 800GbE, hi_ser was based on 8192 codewords per 400G flow with the output of the two flows OR'd to report hi_ser. 100GE and 200GE hi_ser is calculated over 2 AM periods. For 400GbE & 800GbE the interval for measurement is equal to an AM period, hence no counter is required. 100GbE and 200GbE have hi_ser intervals = 2 times the AM period.

Currently 1.6TbE has changed the interval to be less than the AM period. The hi_ser measurement window should be aligned with an AM period, this will maintain the 104.8576 µs time interval used in previous the PCS of 400 & 800GbE.

SuggestedRemedy

Two resolutions are possible:

Option 1: Change the hi_ser measurement interval to 32768 codewords (4x8192) to be consistent with the AM period, with the threshold for declaring hi_ser scaled by a factor of 4.

Option 2: Follow the approach of 800GbE, and calculate hi_ser individually in each FEC decoder over 8192 codewords with the results OR'd.

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

Cl **180** *SC* **180.9.6.4** *P* **485** *L* **41** # 4

Maniloff, Eric Ciena

Comment Type **TR** *Comment Status* **A** *TDECQ and OMA (CO)*

Discrepancy in optical modulation amplitude used for OMAouter – T(D)ECQ penalty computation in link budget:
To compute the link budget the transmitter penalty (TECQ,TDECQ) per equation 180-12 is to be subtracted from the OMAouter measured per SC 180.9.5. However, in SC 180.9.6.4, equation 180-12 suggests using OMATDECQ as the reference level of the ideal PAM4 signal for computation of the transmitter penalty (TECQ,TDECQ). In case, OMAouter measured per SC 180.9.5 and OMATDECQ computed per SC 180.9.6.4 differ, the quantity OMAouter-TECQ or OMAouter-TDECQ used in the link budget will be incorrect.

SuggestedRemedy

In equation 180-12, substitute OMATDECQ with OMAouter (measured per SC 180.9.5) in the report of the TDECQ penalty.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The CRG review the following contributions:
https://www.ieee802.org/3/dj/public/26_01/ran_3dj_04a_2601.pdf
https://www.ieee802.org/3/dj/public/26_01/alloin_3dj_01b_2601.pdf

Straw poll #1 indicates strong support to implement the proposal in alloin_3dj_01b_2601.

Slides 6 and 10 of the following contribution were reviewed by the task force:
https://www.ieee802.org/3/dj/public/26_01/issenhuth_3dj_01c_2601.pdf

Implement the changes shown on slide 6 and 10 of issenhuth_3dj_01c_2601 with editorial license.

Straw poll #1 (directional)
With regards to reconciling the definitions of OMAouter and OMATDECQ, I prefer
A: the specific definitions and algorithmic changes as proposed in alloin_3dj_01b_2601 (slide 20) [which keeps the definition of OMAouter before the reference equalizer and replaces OMATDECQ with OMAouter in the TDECQ equation (180-12)]
B: the specific definitions and algorithmic changes as proposed in ran_3dj_04a_2601 [which moves the measurement of OMAouter to the slicer input, and make appropriate changes to the equations]
C: need more information
D: abstain
Results: A: 55 B: 2 C: 12 D: 8

Cl **178B** *SC* **178B.8.3.5** *P* **893** *L* **30** # 5

Lusted, Kent — Synopsys

Comment Type **T** *Comment Status* **A** *(bucket) (CA)*

In the RX_READY box of Figure 178B-10, the assignment of tx_disable is incorrect. The current text is "tx_disable <= local_rts" and should be "tx_disable <= !local_rts".

The resolution to D2.2 comment #222 contains "Implement the proposed changes on slide 19 of brown_3dj_03b_2511" in which the text for the RX_READY box is "tx_disable <= !local_rts".

SuggestedRemedy

In the RX_READY box of Figure 178B-10 change "tx_disable <= local_rts" to "tx_disable <= !local_rts".

Response *Response Status* **C**

ACCEPT.

Cl **177** *SC* **177.4.5** *P* **360** *L* **33** # 6

Bruckman, Leon — Nvidia

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

Text: "The addition operation inside the matrix multiplication is an XOR operation." is not clear where is the matrix multiplication ? Needs a reference to an equation

SuggestedRemedy

Change: "The addition operation inside the matrix multiplication is an XOR operation."
To: "The addition operation in Equation 177-3 is a XOR operation."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The suggested remedy to add a reference to Equation 177-3 is incorrect. The sentence which comes immediately after Equation 177-1 states: "The addition operation inside the matrix multiplication is an XOR operation". It was added in response to comment #196 against D2.2 and refers to the "dot multiplication" operation inside the matrix multiplication in Equation 177-1 and Equation 177-5. However, this sentence could be reworded to make this clearer.

Change:
"The addition operation inside the matrix multiplication is an XOR operation."

To:
"The matrix dot multiplication in these equations includes an XOR operation as the addition step."

Cl **178** *SC* **178.8.10** *P* **389** *L* **37** # 7

Bruckman, Leon — Nvidia

Comment Type **TR** *Comment Status* **R** *unctional specifications (CG)*

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* **C**

REJECT.

The functionalily of PMD reset in KR PMDs is the same as that of CR PMDs (179.8.10), and the test should have been written this way, consistent with other subclauses of 178.8.

The comment suggests a change that would make this function different from that of 179.8.10. While this change could be considered an improvement, it should be applied to other PMD reset function definitions as well. This topic can be reconsidered in SA ballot and the commenter is encouraged to submit a comment at that time.

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

Cl **179** *SC* **179.8.4** *P* **423** *L* **24** # 8

Bruckman, Leon — Nvidia

Comment Type **TR** *Comment Status* **R** *ILT/RTS/APSU wording (CA)*

The start up protocol was renamed APSU

SuggestedRemedy

Change: "of the ILT startup protocol"
To: "of the APSU startup protocol"

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **180** *SC* **180.9.9** *P* **489** *L* **28** # 9

Cole, Chris — Coherent Corp.

Comment Type **TR** *Comment Status* **A** *TFSEH (O)*

Descriptive text needs updating to accompany change to Table 180-18

SuggestedRemedy

Update text as per cole_3dj_01_2601

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The following contributions were reviewed by the CRG:
https://www.ieee802.org/3/dj/public/26_01/cole_3dj_01c_2601.pdf
https://www.ieee802.org/3/dj/public/26_01/maniloff_3dj_01a_2601.pdf

There was support for the direction proposed in maniloff_3dj_01a_2601 but there were concerns that more work is necessary to refine the proposal. Further work on this topic is encouraged during SA Ballot.

Change the editor's note at the start of 180.9.9 to the following:
"Editor's note (to be deleted prior to publication): The method defined in this subclause and its validation is a work in progress, and in its current form needs to improve. Further contributions in this regard are encouraged.
Some contributions on this topic may be found under "Optics Topics" on the following page:
https://www.ieee802.org/3/dj/public/26_01/index.html"

Cl **180** *SC* **180.9.9** *P* **489** *L* **45** # 10

Cole, Chris — Coherent Corp.

Comment Type **TR** *Comment Status* **A** *TFSEH (O)*

Table 180-18 needs updating to include relevant probabilities only

SuggestedRemedy

Update Table180-18 as per cole_3dj_01_2601

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #9.

Cl **180** *SC* **180.9.9.1** *P* **490** *L* **26** # 11

Cole, Chris — Coherent Corp.

Comment Type **TR** *Comment Status* **A** *TFSEH (O)*

Equations 180-28 through 180-31 need updating for full alignment with Tables 180-7 and 180-9

SuggestedRemedy

Update 180.9.9.1 equations and text as per cole_3dj_01_2601

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The following contributions were reviewed by the CRG:
https://www.ieee802.org/3/dj/public/26_01/cole_3dj_01c_2601.pdf

The specific slides relevant to this comment are 9 through 11.

There was some support for the direction proposed, but there were concerns that more work is necessary to refine the proposal. Further work on this topic is encouraged during SA Ballot.

Resolved by changes to the editor's note per comment #9.

Cl **181** *SC* **181.9.9** *P* **520** *L* **1** # 12

Cole, Chris — Coherent Corp.

Comment Type **TR** *Comment Status* **A** *TFSEH (O)*

Exceptions to equations 180-28 through 180-31 need updating for full alignment with Tables 181-5 and 181-7

SuggestedRemedy

Update 181.9.9 text as per cole_3dj_01_2601

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The following contributions were reviewed by the CRG:
https://www.ieee802.org/3/dj/public/26_01/cole_3dj_01c_2601.pdf

The specific slides relevant to this comment are 15 and 16.

There was some support for the direction proposed, but there were concerns that more work is necessary to refine the proposal. Further work on this topic is encouraged during SA Ballot.

Resolved by changes to the editor's note per comment #9.

Cl **182** *SC* **182.9.9** *P* **552** *L* **24** # 13

Cole, Chris — Coherent Corp.

Comment Type **TR** *Comment Status* **A** *TFSEH (O)*

Exceptions to equations 180-28 through 180-31 need updating for full alignment with Tables 182-7 and 182-9

SuggestedRemedy

Update 182.9.9 text as per cole_3dj_01_2601

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The following contributions were reviewed by the CRG:
https://www.ieee802.org/3/dj/public/26_01/cole_3dj_01c_2601.pdf

The specific slides relevant to this comment are 18 and 19.

There was some support for the direction proposed, but there were concerns that more work is necessary to refine the proposal. Further work on this topic is encouraged during SA Ballot.

Resolved by changes to the editor's note per comment #9.

Cl **183** *SC* **183.9.9** *P* **585** *L* **25** # 14

Cole, Chris — Coherent Corp.

Comment Type **TR** *Comment Status* **A** *TFSEH (O)*

Exceptions to equations 180-28 through 180-31 need updating for full alignment with Tables 183-6 and 183-8

SuggestedRemedy

Update 183.9.9 text as per cole_3dj_01_2601

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The following contributions were reviewed by the CRG:
https://www.ieee802.org/3/dj/public/26_01/cole_3dj_01c_2601.pdf

The specific slides relevant to this comment are 21 and 22.

There was some support for the direction proposed, but there were concerns that more work is necessary to refine the proposal. Further work on this topic is encouraged during SA Ballot.

Resolved by changes to the editor's note per comment #9.

Cl **180** *SC* **180.9.15** *P* **492** *L* **45** # 15

Cole, Chris — Coherent Corp.

Comment Type **TR** *Comment Status* **R** *Rx Sensitivity (O)*

The conformance test signal requires additional specification.

SuggestedRemedy

Update text to: "The conformance test signal at TP3 is the stressed receiver sensitivity test signal, specified in 180.9.16 " with exception as per cole_3dj_01_2601

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

Slides 37 through 39 of the following contribution were reviewed by the CRG:
https://www.ieee802.org/3/dj/public/26_01/cole_3dj_01c_2601.pdf

The proposal to address this comment is on slide 38 and 39.

There was no consensus to make the proposed changes. However, further work to to refine this proposal is encouraged.

Cl **181** *SC* **181.9.15** *P* **521** *L* **32** # 16

Cole, Chris — Coherent Corp.

Comment Type **TR** *Comment Status* **R** *Rx Sensitivity (O)*

The conformance test signal requires additional specification.

SuggestedRemedy

Update text to: "The conformance test signal at TP3 is the stressed receiver sensitivity test signal, specified in 181.9.16 " with exception as per cole_3dj_01_2601

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

Resolve using the response to comment #15.

Cl **182** SC **182.9.15** P **553** L **51** # 17

Cole, Chris — Coherent Corp.

Comment Type **TR** *Comment Status* **R** *Rx Sensitivity (O)*

The conformance test signal requires additional specification.

SuggestedRemedy

Update text to: "The conformance test signal at TP3 is the stressed receiver sensitivity test signal, specified in 182.9.16 " with exception as per cole_3dj_01_2601

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.
Resolve using the response to comment #15.

Cl **183** SC **183.9.15** P **587** L **6** # 18

Cole, Chris — Coherent Corp.

Comment Type **TR** *Comment Status* **R** *Rx Sensitivity (O)*

The conformance test signal requires additional specification.

SuggestedRemedy

Update text to: "The conformance test signal at TP3 is the stressed receiver sensitivity test signal, specified in 183.9.16 " with exception as per cole_3dj_01_2601

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.
Resolve using the response to comment #15.

Cl **176D** SC **176D.6.1** P **821** L **35** # 19

Kutscher, Noam — Marvell

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

There is no DC blocker on the test setup of the host figure - TX as well as RX paths + no description of the DC block on the host input. The module connected in the host TX and RX path has dc blockers(page 819) allowing the host device to operate at it's own voltages, we should add the DC blockers also in the host TX and RX test setup to allow the same conditions.

SuggestedRemedy

Add DC blocker between the HCB and the Tp1a and Tp4a + definition in 176D.6.6 host input - as done on176D.6.4 line 50, on the right of the HCB

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The CRG has reviewed slides 14-17 in <https://www.ieee802.org/3/dj/public/26_01/ran_3dj_01b_2601.pdf>.

Figure 176D-4, subject of this comment, represents the host compliance points. It is not a test setup diagram.

As stated in 176D.6.4, host output measurements are done with AC coupling between TP1a and the test equipment. For host input there is no such statement.

There was agreement for adding AC coupling indication in Figure 176D-7a.

Add indications of DC blocks in Figure 176D-7a between the pattern generator and the "Tx test reference" arrow, and between the HCB and the Rx termination.

Cl **176C** *SC* **176C.6.4.5** *P* **806** *L* **13** # 20

Kutscher, Noam Marvell

Comment Type **T** *Comment Status* **A** *Rx tests (E)*

there is no target for COM on Test L

SuggestedRemedy

Add 3dB COM target for test L

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

However, it points out a seemingly editorial error that occurred in the implementation of D2.2, and is worth fixing.

Implement the suggested remedy.

Cl **178B** *SC* **178B.8.3.5** *P* **893** *L* **53** # 21

GALAN, JOSE MAXLINEAR, INC.

Comment Type **TR** *Comment Status* **R** *State diagrams (CA)*

In the PATH_UP state, when transitioning to data mode and tx_mode is set to data (tx_mode <-- data), this means the Tx starts transmitting data from the PMA or Inner FEC if the Inner FEC is available. But the Inner FEC encoder can start only after the Rx achieves the alignment marker lock. It would be good to clarify that in the PATH_UP state the data mode starts after the alignment marker detection.

SuggestedRemedy

Add text clarifying that in the PATH_UP state the transition to data mode (tx_mode <-- data) can only start after alignment marker detection and the Rx is locked.

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The comment points a potential problem that may need to be addressed. The suggested remedy may not resolve the issue.

Further work on this issues is necessary.

There is not consensus to make any changes at this time.

Cl **45** *SC* **45.2.1.269** *P* **121** *L* **8** # 22

Huber, Thomas Nokia

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

In table 45-212r, the name of bit 1.2733.15 was changed from Lane 31 to Lane 27, but it should still be Lane 31.

SuggestedRemedy

Change the name back to "Lane 31 aligned."

Response *Response Status* **C**

ACCEPT.

Cl **116** *SC* **116.3.2** *P* **171** *L* **40** # 23

Huber, Thomas Nokia

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

The text of item b) was changed, replacing "DTE 200GXS, DTE 400GXS" with "DTE 800GXS".

SuggestedRemedy

Since this clause is about 200G and 400G PHYs, the change should be reverted. Change "DTE 800GXS" back to "DTE 200GXS, DTE 400GXS"

Response *Response Status* **C**

ACCEPT.

Cl **178** *SC* **178.9.2.5** *P* **393** *L* **27** # 24

Huber, Thomas Nokia

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

"different linear fit pulse peak ratio" should be "difference…"

SuggestedRemedy

Change "different" to "difference"

Response *Response Status* **C**

ACCEPT.

Cl **179** *SC* **179.8.4** *P* **423** *L* **25** # 25

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **R** *ILT/RTS/APSU wording (CA)*

"ILT startup protocol" is confusing, given that the combination of ILT and RTS is named Autonomous Path Startup.

SuggestedRemedy

Change "ILT startup protocol" to "ILT function", if the intent is to refer to ILT being complete, or to "autonomous path startup function", if the intent is that ILT and RTS are complete.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **179** *SC* **179.8.4** *P* **423** *L* **26** # 26

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **R** *ILT/RTS/APSU wording (CA)*

"remote_rts in the ILT function (see 178B.8.2.1)" is confusing. The variable remote_rts is in the referenced clause, but the ILT function is defined in 178B.7

SuggestedRemedy

Replace "remote_rts in the ILT function (see 178B.8.2.1)" with "ILT function variable remote_rts (see 178B.8.2.1)"

Response *Response Status* **C**

REJECT.

The comment, and similar comments #27 and #28, suggest potential improvements, but the text is correct as written.

The text can be reconsidered during SA ballot.

Cl **179** *SC* **179.8.5** *P* **423** *L* **31** # 27

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **R** *ILT/RTS/APSU wording (CA)*

"the variables local_rx_ready and remote_rx_ready in lane i of the ILT function" is confusing. Probably also useful to include a cross-reference to 178B.8.3.1, where these variables are defined.

SuggestedRemedy

Replace "the variables local_rx_ready and remote_rx_ready in lane i of the ILT function" with "the ILT function variables local_rx_ready and remote_rx_ready (see 178B.8.3.1) for lane i".

Response *Response Status* **C**

REJECT.
Resolve using the response to comment #26.

Cl **179** *SC* **179.8.7** *P* **423** *L* **48** # 28

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **R** *ILT/RTS/APSU wording (CA)*

"the variable tx_disable in lane i of the ILT function (see 178B.8.2.1)" is confusing. The cross-reference is to the variable definition, not to the ILT function, which is defined in 178B.7.

SuggestedRemedy

Replace "tx_disable in lane i of the ILT function (see 178B.8.2.1)" with "ILT function variable tx_disable (see 178B.8.2.1) for lane i".

Response *Response Status* **C**

REJECT.
Resolve using the response to comment #26.

Cl **180** *SC* **180.9.6.4** *P* **482** *L* **53** # 29

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **A** *TDECQ and OMA (O)*

Awkward sentence: "The TDECQ reference point where OMA(sub)TDECQ is referenced to and noise is added is at the input of the reference equalizer."

SuggestedRemedy

Rewrite as:
"The reference point for OMA(sub)TDECQ, to which noise is added, is at the input of the reference equalizer."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #4.

Cl **182** *SC* **182.5.2** *P* **538** *L* **17** # 30

Huber, Thomas Nokia

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

"ISL training function" should be "ILT function"

SuggestedRemedy

Change "ISL training function" to "ILT function"

Response *Response Status* **C**

ACCEPT.

Cl **183** *SC* **183.5.2** *P* **569** *L* **15** # 31

Huber, Thomas Nokia

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

"ISL training function" should be "ILT function"

SuggestedRemedy

Change "ISL training function" to "ILT function"

Response *Response Status* **C**

ACCEPT.

Cl **73A** *SC* **73A** *P* **724** *L* **24** # 32

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **R** *(bucket) (CG)*

"If the PMD is compliant to more than
one host class, the recommended priority of which host class to indicate would be HL followed by HN. So for example, HL would be advertised if the PMD supports all three host classes" is ambiguous and verbose. The intent seems to be that the highest-numbered class to which a PMD is compliant is what is advertised, so the text should simply say that.

SuggestedRemedy

Change
"If the PMD is compliant to more than
one host class, the recommended priority of which host class to indicate would be HL followed by HN. So for example, HL would be advertised if the PMD supports all three host classes"
to
"If the PMD is compliant to more than one host class, it shall indicate the highest-numbered class to which it complies."

Response *Response Status* **C**

REJECT.

The intent of these bits is to enable indication of host class, but this indication is optional. The suggested remedy would change a recommendation ("should") to a normative requirement ("shall") and remove the optionality of this indication. The suggested remedy refers to “highest-numbered class”, but the classes are not numbered.

The referenced text is correct as written, but could be modified to be more clear. This topic can be reconsidered in SA ballot and the commenter is encouraged to resubmit at that time.

Cl **176C** *SC* **176C.6.3.6** *P* **801** *L* **25** # 33

Huber, Thomas Nokia

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

"different linear fit pulse peak ratio" should be "difference…"

SuggestedRemedy

Change "different" to "difference"

Response *Response Status* **C**

ACCEPT.

Cl **179** *SC* **179.11.4** *P* **446** *L* **23** # 34

Heck, Howard — TE Connectivity

Comment Type **TR** *Comment Status* **R** *RL masks (E)*

The RX RLcd mask requirement for CR that was adopted via D2.0 comment #492 is too stringent for cable assemblies to meet.

SuggestedRemedy

Change equation (179-27) and Figure 179-8 to
RLcd(f) = 28-15*f/12.89 for 0.01<=f<12.89 GHz
13-5*(f-12.89)/(35-12.89) for 12.89<=f<35 GHz
8 for 35 <=f <= 67 GHz
A contribution is planned for the January interim to support the comment and suggested remedy.

Response *Response Status* **C**

REJECT.
[Editor's note: subclause/line changed from 179.11.5/28 to 179.11.4/23]

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The comment referred to a contribution, but no presentation was received.
Concern was expressed about the strictness of RLcd specification and its relationship with link performance.
Note that the RLcd equation is 179-23.
There was no consensus to make a change.
Further work and consensus building on this topic is encouraged.

Cl **180** *SC* **180.9.6.3** *P* **482** *L* **17** # 35

El-Chayeb, Ahmad — Keysight (ahmad.el-chayeb@keysight.com)

Comment Type **TR** *Comment Status* **R** *DFE tap (CO)*

Including the DFE tap b1 in the limit: |w(1)/w(0)-b(1)-w(-1)/(w0)| <= .25 makes the implementation makes the limit non-linear limit, introduces complexity and increases the measurement time.

SuggestedRemedy

A supporting presentation will be provided.

Suggested remedy: Remove b(1) from the equation

Response *Response Status* **C**

REJECT.

This comment is a resubmission of Draft 2.2 Comment #116 in the following comment report:
https://www.ieee802.org/3/dj/comments/D2p2/8023dj_D2p2_comments_unsatisfied_id.pdf

The noted comment was reject, After CRG discussion, while there was some agreement on the issue raised by the comment but even with the change there may be other issues. Further work on this topic is encouraged.

Although the suggested remedy said that a presentation would be provided a contribution was not submitted for review at the CRG meeting.

No new substantive evidence or rationale is provided in this new comment.

Cl **180** *SC* **180.9.7.1** *P* **486** *L* **41** # 36

El-Chayeb, Ahmad Keysight (ahmad.el-chayeb@keysight.com)

Comment Type **TR** *Comment Status* **R** *TDECQCER (CO)*

The number of samples/UI required for TDECQ_CER waveform acquisition is currently defined to require greater than 25 samples/UI. chayeb_3dj_01a_2511 (slide 6) shows improvement in TDECQ_CER measurement repeatability with 63.99 samples/UI.

SuggestedRemedy

Change the text below in the first paragraph in sub-clause 180.9.7.1:

"The waveform should be acquired with greater than 25 samples/UI."

to

"The waveform should be acquired with greater than 63 samples/UI."

Response *Response Status* **C**

REJECT.

The following contribution was reviewed by the CRG:
https://www.ieee802.org/3/dj/public/26_01/rodes_3dj_01_2601.pdf

The contribution demonstrates that the variability of TDECQ_CER value is too high to be helpful. Some enhancements to the methodology might improve the variability. Further investigation is required.

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

Further work to improve the test methodology are encouraged and consensus building on an appropriate resolution is suggested.

Cl **182** *SC* **182.7.1** *P* **541** *L* **36** # 37

El-Chayeb, Ahmad Keysight (ahmad.el-chayeb@keysight.com)

Comment Type **TR** *Comment Status* **R** *TDECQCER (CO)*

TDECQ_CER will capture additional penalties that TDECQ does not. TDECQ_CER will also have up to 0.5dB variability.

SuggestedRemedy

Add a 1dB excursion to the limit of TDECQ_CER to be consitent with clauses 180 and 181.

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

No measurements of TDEQ_CER for Clause 182 and Clause 183 PMDs (which use the Clause 177 Inner FEC) have been presented to the CRG. Insufficient evidence has been provided for the proposed changes.

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

Cl **183** *SC* **183.7.1** *P* **573** *L* **37** # 38

El-Chayeb, Ahmad Keysight (ahmad.el-chayeb@keysight.com)

Comment Type **TR** *Comment Status* **R** *TDECQCER (CO)*

TDECQ_CER will capture additional penalties that TDECQ does not. TDECQ_CER will also have up to 0.5dB variability.

SuggestedRemedy

TDECQ_CER will capture additional penalties that TDECQ does not. TDECQ_CER will also have up to 0.5dB variability.

For 800GBASE-FR4, change TDECQ_CER limit to 4.4dB
For 800GBASE-LR4, change TDECQ_CER limit to 4.9dB

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

No measurements of TDEQ_CER for Clause 182 and Clause 183 PMDs (which use the Clause 177 Inner FEC) have been presented to the CRG. Insufficient evidence has been provided for the proposed changes.

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

Cl **178A** *SC* **178A.1.7.3** *P* **854** *L* **20** # 39

Mellitz, Richard — Samtec

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

Equation 179A-19 for S_tn computation omits the modulation term (signa_X²), assuming transmitter noise behavior is independent of modulation. This was implemented as are result of comment 511 on d1.3. This is acceptable for low-radix designs with minimal crosstalk, where SNDR remains high regardless of modulation. However, in high-radix designs with significant crosstalk and modal conversion, transmitter noise becomes modulation-dependent. Ignoring signa_X² under these conditions misrepresents performance and introduces a ~0.4 dB COM penalty.

SuggestedRemedy

Include signa_X^2 in the S_tn computation as in suggested in slide 7 of https://www.ieee802.org/3/dj/public/24_01/healey_3dj_01_2401.pdf

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The CRG has reviewed slides 3-6 in <https://www.ieee802.org/3/dj/public/26_01/ran_3dj_01b_2601.pdf>.

A change to the transmitter noise model should not be done without a corresponding change to the SNDR limits (and/or definition) in order to maintain the intended relationship. The suggested remedy does not propose such a change to the SNDR definition and this risks creating a disconnect between what is required for a compliant transmitter and how such a transmitter is modeled to compute Channel Operating Margin (COM).

There is no consensus to make the suggested change.

Cl **178** *SC* **178.9.2** *P* **390** *L* **24** # 40

Mellitz, Richard — Samtec

Comment Type **TR** *Comment Status* **R** *RL masks (E)*

RLcc is not a reliable interoperability metric and should be removed from specifications because it often causes many false pass and false fail results. See “Impact of Modal ERL on COM”, by Mellitz for the IEEE P802.3dj January 2026 task Interim force meeting for more information.
RLcc It is better suited as a design tool, while SCMR and RLdc/RLcd are more effective indicators of common-mode issues.

SuggestedRemedy

Remove RLcc rows in the Tx specification tables
178.9.2: Table 178-6: page 390: line 24
179.9.4: Table 179-7: page 425: line 47
176C.6.3: Table 176C-2: page 800: line 8
176D.6.4: Table 176D-2: page 823: line 18
176D.6.5; Table 176D-3: page 824: line 20

Remove RLcc rows in the specification tables
179.11: Table 179-16: page 445: line 18

Remove sections for common-mode to common mode RL
178.9.2.4: Page 393: line 20
179.9.4.9: Page 434: line 28

Remove section 176D.8.4 Return loss specifications.

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The CRG has reviewed the contribution <https://www.ieee802.org/3/dj/public/26_01/mellitz_3dj_01b_2601.pdf>.

In discussion of the suggested remedy there was some support for relaxing RLcc but no consensus to remove it.

There is no consensus to implement a change at this time. Further consensus building on this topic is encouraged.

Cl **178** *SC* **178.9.3** *P* **395** *L* **13** # 41

Mellitz, Richard Samtec

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

RLcd is specified in table 178-9 and other similar tables is not sufficient to control impairments from common mode reflections.
RLcd and RLdc exhibit complex interactions across the transmitter, receiver, and channel, as mode-conversion reflections arise from multiple interacting reflection paths that are not represented by simple reflection diagrams.
Both RLcd and RLdc are required for transmitters, receiver, and channels and should be universally specified to account for mode reflection impairment. This comment will only address where RLcd or RLdc are specified.
Furthermore, limiting RLcd or RLdc with frequency-domain RL masks don't capture the time-domain nature of reflections. ERLcd and ERLdc are better suited for control modal impair as suggested in "Impact of Modal ERL on COM", by Mellitz for the IEEE P802.3dj January 2026 task Interim force meeting.

SuggestedRemedy

Remove RLcd and RLcd masks and respective sections and replace them with minimum specification limits of 17 dB for ERLcd and ERLcd. See "Impact of Modal ERL on COM", by Mellitz for the IEEE P802.3dj January 2026 task Interim force meeting for more
Add section derived from 93A.5 but change reference from return loss to modal return loss.
Refer to the 10-30-2025 electrical ad-hoc presentation by mellitz "Moving toward an ERL CC, DC, and CC specification" (mellitz_3dj_01_adhoc_251030)

Summary in "Impact of Modal ERL on COM", by Mellitz for the IEEE P802.3dj January 2026 task Interim force meeting
Details ------

-Remove RLcd rows in the Rx specification tables
178.9.2: Table 178-9: page 395: line 13
-Remove section: 178.9.3.8
-Replace with 2 rows: ERLcd (min) and ERL_dc (min) of 17 dB using ERL parameter specified in 178.9.3.7

-Remove RLcd rows in the channel specification tables
- 178.10.21 Table 178-13: page 402: line 11
-Remove section. 178.10.4
-Replace with 2 rows: ERLcd (min) and ERL_dc (min) of 17 dB using ERL parameter specified in 178.10.3

-Remove RLcd rows in the cable assembly specification tables
- 179.11 Table 179-16: page 445: line 16
-Remove section. 179.11.4
-Replace with 2 rows: ERLcd (min) and ERL_dc (min) of 17 dB using ERL parameter specified in 178.11.3

-Remove RLcd rows in the Rx specification tables
- 179.11 Table 176C-4: page 803: line 13
-Remove section. 176C.6.4.3
-Replace with 2 rows:ERLcd (min) and ERL_dc (min) of 17 dB using ERL parameter specified in 176C.6.4.2

-Remove RLcd rows in the channel specification tables
- 176C.7 Table 176C-8: page 809: line 17
-Replace with 2 rows: ERLcd (min) and ERL_dc (min) of 17 dB using ERL parameter specified in 178C.7.3

-Remove RLcd rows in the host input specification tables
176D.6.6: Table 176D-4: page 825: line 16
-Remove section: 178D.8.4
-Replace with 2 rows: ERLcd (min) and ERL_dc (min) of 17 dB using ERL parameter specified in 176D.8.3

-Remove RLcd rows in the Module input specification tables
176D.6.7: Table 176D-4: page 825: line 45
-Replace with 2 rows: ERLcd (min) and ERL_dc (min) of 17 dB using ERL parameter specified in 176D.8.3

-Remove RLdc rows in the Module input specification tables
179.9.4: Table 179-7: page 425: line 48
-Remove section: 179.9.4.10
-Replace with 2 rows: ERLcd (min) and ERL_dc (min) of 17 dB using ERL parameter specified in 179.9.4.8

-Remove RLdc rows in the Tx specification tables
176C.6.3: Table 176C-2: page 800: line 33
-Remove section: 176C.6.3.9
-Replace with 2 rows: ERLcd (min) and ERL_dc (min) of 17 dB using ERL parameter specified in 176C.6.3.7

-Remove RLdc rows in the host output specification tables
176D.6.4: Table 176D-2: page 823: line 20
-Remove section: 176D.8.4
-Replace with 2 rows: ERLcd (min) and ERL_dc (min) of 17 dB using ERL parameter specified in 176D.8.3

-Remove RLdc rows in the host output specification tables
176D.6.5: Table 176D-3: page 824: line 22
-Replace with 2 rows: ERLcd (min) and ERL_dc (min) of 17 dB using ERL parameter specified in 176D.8.3

Response *Response Status* **C**

REJECT.
The CRG has reviewed the contribution <https://www.ieee802.org/3/dj/public/26_01/mellitz_3dj_01b_2601.pdf>.

Modal ERL as mentioned in the suggested remedy has been discussed in the task force in conjunction with several comments against D2.1 (see

<https://www.ieee802.org/3/dj/comments/D2p2/8023dj_D2p2_comments_unsatisfied_id.pdf #page=30>). The responses to these comments indicated general support for the direction (as expressed by straw poll #E-1 in the September 2025 meeting) but no consensus for implementation and need of a detailed proposal and consensus building.

Discussion following the presentation of mellitz_3dj_01b_2601 did not show consensus to implement the suggested remedy. However, there is interest in studying this topic further.

There is no consensus on implemening changes at this time.

This topic can be reconsidered in SA ballot and the commenter is encouraged to resubmit at that time.

Cl **178** *SC* **178.10.6** *P* **407** *L* # 42

Mellitz, Richard — Samtec

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

SCMR for device transmitters accounts for all common-mode effects, including power noise, thermal noise, and non-linear noise, which can indicate that the common mode is uncorrelated and unbounded. However, SCMR_CH is a correlated and bounded metric. It is a channel-specific property closely related to COM. The statical criterion of the SCMR_CH computation P_peak should be applied in a comparable manner to the COM computation.

SuggestedRemedy

178.10.6 page 407 line 36
Replace 10^-7 with DER0
179.11.7 page 451 line 46
Replace 10^-7 with DER0
176C.7.4 page 813 line 24
Replace 10^-7 with DER0

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The change from DER0 to 1e-7 was made by the resolution of comment #397 againt D2.1 (see <https://www.ieee802.org/3/dj/comments/D2p1/8023dj_D2p1_comments_final_id.pdf#page=104>). As noted in that comment, mode conversion in the channel (which creates a common mode signal at its output) can affect the receiver in ways that are not addressed by the COM model, and potentially create correlated errors. For this reason, comment #397 suggested limiting the peak at a lower probability than the COM budget.
In discussion of this comment it was indicated that the change of the probabilty should cause reconsideration of the SCMR limit.

There is no consensus to make a change at this time.
Further work on this topic and consensus building are encouraged.

Cl **178** *SC* **178.9.3.4.2** *P* **398** *L* **33** # 43

Brown, Matt — Alphawave Semi

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

The jitter parameter defined in 179.9.4.7.2 is JH4u, not J4Hu.

SuggestedRemedy

Change "J4Hu" to "JH4u" in 6 places.
178: page 398, line 33/35
176C: page 802 line 3, page 807 line 27/29

Response *Response Status* **C**

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

Cl **186A** *SC* **186A** *P* **956** *L* **18** # 44

Brown, Matt — Alphawave Semi

Comment Type **TR** *Comment Status* **R** *Test vectors (L)*

Draft 2.2 comment #152 requested that test vectors be incorporated into the draft. The response pointed out that relevant test vectors are provided publicly by OIF but need some exceptions. During comment resolution, one participant offered to provide appropriate text vectors.

SuggestedRemedy

Provide text vectors for Clause 186 FEC or reference the OIF test vectors noting exceptions.

Response *Response Status* **C**

REJECT.

The following contribution was reviewed by the CRG:
https://www.ieee802.org/3/dj/public/26_01/sluyski_3dj_01_2601.pdf

Related test vectors are posted here:
https://www.ieee802.org/3/dj/public/26_01/sluyski_3dj_02_2601.7z

Discussion indicated it would be preferred to label the test points VPn rather than TPn.

Further evalaution to confirm the vectors is encouraged.

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

Cl **180** *SC* **180.9.6.4** *P* **482** *L* **53** # 45

Brown, Matt — Alphawave Semi

Comment Type **T** *Comment Status* **R** *TDECQ and OMA (O)*

The sentence "The TDECQ reference point where OMATDECQ is referenced to and noise is added is at the input of the reference equalizer." It is not clear which noise this is referring to. It would be good to link the AWGN noise source in Figure 180-10 with sigma_g. Note that another comment deals with the OMA_TDECQ in this sentence.

SuggestedRemedy

Delete the reference sentence.
On page 484 line 26 (the first reference to σG)...
Change the sentence to: "G_th1(y_i), which represents AWGN at the input to the reference equalizer (see Figure 180-10), is equivalent to a Gaussian probability density function with an RMS value of σ_G, centered around the sub-eye threshold P_th1."

Response *Response Status* **C**

REJECT.

There was some agreement that wording in this direction was an improvement to the draft. Also, the term AWGN is incorrect. Further work on this topic is needed.

There was no consensus to make the proposed changes.

Cl **180** *SC* **180.9.6.4** *P* **482** *L* **53** # 46

Brown, Matt — Alphawave Semi

Comment Type **T** *Comment Status* **A** *TDECQ and OMA (O)*

In the sentence "The TDECQ reference point where OMATDECQ is referenced to and noise is added is at the input of the reference equalizer." it is not clear what these reference points are. Further, the measurement point for OMA_TDEQ contradicts the text on page 485 line 46 and 488 line 52. If these are intended to be the same point then one or the other locations needs to be corrected. If they are intended to be different, then a different parameter name should be used. Finally, the definition of OMA_TDECQ should be colocated where it is used, e.g., along with equation 180-1 through 180-3.

SuggestedRemedy

Reconcile the measurement points for OMA_TDECQ or use different parameter names.
Define OMA_TDECQ where it is referenced in equations, e.g., page 483 line 45.
Delete the sentence at page 482 line 53. Note that another comment deals with the mention of noise in this sentence.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #4.

Cl **178** *SC* **178.9.2.3** *P* **392** *L* **38** # 47

Brown, Matt — Alphawave Semi

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

The specification is for transmitter ERL.

SuggestedRemedy

Change "receiver package class" to "transmitter package class".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

However, it points out an obvious editorial error that is worth fixing.

Implement the suggested remedy.

Cl **176D** *SC* **176D.8.12** *P* **833** *L* **21** # 48

Brown, Matt — Alphawave Semi

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

BER should be BER_max to align with similar tables elsewhere and with Annex 174A.9.5, 174A.9.6, etc.

SuggestedRemedy

Change "BER" to "BER_max".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

However, it points out an obvious editorial error that is worth fixing.

Implement the suggested remedy.

Cl **180** *SC* **180.9.6.4** *P* **482** *L* **33** # 49

Rodes, Roberto Coherent

Comment Type **T** *Comment Status* **R** *TDECQ and TDECCER (O)*

It is unclear from the method description whether the oscilloscope is intended to capture and process only a single pattern acquisition or whether it can accumulate multiple pattern acquisitions.

SuggestedRemedy

Replace “...the oscilloscope is set up to capture samples from all symbols in the complete pattern...” with “...the oscilloscope is set up to capture samples from all symbols with a single pattern acquisition...”

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **180** *SC* **180.9.6.4** *P* **485** *L* **41** # 50

Rodes, Roberto Coherent

Comment Type **TR** *Comment Status* **A** *TDECQ and OMA (O)*

TDECQ in 180-12 is a penalty on the OMA to calculate the Link power budget. Therefore, OMA in equation 180-12 should be equivalent to OMAouter as defined in 180.9.5.

SuggestedRemedy

Replace OMAtdecq with OMAouter in equation 180-12,and use editorial license to align the rest of the text in the subclause to this change

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #4.

Cl **180** *SC* **180.9.7.1** *P* **486** *L* **41** # 51

Rodes, Roberto Coherent

Comment Type **TR** *Comment Status* **R** *TDECQCER (CO)*

TDECQCER has significant variation, narrow histogram window and higher number of samples per UI improves the variability

SuggestedRemedy

specify >63 sample/UI and 0.02 UI width histograms. Replace "The waveform should be acquired with greater than 25 samples/UI. This provides at least one sample falling within both the left and the right 0.04 UI width histograms for each symbol." with "The waveform should be acquired with greater than 63 samples/UI and 0.02 UI width histogram. This provides at least one sample falling within both the left and the right 0.02 UI width histograms for each symbol."

Response *Response Status* **C**

REJECT.

The following contribution was reviewed by the CRG:
https://www.ieee802.org/3/dj/public/26_01/rodes_3dj_01_2601.pdf

The contribution demonstrates that the variability of TDECQ_CER value is too high to be helpful. Some enhancements to the methodology might improve the variability. Further investigation is required.

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

Further work to improve the test methodology are encouraged and consensus building on an appropriate resolution is suggested.

Cl **180** *SC* **180.9.8** *P* **488** *L* **46** # 52

Rodes, Roberto Coherent

Comment Type **T** *Comment Status* **A** *TDECQ and OMA (O)*

TDECQCER in 180-25 is meant to be a penalty on the OMA to calculate the Link power budget. Therefore, OMA in equation 180-26 should be equivalent to OMAouter as defined in 180.9.5.

SuggestedRemedy

Replace OMAtdecq with OMAouter in equation 180-26,and use editorial license to align the rest of the text in the subclause to this change

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #1.

Cl **180** *SC* **180.9.1** *P* **477** *L* **38** # 53

Rodes, Roberto Coherent

Comment Type **E** *Comment Status* **A** *(bucket) (O)*

make TDECQ CER name consistent with the other tables in the clause

SuggestedRemedy

make TDECQ CER naming consistent in table 180-14 and table 180-7

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Align wording in Table 180-14 with the wording in Table 181-12.

In Table 180-14...
Change "Codeword error ratio (CER) TDECQ"
To: "Codeword error ratio TDECQ (TDECQ_CER)"

Implement with editorial license.

Cl **180** *SC* **180.7.1** *P* **470** *L* **34** # 54

Rodes, Roberto Coherent

Comment Type **TR** *Comment Status* **R** *TDECQCER (CO)*

If TDECQCER better correlates with Rx Sensitivity, it should replace TDECQ for calculating link budget and OMA specs. However, TDECQCER does not combine samples of all 65k PAM4 symbols to create distribution but creates distributions for each PAM4 sample. This drastically reduces the number of samples available to create stable statistics. Oscilloscope testing is better suited for traditional TDECQ and new TDECQCER. Traditional TDECQ has shown good correlation for most cases.

SuggestedRemedy

Remove TDECQ CER from the spec. Do the same for CL 181, 182 and 183

Response *Response Status* **C**

REJECT.

The following contribution was reviewed by the CRG:
https://www.ieee802.org/3/dj/public/26_01/rodes_3dj_01_2601.pdf

The contribution demonstrates that the variability of TDECQ_CER value is too high to be helpful. Some enhancements to the methodology might improve the variability. Further investigation is required.

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

Further work to improve the test methodology are encouraged and consensus building on an appropriate resolution is suggested.

Cl **180** *SC* **180.9.16** *P* **494** *L* **17** # 55

Rodes, Roberto Coherent

Comment Type **E** *Comment Status* **R** *Stressed Rx Sensitivity (O)*

Receiver Sensitivity and Stressed Receiver Sensitivity (SRS) conformance test definitions might need some refinement. Currently, SRS test method reference to an older 121.8.10 subclause where some of the parameters such SECQ-10log(Ceq) should not longer apply. It would be very benefitial to bring the SRS conformace test methodology to Clause 180 to better enable feedback to update it. Similar to what it was done with TDECQ methodology.

SuggestedRemedy

Bring the test method description in 121.8.10 to 180.9.16

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The comment is meant to take the SRS test method content and update with the current 200 Gb/s signaling parameters, to improve the readability of the draft. The comment is meant to be purely editorial with no technical changes.

Implementing the proposed changes would indeed enhance the clarity of the draft, however, the changes to the draft would be extensive.

The commenter is encouraged to resubmit in SA ballot. However, a draft proposal to show the intended outcome is recommended.

Cl **178** *SC* **178.9.2.6** *P* **394** *L* **2** # 56

Healey, Adam Broadcom, Inc.

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

VCM_FB is defined to be "the full-band peak-to-peak AC common-mode voltage defined by the method specified in 179.9.4.2". 179.9.4.2 defines "Transmitter output equalization".

SuggestedRemedy

Change the reference from 179.9.4.2 to 176D.8.2.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

However, it points out an obvious editorial error that is worth fixing.

Implement the suggested remedy.

Cl **176D** *SC* **176D.3** *P* **819** *L* **38** # 57

Healey, Adam
Broadcom, Inc.

Comment Type **E** *Comment Status* **R** *editorial (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**

REJECT.
The CRG has reviewed slides 7-11 in <https://www.ieee802.org/3/dj/public/26_01/ran_3dj_01b_2601.pdf>.

The location of the arrow end in Figure 176D–2 (and the similar Figure 176D–6) was set in D1.2 by the resolution of comment #115 against D1.1, following a long discussion (see <https://www.ieee802.org/3/dj/comments/D1p1/8023dj_D1p1_comments_final_id.pdf#page=25>).

The figures addressed in the comment, and similar ones in the draft, could be improved in various ways. However, there is no consensus on a specific change at this time.

Further work and consensus building are encouraged.

Cl **176D** *SC* **176D.8.13.2** *P* **836** *L* **9** # 58

Healey, Adam
Broadcom, Inc.

Comment Type **TR** *Comment Status* **R** *channel model (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 176D–6 for the receiver S-parameter model."

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The CRG has reviewed the contribution <https://www.ieee802.org/3/dj/public/26_01/healey_3dj_01_2601.pdf>

In disucssion of the presentation there was support for the direction of the proposed changes in slide 4 of the presentation. However, further analysis of the effect of the changes is required.

There is no consensus for making the suggested changes at this time.

This topic can be reconsidered in SA ballot and the commenter is encouraged to resubmit at that time.

Cl **176D** *SC* **176D.8.8** *P* **832** *L* **8** # 59

Healey, Adam — Broadcom, Inc.

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

The first letter in the subclause heading should be capitalized.

SuggestedRemedy

Change the subclause heading to "Signal-to-noise-and-distortion ratio".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

However, it points out an obvious editorial error that is worth fixing.

Implement the suggested remedy.

Cl **176D** *SC* **176D.6.5** *P* **824** *L* **25** # 60

Healey, Adam — Broadcom, Inc.

Comment Type **TR** *Comment Status* **R** *channel model (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**

REJECT.

The CRG has reviewed the contribution <https://www.ieee802.org/3/dj/public/26_01/healey_3dj_01_2601.pdf>.

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

Further work and consensus building on this topic are encouraged.

Cl **180** *SC* **180.9.6.3** *P* **481** *L* **3** # 61

Ran, Adee — Cisco Systems

Comment Type **TR** *Comment Status* **R** *TDECQCER (CO)*

The reference equalizer is defined here without any statement of how the coefficients are calculated.
Different coefficients will yield different values of the metric being calculated.

The same reference equalizer is used for TDECQ (180.9.6), TDECQ_SER (180.9.7), TECQ (180.9.8), and SRS (180.9.16, for SECQ), and the optimal coefficients can be different in each case. This is not stated anywhere.

Note that a method of optimization is described in the 4th paragraph of 180.9.6.4 (identical to the original definition in 121.8.5.3), albeit being phrased as an example ("one way of doing this"). This method is specific to TDECQ - other metrics do not have equivalent statements, but there is no reason that TECQ (as an example) will use the same equalizer as TDECQ. It should be explicitly stated that the equalizer can be different.

Note that 181.9.7, 182.9.7, and 183.9.7 state that the "optimized parameters" are taken from TDECQ measurement - which has no equivalent in clause 180. There should be no requirement to use the same parameters.

SuggestedRemedy

In 180.9.7, add an informative note after the second paragraph:
"NOTE—The coefficients of the reference equalizer that yield the minimum TDECQ_CER can be different from those of TDECQ in 180.9.6.4."

In 180.9.8, add a similar informative note for TECQ.

Make similar changes in corresponding subclauses of clauses 181, 182, 183, and specifically, remove the requirement to use the same "optimized parameters" for TDECQ_CER.

Implement with editorial license.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **180** *SC* **180.9.6.3** *P* **482** *L* **23** # 62

Ran, Adee Cisco Systems

Comment Type **T** *Comment Status* **R** *ap limit TDECQ and OMA (O)*

Footnote a (attached to the "Equalizer DC gain" row) says "The sum of all 15 equalizer coefficients, w(i)."

The DC gain is the response to an infinite run of identical symbols (with a certain nominal level) at the input, divided by that level. When the equalizer consists of only an FFE, it is indeed the sum of the coefficients. But with the DFE (which subtracts the nominal symbol level from the output) the sum of the FFE taps is no longer the DC gain. If the sum of w(i) is set to 1 then the DC gain will be 1-b(1).

However, "unity DC gain" is an arbitrary choice and perhaps not the best requirement.

Since the reference equalizer is long, it is likely to address not just limited bandwidth but also frequency ripple (e.g. reflections). In this case it is preferable to normalize the equalizer in a different way, to maintain the nominal levels equal before and after the equalizer; This requires that the normalization is to have w(0)=1 instead.
(rationale: in convolution of the equalizer and the pulse response, w(0) is multiplied by the nominal level of the symbol x(n)*h(0), creating the four levels of the eye diagram; other coefficients are multiplied by previous or subsequent symbols x(n+k)h(n-k+i); these terms have zero mean because the symbols are uncorrelated and equiprobable).

This would enable measuring OMA at the equalizer output and having only one definition of OMA.

A related change in the calculation of OMA_outer is suggested in another comment.

Note that this change does not affect TDECQ because the noise amplification is calculated from the equalizer's response, which is scaled by the same factor.

SuggestedRemedy

Add limits for i=0: min=1, max=1.
Change the "symbol" for limits to w(i) (no need to divide by w(0) since it is 1).
Delete the row for "Equalizer DC gain" and the footnote.
In equation 180-10, delete the middle term "H_eq(f=0)=" (the DC gain), because it is not equal to 1 anymore.

Delete the definition of OMA_TDECQ and change all instances of "OMA_TDECQ" to "OMA_outer".

Apply corresponding changes in clauses 181, 182, and 183.
A detailed proposal is planned.

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

Resolve using the response to comment #4.

Cl **180** *SC* **180.9.6.4** *P* **485** *L* **5** # 63

Ran, Adee Cisco Systems

Comment Type **T** *Comment Status* **R** *TDECQ (O)*

"the normalized frequency response Heq(f) of the reference equalizer"
The reference equalizer now includes a DFE, a nonlinear element, so it does not have a frequency response. The noise amplification is only due to the FFE.

SuggestedRemedy

Change "the normalized frequency response Heq(f) of the reference equalizer" to "the normalized frequency response Heq(f) of the FFE in the reference equalizer".
Implement with editorial license.

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

While this proposal may enhance the clarity of the draft the editorial team suggests that this should be reconsidered in SA ballot. The commenter is encouraged to resubmit in SA ballot.

Cl **180** *SC* **180.9.7** *P* **487** *L* **7** # 64

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **A** *TDECQCER (O)*

The probability of error is calculated for each n (index of the PAM4 symbol), not for each L_n (one of four values).

SuggestedRemedy

Change "The probability of error for each symbol L_n" to "The probability of error for the nth PAM4 symbol".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

There is agreement (no objections) that the suggested change is an improvement to the draft.

Implement the suggested remedy with editorial license.

Cl **180** *SC* **180.9.7** *P* **487** *L* **7** # 65

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **R** *TDECQCER (O)*

The phrase "within the limits of the target histogram of the nth symbol" is unclear.
I assume it means the samples that are within the specific histogram window (left or right) that is being calculated, for the nth symbol.

SuggestedRemedy

Change the quoted phrase to "within the window of the histogram corresponding to the G(\sigma) being calculated (left or right, see Figure 180-11) for the nth symbol".

Response *Response Status* **C**

REJECT.

The proposed change may be an improvement to the text. However, the text is correct as written.

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

Cl **180** *SC* **180.9.7** *P* **487** *L* **8** # 66

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **R** *TDECQCER (O)*

"The amplitude of the M samples are y_(n,i)"
There is no definition of M other than this sentence (it is a poor way to define a notation).
Also y is not an amplitude but a power level of a specific sample.
The sentence is unclear and should be improved

SuggestedRemedy

Change "is calculated by first taking all the samples points"
to "is calculated from a set of samples of the nth symbol".
Change the quoted sentence to
"The sample levels are denoted y_(n,i). The number of samples is denoted by M".

Response *Response Status* **C**

REJECT.

There is agreement that the proposed wording is an improvement to the draft. However, the draft is correct as written.

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

Cl **180** *SC* **180.9.7** *P* **487** *L* **45** # 67

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **R** *TDECQCER (O)*

The index k in equation 180-18 is undefined. It seems that it should be n.

SuggestedRemedy

Change k to n

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **180** *SC* **180.9.7** *P* **488** *L* **14** # 68

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **R** *TDECQCER (O)*

It is unclear what "cumulated" means. Based on the equation it looks like an average.

SuggestedRemedy

Change "cumulated" to "average".

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **180** *SC* **180.9.7** *P* **488** *L* **20** # 69

Ran, Adee
Cisco Systems

Comment Type **TR** *Comment Status* **R** *TDECQCER (O)*

"where N is the pattern length"
Based on equations 180-22 and 180-18, it seems that the index n plus the codeword length d must be less than the pattern length.

SuggestedRemedy

Change "where N is the pattern length" to "where N is the pattern length minus d", with editorial license.

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The comment suggests there is an error in the definition of N (or alternately in Equation 180-22). However, more work is required to confirm the error and propose an accurate remedy.

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

Cl **180** *SC* **180.9.7.1** *P* **488** *L* **30** # 70

Ran, Adee
Cisco Systems

Comment Type **TR** *Comment Status* **A** *TDECQCER (O)*

In equation 180-23, the intent seems to be that the number of error symbols is i (from 0 to k) and the number of correct symbols is d-i; that does not match the definition of p (which currently corresponds to "the probability of a symbol being correct").

To get matching CER_target and SER_target values in Table 180-17, the exponents need to be swapped.

I assume the current implementation in scopes is correct and the error is in the equation in the draft.

SuggestedRemedy

Change equation 180-23 to have p^(d-i) and (1-p)^I instead of the current exponents.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The comment points out an error in Equation 180-23. However, to be consistent with similar equations elsewhere in the draft, the equation for p should be corrected.

Change: "p = (1 - SER_target)^m"
To: "p = 1 - (1-SER_target)^m"

Add the following text below 180-23:
"where p is the probability of receiving an FEC symbol incorrectly"

Implement with editorial license.

Cl **180** *SC* **180.9.7.1** *P* **488** *L* **30** # 71

Ran, Adee
Cisco Systems

Comment Type **ER** *Comment Status* **A** *TDECQCER (O)*

p is a term used in the equation, not part of the equation. It should be on a separate line. Also an explanation of what p means would be helpful (see another comment, technical, that addresses the definition of p)

SuggestedRemedy

Delete the part of the equation from the comma and on.
Add a text paragraph after the equation:
"Where p = (1-SER_target)^m is the probability of receiving a FEC symbol correctly."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #70.

Cl **180** *SC* **180.9.7** *P* **488** *L* **33** # 72

Ran, Adee — Cisco Systems

Comment Type **TR** *Comment Status* **R** *TDECQCER (O)*

"\sigma_g is the maximum RMS \sigma of the AWGN"
AWGN has not been mentioned earlier. \sigma_g is simply the maximum value of \sigma.

SuggestedRemedy

Change the quoted phrase to "\sigma_g is the maximum value of \sigma".

In the paragraph preceding equation 180-16, change
"the probability of the ith sample of the nth symbol being in error"
To
"the probability of the ith sample of the nth symbol being in error, assuming an additive white Gaussian noise (AWGN) with RMS value of \sigma"

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

There is agreement that improvements to the wording related to this parameter would be an improvement to the draft. Further work on this topic is encouraged.

There was no consensus to make the proposed changes.

Cl **180** *SC* **180.9.7** *P* **488** *L* **37** # 73

Ran, Adee — Cisco Systems

Comment Type **TR** *Comment Status* **R** *TDECQCER (O)*

\sigma_s and C_eq have not been introduced in this subclause.
I assume it is the same as in 180.9.6.4.

SuggestedRemedy

Define \sigma_s and C_eq, using the definition in 180.9.6.4, with editorial license.

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

There is agreement that changes in the direction of the suggested remedy would be an improvement to the draft.

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

Cl **180** *SC* **180.9.9** *P* **489** *L* **24** # 74

Ran, Adee — Cisco Systems

Comment Type **E** *Comment Status* **R** *TFSEH (O)*

"The transmitter functional symbol error histogram mask for each lane is given in Table 180–18"
The TFSEH has not been defined yet; referencing the mask first is unclear. Also, the mask is referenced again in the next paragraph.

SuggestedRemedy

Delete the quoted sentence.
In the second paragraph, change "The error mask" to "The symbol error histogram mask".

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

Changes to the "transmitter functional symbol error histogram" subclauses were proposed in other comments but there were concerns that more work is necessary to refine the proposals and further work on this topic is encouraged during SA Ballot.

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

Cl **180** *SC* **180.9.9** *P* **489** *L* **31** # 75

Ran, Adee — Cisco Systems

Comment Type **ER** *Comment Status* **R** *TFSEH (O)*

"Test_margin, defined in 180.9.9.1, determines the input BER"
It is unclear how the Test_margin determines the input BER; is the input BER different from the numeric values of BER given in the previous sentence?

The quoted sentence does not seem to add any clarity, and is confusing.

SuggestedRemedy

Delete the quoted sentence.

Response *Response Status* **C**

REJECT.

A proposal to address this comment was provided on slide 9 in the following contribution:
https://www.ieee802.org/3/dj/public/26_01/cole_3dj_01c_2601.pdf

However there was no consensus to make the change proposed in this comment or in cole_3dj_01c_2601 at this time.

Further discussion on this topic is required.

Cl **180** *SC* **180.9.9** *P* **489** *L* **43** # 76

Ran, Adee
Cisco Systems

Comment Type **TR** *Comment Status* **R** *TFSEH (CO)*

It has become clear that the TFSEH test does not guarantee interoperability with any compliant receiver, since the functional receiver is likely better than minimally compliant receivers in parameters other than the sensitivity, which are not calibrated in the test (for example, jitter tolerance and equalization capabilities).

Thus, meeting the TFSEH mask in a specific test is a required but not sufficient condition for compliance.

Readers should be informed of this situation.

SuggestedRemedy

Add the following text and informative note after the second paragraph of 180.9.9:
A compliant transmitter meets the error mask in Table 180-18 for any functional receiver.

NOTE—With any specific functional receiver as defined in 180.9.9.1, meeting the error mask is required but not necessarily sufficient for proving transmitter compliance.

Response *Response Status* **C**

REJECT.

A proposal intended to address this comment was provided on slides 4 and 9 in the following contribution:
https://www.ieee802.org/3/dj/public/26_01/cole_3dj_01c_2601.pdf

There was some agreement that further work may be necessary to address test variability due to choice of functional receiver.

However there was no consensus to make the change proposed in this comment or in cole_3dj_01c_2601 at this time.

Further discussion on this topic is required.

Cl **180** *SC* **180.9.9.1** *P* **490** *L* **34** # 77

Ran, Adee
Cisco Systems

Comment Type **TR** *Comment Status* **R** *TFSEH (O)*

The Test_margin term seems to relax the requirements of the test; the attenuation is reduced by 1.5 dB (half of the channel insertion loss budget in Table 180-9!) compared to what the power budget requires, so the receiver is getting a much stronger signal than the worst case.

There is no justification in the standard or in the proposals for this large relaxation.

Combined with the expectation that a functional receiver will be better than the worst case receiver (comply with all specifications with some margin), this makes the test practically impossible to fail, and thus quite useless as a screening method.

In discussion in the ad hoc it was claimed that the relaxation is balanced by a tighter histogram mask. But this is an arbitrary combination that is not aligned with the other specifications in this clause. In addition, this results in longer time required to verify that the lower probability mask is not exceeded.

To improve interoperability, the margin should be applied in the other direction - require a higher attenuation than the worst case power budget - similar to applying a worst-case stressed signal into the receiver in receiver tests.

The suggested remedy also reduces the margin to a more reasonable value of 0.5 dB to avoid excessive overstress. It also makes a higher mask based on the receiver compliance requirements in Table 180–20, which enables shorter test time (or better resolution with the same test time).

Alternatively, the margin can be removed altogether.

SuggestedRemedy

In equation 180-28, change the sign of Test_margin from minus to plus. Change the description of Test_margin to "is additional attenuation intended to create margin in the link budget, with a value of 0.5 dB".
In Table 180–18, change the probabilities to match those of column "p=1" in Table 180–20.
Implement with editorial license.

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

Changes to the "transmitter functional symbol error histogram" subclauses were proposed in other comments but there were concerns that more work is necessary to refine the proposals and further work on this topic is encouraged during SA Ballot.

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

Cl **180** *SC* **180.9.14** *P* **492** *L* **20** # 78

Ran, Adee
Cisco Systems

Comment Type **TR** *Comment Status* **R** *RINxxOMA (O)*

"when measured using the test pattern and sampling range specified for OMAouter measurement in 180.9.5"

OMA_outer is currently defined before the reference equalizer, but this would not create the flat regions shown in Figure 180–8. As suggested in another comment, OMA_outer should be defined after the reference equalizer (with appropriate normalization) instead.

Assuming noise measurement for RINxxOMA should still be done before the reference equalizer, measuring using PRBS13Q will not create the required flat regions, since the maximum run length for P0 is 6, much shorter than the reference equalizer length. The test patterns for RINxxOMA should be changed to SSPRQ or quaternary square wave, both of which have longer runs (15 or 8 respectively), or a longer square wave pattern which implementations may have (subject of another comment against clause 176).

The existing text already defines "on a region in a place in the pattern that is selected to minimize the measurement error" which is enough if the pattern has a flat region.

SuggestedRemedy

In Table 180–14, change the patterns for RINxxOMA from "4 or 6" to "Square wave or 6". Change the quoted phrase to "when measured using the test pattern specified for RINxxOMA in Table 180–14".

Add an allowance in 180.9.14 or in Table 180–14 to use a lower frequency square wave test pattern if available (with editorial license).

Implement the same changes in corresponding places in clauses 181, 182, and 183.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **180** *SC* **180.9.15** *P* **492** *L* **54** # 79

Ran, Adee
Cisco Systems

Comment Type **E** *Comment Status* **R** *Rx Sensitivity (O)*

The BLER requirements, the notes, the statement about precoding, and the tables apply equally to RS (180.9.15) and to SRS (180.9.16).

The text in 180.9.16 is missing the first note.

Instead of repeating the content (which is most of the text of 180.9.15), it may be preferable to move the common part to a separate subclause, as was done for example in 179.9.5.2.

SuggestedRemedy

Create a new subclause before 180.9.15 that defines the error ratio requirements, with the content from the 3rd paragraph of 180.9.15 down to the end and point to the new subclause from 180.9.15 and 180.9.16.

If this is not done, add the missing NOTE in 180.9.16.

Make similar changes in corresponding subclauses of clauses 181, 182, 183. Implement with editorial license.

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

There was some interest in a similar note but some rewording would be needed.

A proposal with implementation details is required.

There is no consensus to make the proposed changes.

Cl **180** *SC* **180.9.16** *P* **494** *L* **21** # 80

Ran, Adee
Cisco Systems

Comment Type **TR** *Comment Status* **R** *Stressed Rx Sensitivity (O)*

"The SECQ of the stressed receiver conformance test signal is measured according to 180.9.6, except that the test fiber is not used"
This means that SECQ is equivalent to TECQ (180.9.8) which has exactly that definition. So why not use that definition?

There is an important difference: meeting a transmitter specification (e.g. TECQ) can be verified without optimizing the equalizer to the specific requirement - sub-optimal equalizer that yields a result below the limit is sufficient. But for SRS, if the equalizer is sub-optimal then SECQ will be higher and less stress will be applied. Therefore, non-optimal equalization can lead to under-stressed testing.

SuggestedRemedy

Change the quoted sentence to
"The SECQ of the stressed receiver conformance test signal is defined as the TECQ measured according to 180.9.8 at the output of the E/O converter, with reference equalizer coefficients that minimize TECQ."

Add an informative note after the list of exceptions:
"NOTE—Practical implementations can have sub-optimal coefficients that result in increased SECQ, which would lead to an under-stressed test signal. In such cases, reduction of the TECQ as a guard band for SECQ is recommended."

Make similar changes in corresponding subclauses of clauses 181, 182, 183. Implement with editorial license.

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

There was some support for the proposed changes but there is no consensus to make the proposed changes at this time.

Cl **181** *SC* **181.9.6** *P* **518** *L* **45** # 81

Ran, Adee
Cisco Systems

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

TDECQ is defined based on 180.9.6, without the subclauses .2 - .4 (which leaves only one subclause 181.9.6.1).
The test setup for FR/LR is likely different than that of DR (based on Figure 122-4 having an "optical filter" block that Figure 121-4 does not have).

Similarly in 182.9.6 and 183.9.6.

SuggestedRemedy

Create 181.9.6.1 through 181.9.6.4, with titles of the corresponding subclauses in clause 180. For 181.9.6.1, add a diagram with an optical filter (and any other differences). For 181.9.6.2, use the content of the existing 181.9.6.1. For other subclauses, point to the corresponding subclauses in clause 180.

Make similar changes in corresponding subclauses of clauses 182 and 183 with references to the appropriate figures. Implement with editorial license.

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

Adding a diagram with an optical filter does clarify the differences in the test setup. However, there is no need to repeat the full method with the four subclauses.

It is implict that a WDM DeMux is required to separate the lanes in testing. Adding a new diagram would be be helpful but is not necessary to address this comment at this time. The commenter is encouraged to resubmit in SA ballot.

Cl **182** *SC* **182.9.2** *P* **549** *L* **25** # 82

Ran, Adee
Cisco Systems

Comment Type **E** *Comment Status* **R** *exception list (bucket) (O)*

The reference receiver is defined by reference to 180.9.2 with a single exception which is almost the whole definition.

SuggestedRemedy

Define the reference receiver using text as in the fist patagraph of 180.9.2. Refer to 180.9.2 for the CRU and the block diagram.
Implement with editorial license.

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The suggested change is a potential editorial improvement, but is not required at this time. This topic can be reconsidered in SA ballot and the commenter is encouraged to resubmit at that time.

Cl **182** *SC* **182.9.7** *P* **552** *L* **14** # 83

Ran, Adee
Cisco Systems

Comment Type **TR** *Comment Status* **R** *TDECQCER (CO)*

The SER and CER targets in Table 182-16 were adopted by the response to comment #114 against D2.2 and the referenced presentation <https://www.ieee802.org/3/dj/public/25_11/chayeb_3dj_01a_2511.pdf>. No rationale was provided for the values.

The target CER in this case is the maximum expected failure rate of the inner FEC. An analysis resulting in estimate of this value has been provided in the ad hoc presentation <https://www.ieee802.org/3/dj/public/adhoc/optics/0623_OPTX/ran_3dj_logic_01_230629.pdf>.
Given the 12-way interleaving, and combining results in slide 6 and in slide 12 of that presentation, the allowed inner FEC failure ratio is 30*2.85e-4 = 8.55e-3. This should be the value of CER_target for consistency with the existing definitions (i.e. ignoring error floor).

Using this CER_target and the values k=3, m=1, and d=64 from Table 182-16, Equation 180-23 (corrected, based on another comment) can be solved to yield the SER_target=1.25e-2.

Note that these values are higher than the existing values (which relaxes the transmitter requirements), because the 12-way interleaving reduces the error correlation below that of random errors.

As an alternative, to protect against an error floor, the CER_target can be reduced by an order of magnitude to 8.55e-4; this would result in SER_target of 6.55e-3.

SuggestedRemedy

In Table 182-16, change the values of SER_target and CER_target to 1.25e-2 and 8.55e-3, respectively.
Apply the same changes in Table 183-16.

Response *Response Status* **C**

REJECT.

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

Further analysis and consensus building is encouraged.

Cl **183** *SC* **183.9.2** *P* **582** *L* **35** # 84

Ran, Adee
Cisco Systems

Comment Type **E** *Comment Status* **R** *exception list (bucket) (O)*

The reference receiver is defined by reference to 180.9.2 with a single exception which is almost the whole definition.

SuggestedRemedy

Define the reference receiver using text as in the fist patagraph of 180.9.2. Refer to 180.9.2 for the CRU and the block diagram.
Implement with editorial license.

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The suggested change is a potential editorial improvement, but is not required at this time. This topic can be reconsidered in SA ballot and the commenter is encouraged to resubmit at that time.

Cl **179B** *SC* **179B.4.1** *P* **912** *L* **10** # 85

Ran, Adee
Cisco Systems

Comment Type **T** *Comment Status* **R** *Test fixtures (E)*

The difference between minimum and maximum ILdd for mated test fixtures is about 3 dB at the Nyquist frequency.
This difference allows significant variations in cable assembly test fixture (MCB), which can have a double effect (up to 6 dB) if used to measure a cable.

SuggestedRemedy

Reduce the allowed variablility of test fixtures, or its effect on measurements.
A detailed proposal is planned.

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3. However, the commenter indicated that it is related to unsatisfied comment #306 against D2.2 (see <https://www.ieee802.org/3/dj/comments/D2p2/8023dj_D2p2_comments_final_id.pdf#page=84>), so it is considered in scope.

The CRG has reviewed the following contributions:
<https://www.ieee802.org/3/dj/public/26_01/ran_3dj_02_2601.pdf>
<https://www.ieee802.org/3/dj/public/26_01/mammenga_3dj_01_2601.pdf>

Note the the draft states that "The effects of differences between the insertion loss of an actual test fixture and the reference insertion loss are to be accounted for in the measurements".

The comment suggests changes that are a potential improvement, but the specific details are not clear.

The discussion did not show consensus for any of the directions in the presentation.

Future work and consensus building on this topic are encouraged.
There was no consensus to make a change.

Cl **179C** *SC* **179C.1** *P* **921** *L* **3** # 86

Ran, Adee
Cisco Systems

Comment Type **T** *Comment Status* **R** *MDI connectors (CG)*

"When an MDI connector is not fully utilized the lower PMD numbers in Table 179C–2 should be used"

The MDI is part of the PHY so "not fully utilized" means the host does not have transmit and receiver functions for all lanes of the MDI. This is an unlikely situation, and even if it happens, following the recommendation does not guarantee interoperability, since in most cases the link partner needs to be configured accordingly.

Instead, it would be helpful for readers to know that in some cases, such as breakout cables, the combination of PMDs types on both sides of the cable can require management to create matching configurations

SuggestedRemedy

Delete the quoted sentence.
Add the following informative note:
NOTE—The PMD types on both sides of the cable assembly need to match. When the MDI is used for multiple PMDs or for PMDs with lower number of lanes than the MDI supports, appropriate configuration is required. The means for selecting the appropriate configuration are beyond the scope of this standard.

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The following contribution was reviewed by the CRG:
https://www.ieee802.org/3/dj/public/26_01/ran_3dj_03a_2601.pdf

There was some agreement that changes to the wording in 179C would improve the quality of the draft. However, there was no agreement on specific changes. Further work on this topic is required.

There was no consensus to make any of the proposed changes at this time.

Cl **180A** *SC* **180A.4.1** *P* **939** *L* **33** # 87

Ran, Adee
Cisco Systems

Comment Type **T** *Comment Status* **R** *MDI connectors (CO)*

The situations described in the text, of MDI connectors that are not fully utilized (some lanes not connected to a PMD) or are used with multiple PMDs (breakout), are not detectable by a link partner that is connected to the other side of the cable plant.

In such situations, the link partner needs to be configured by management to the corresponding PMD combination. This should be noted for readers.

Also in 180A.4.2.

SuggestedRemedy

Add the following informative note:
NOTE—The PMD types on both sides of the fiber need to match. When the MDI is used for multiple PMDs or for PMDs with lower number of lanes than the MDI supports, appropriate configuration is required. The means for selecting the appropriate configuration are beyond the scope of this standard.

Add a similar note in 180A.4.2.
Implement with editorial license.

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3. However, the commenter indicated that it is related to unsatisfied comment #419 from D2.1 (see <https://www.ieee802.org/3/dj/comments/D2p1/8023dj_D2p1_comments_final_id.pdf#page=111>), so it is considered in scope.

Two other comments are related to this one:
Comment #86 proposes a similar change to the proposed response for electrical MDIs (in Annex 179C).
Comments #107 addresses the corresponding content in Annex 179C and suggest a different change.

The following contribution was reviewed by the CRG:
https://www.ieee802.org/3/dj/public/26_01/ran_3dj_03a_2601.pdf

There was some agreement that changes to the wording in 180A would improve the quality of the draft. However, there was no agreement on specific changes. Further work on this topic is required.

There was no consensus to make any of the proposed changes at this time.

Cl **1.3** *SC* **1.3** *P* **57** *L* **17** # 88

Ran, Adee Cisco Systems

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

To my best knowledge, an SFP224 specification has not been made available for review of P802.3dj prior to the January meeting.
The editor's notes here and in Annex 179C were placed under certain project schedule assumptions. Based on the progress of the project, it may be possible to extend the deadline.

Assuming the deadline is not extended, all content related to SFP224 needs to be removed prior to SA ballot.

SuggestedRemedy

Change the note to extend the deadline to March 2026.
Alternatively:
Delete subclause 179.2.1, the editor's note in 1.3 about SFF-TA-1031, and all text and table columns/rows related to SFF224 across clause 179, annex 179C, and annex 179D, with editorial license.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **1** *SC* **1.3** *P* **57** *L* **17** # 89

Ran, Adee Cisco Systems

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

To my best knowledge, an SFP-DD224 specification has not been made available for review of P802.3dj prior to the January meeting.
The editor's note in Annex 179C was placed under certain project schedule assumptions. Based on the progress of the project, it may be possible to extend the deadline.

Assuming the deadline is not extended, all content related to SFP-DD224 needs to be removed prior to SA ballot.

SuggestedRemedy

Change the note to extend the deadline to March 2026.
Alternatively:
Delete subclause 179.2.2 and all text and table columns/rows related to SFP-DD224 across clause 179, annex 179C, and annex 179D, with editorial license.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **176** *SC* **176.4.2.2** *P* **322** *L* **27** # 90

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **R** *exception list (bucket) (L)*

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**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.
The suggested change is a potential editorial improvement, but is not required at this time. This topic can be reconsidered in SA ballot and the commenter is encouraged to resubmit at that time.

Cl **176** *SC* **176.4.4.2** *P* **332** *L* **35** # 91

Ran, Adee
Cisco Systems

Comment Type **E** *Comment Status* **R** *(bucket) (L)*

The subclause text includes a dashed list with one item, and then a paragraph with multiple statements regarding different PMAs, which would be more readable as a table or 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**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The text in this subclause is technically correct as written, but could be changed to improve readability.

This topic can be reconsidered in SA ballot and the commenter is encouraged to resubmit at that time.

Cl **176** *SC* **176.7.4.6** *P* **342** *L* **37** # 92

Ran, Adee
Cisco Systems

Comment Type **T** *Comment Status* **R** *square wave (CO)*

The square wave test pattern defined in 120.5.11.2.4 has a period of 16 UI (8 threes and 8 zeros) since its introduction in 802.3bs (where the PAM4 signaling rate f_b was about 26 GBd for most interfaces). This corresponds to a fundamental frequency of f_b/16,

For the electrical and IM-DD optical interfaces defined in this amendment, this frequency is about 6.64 GHz (or slightly higher with inner FEC). It is expected that the accessible test points (e.g. TP2) will be after non-negligible loss at this frequency, and thus the amplitude to the output will be much lower than the steady-state levels, and there will be no flat regions, as expected from this pattern.

A longer-period square wave will be beneficial and will likely available in all implementations. Since the generator is optional, there is no harm in modifying the definition.

SuggestedRemedy

Add an exception that the number of consecutive zero and three symbols in the test pattern may be larger than 8, and a recommendation to provide a pattern with 16 or 32 consecutive symbols of each type.
Consider adding a variable and MDIO mapping to control the length of the pattern.
Implement with editorial license.

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The square wave (quaternary) test pattern is defined for use only for optical PMD types defined in Clause 180 through Clause 183. For those PMD types it is defined only for measurement of optical wavelength and transition time parameters. For transmitter measurements for those optical PMD types the effect of bandwidth limitations on optical wavelength is negligible and the effect on transition time is exactly what is being measured and the pass/fail criterion can be set appropriately for the test method specified. Modifications to the test pattern are therefore not warranted.

In 176D.8.2, for differential peak-to-peak output measurement the following is stated: "Differential peak-to-peak output voltage is defined with P=10^–7 for the differential output signal. 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." However, this pattern is not defined in Clause 176. A complete proposal and consensus on this is encouraged.

The comment proposed is a technical change that requires further discussion and consensus. Consider building consensus for these changes and resubmitting a comment

during SA ballot.

Cl **179** *SC* **179.11.6.2.2** *P* **451** *L* **23** # 93

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **R** *exception list (bucket) (E)*

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**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The suggested change is a potential editorial improvement, but is not required at this time. This topic can be reconsidered in SA ballot and the commenter is encouraged to resubmit at that time.

Cl **180** *SC* **180.9.5** *P* **478** *L* **43** # 94

Ran, Adee Cisco Systems

Comment Type **T** *Comment Status* **R** *OMAouter (O)*

"OMAouter is measured using the waveforms captured at the output of the reference receiver defined in 180.9.2"
As noted in previous comments, the illustration of the signal in Figure 180-8 does not match this statement; the signal in the figure is fully equalized. Indeed, in a non-equalized signal, there will likely be no flat region in a 6-UI run (noting that the reference equalizer is longer).

In another comment I am suggesting that the reference equalizer should be normalized to have c(0)=1. With this modification, the nominal 0 and 3 levels will be the same before and after the equalizer, but the eye diagram will be open, and thus OMA_outer will be measurable at the equalizer output on flat regions. This will also match the illustration in Figure 180-8.

The benefit of these two changes is that OMA_outer matches the original meaning of the distance between nominal levels measured without equalization (e.g. with an NRZ modulated pattern). Also, there is no need for two different definitions of OMA.

SuggestedRemedy

Change "at the output of the reference receiver defined in 180.9.2" to "at the output of the reference equalizer defined in 180.9.6.3".
Apply corresponding changes in clauses 181, 182, and 183.
A detailed proposal is planned.

Response *Response Status* **C**

REJECT.

The location of where OMAouter is measured was discussed in the resolution to comment #4.

There was no consensus to make the changes proposed in this comment.

Cl **178** *SC* **178.9.3.5.2** *P* **399** *L* **45** # 95

Dudek, Mike Marvell

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

Typically we say "measured at TP0v" not "measured at the TP0v"

SuggestedRemedy

Change to "measured at TP0v"

Response *Response Status* **C**

ACCEPT.

Cl **176C** *SC* **176C.6.4.7** *P* **808** *L* **42** # 96

Dudek, Mike Marvell

Comment Type **TR** *Comment Status* **R** *Rx tests (E)*

An AUI link is PMA to PMA and doesn't include the major source of BER. Hence testing the AUI within a complete PHY rather than from the PMA to PMA will be difficult. Also FEC counters which operate over multiple lanes will make it even more difficult.

SuggestedRemedy

Delete "or 174A.11" also in 176D.8.15 page838 line 20

Response *Response Status* **C**

REJECT.
The addition of 174A.11 in both 176C.6.4.7 and 176D.8.15 was made by the response to comment #178 against D2.2 (see <https://www.ieee802.org/3/dj/comments/D2p2/8023dj_D2p2_comments_final_id.pdf#page=49>).
174A.9, the other reference in the text, defines BLER measurement only using PRBS31 and PMA counters.
174A.11 defines BLER measurement using PCS-encoded data and PCS counters. Testing using this method, with the approprate value of BER_added, is a valid option for AUI-C2C and AUI-C2M too (in the receive direction there can be a PCS). Thus, the reference to 174A.11 is not incorrect.
It was noted that in some scenarios, such as testing a host with an 800GBASE-ER1 module, this test method is a possibility.

There was no consensus to make the suggested change.

Cl **181** *SC* **181.9.9** *P* **520** *L* **11** # 97

Dudek, Mike Marvell

Comment Type **TR** *Comment Status* **R** *TFSEH (O)*

The test calls out a fiber that is compliant to Table 181-13, but that table shows a minimum and maximum chromatic dispersion, so a patch cord is compliant to that table. This test is intended to include the effects of chromatic dispersion. The proposed solution uses the same channel as the TDECQ test.

SuggestedRemedy

Replace "The transmitter under test is connected to the FRx by a test fiber which meets the transmitter compliance channel specifications in Table 181–13." with “The transmitter under test is connected to the FRx by a test fiber which meets the requirements provided in section 181.9.6.2.” Make the equivalent changes in clause 182 and 183. (Suggestion is not to change clause 180 as due to the small amount of chromatic dispersion expected a patch cord is acceptable).

Response *Response Status* **C**

REJECT.

A proposal to address this comment was provided on slide 8 in the following contribution: https://www.ieee802.org/3/dj/public/26_01/cole_3dj_01c_2601.pdf

However there was no consensus to make the change proposed in this comment or in cole_3dj_01c_2601 at this time.

Further discussion on this topic is required.

Cl **185A** *SC* **185A.2.4.10** *P* **952** *L* **18** # 98

Dudek, Mike Marvell

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

The magnitude variation is measured relative to the 0dB level over the 3dB bandwidth. It must therefore be at least 3dB (unless measured over the minimum value specified and the actual bandwidth is much larger. However in table 185-13 and 187-13 the value is required to be 1dB max.

SuggestedRemedy

Change "over the specified 3dB bandwidth" to "over 0.75 of the specified minimum 3dB bandwidth."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change 185A.2.4.10 to "The frequency response magnitude variation is the largest excursion in dB relative to the 0 dB level, measured over the bandwidth equivalent to 0.55 * symbol rate. This may be achieved through the implementation of a fixed digital equalizer applied as part of the calibrated front-end sampling.
Implement with editorial license.

Cl **178B** *SC* **178B.9** *P* **895** *L* **51** # 99

Dudek, Mike Marvell

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

In this subsection "other interface" is used which is not well defined whereas in the rest of the section "adjacent interface" is used for the same interface and "adjacent interface is better defined

SuggestedRemedy

Replace "other interface" with "adjacent interface" throughout this subsection. (4 places).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

But it is a good proposed improvement, since in subclause 178B.6 the term "other interface" is used to indicate both: peer and adjacent interfaces. This may create some confusion.

Change: "In normal operation, a retimer passes the data received on one of its interfaces to the other interface using the clock recovered from the received data"
To: "In normal operation, a retimer passes the data received on one of its interfaces to the other (adjacent) interface using the clock recovered from the received data"

Change the word "other" in the next three places in this subclause to "adjacent".

Implement with editorial license.

Cl **183** *SC* **183.9.15** *P* **587** *L* **25** # 100

Dudek, Mike Marvell

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

Other optical clauses (e.g. clause 180, 181 and 182) provide precoding if the receiver requests it to improve receiver sensitivity and stressed receiver sensitivty.

SuggestedRemedy

Add "Precoding (see 176.7.1.2) is enabled if the receiver requests precoding using the ILT function." at line 25 and also on page 588 line 2.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

However, the statement provided in the suggested remedy is provided clauses 180, 181, and 182, and is equally relevant to Clause 183. It appears to be an oversight.

Implement the suggested remedy with editorial license.

Cl **180** *SC* **180.9.15** *P* **493** *L* **10** # 101

Dudek, Mike Marvell

Comment Type **E** *Comment Status* **R** *precoding (O)*

It would be better to describe the precoding before the details of the test in this Receiver Sensitivity sub section.

SuggestedRemedy

Move "Precoding (see 176.7.1.2) is enabled if the receiver requests precoding using the ILT function." to page 492 line 47. Make the equivalent change in clauses 181, 182 and 183 (if it is added per a different comment).

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

This is a purely editorial comment, however this proposal may enhance the clarity of the draft. The commenter is encouraged to resubmit in SA ballot.

Cl **180** *SC* **180.9.15** *P* **493** *L* **10** # 102

Dudek, Mike — Marvell

Comment Type **E** *Comment Status* **R** *precoding (O)*

It would be better to describe the precoding before the details of the BLER test in this stressed receiver sensitivity sub section.

SuggestedRemedy

Move "Precoding (see 176.7.1.2) is enabled if the receiver requests precoding using the ILT function." to page 494 line 32. Make the equivalent change in clauses 181, 182 and 183 (if it is added per a different comment).

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.
This is a purely editorial comment, however this proposal may enhance the clarity of the draft. The commenter is encouraged to resubmit in SA ballot.

Cl **180** *SC* **180.9.15** *P* **494** *L* **14** # 103

Dudek, Mike — Marvell

Comment Type **T** *Comment Status* **R** *mask table (CO)*

The final bin is for ">=16" not for "16" test symbol errors per test block

SuggestedRemedy

Change "16" to "<=16" here and on page 639 line 23, page 805 line 31, page 833 line 53, page 396 line 48 and page 437 line 53 and page 499 line 23

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The CRG reviewed slides 3 and 4 in the following contribution:
https://www.ieee802.org/3/dj/public/26_01/brown_3dj_03_2601.pdf

The histogram mask (upper limit) H_max(k) is defined in 174A.9.5 where the mask value for k = 16 is defined (and calculated) as the probability of 16 test symbol errors; not greater than or equal to 16 test symbol errors as the comment purports. Also, it states explicitly that h_m(k) shall be less than h_max(k) so there is no ambiguity.

There is no consensus to make a change at this time.

However, there was some interest to align the calculation of H_max(16) with that of H_m(16). A complete proposal and consensus ballot are encouraged.

Cl **176C** *SC* **176C.3** *P* **796** *L* **48** # 104

Dudek, Mike — Marvell

Comment Type **T** *Comment Status* **R** *C2C functional spec (L)*

The C2C spec normatively requires meeting the functional specifications in management variable specifications in 178.13 which point to those in 179.14 where PMD_reset is required. It would be more appropriate to call out PMA_reset

SuggestedRemedy

Add an exception. Change "and the management variable specifications in 178.13, unless stated otherwise" to "and the management variable specifications in 178.13,unless stated otherwise but with PMA_reset replacing PMD_reset. "
Make the same change in 176D on page 819 line19

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The suggested change is a potential improvement, but is not required at this time. Consider resubmitting this comment during SA ballot.

Cl **179** *SC* **179.9.4.7** *P* **432** *L* **11** # 105

Dudek, Mike — Marvell

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

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**

REJECT.
This comment (#105) suggests that JH4u should be measured with other lanes active (like JRMS).
Comment #141 suggests the contrary, that JRMS should be measured with other lanes disabled.
It is unclear that there is consensus for making any of these changes at this time.
Note that data showing the effect of other lanes on the new JRMS and JH4u, that could support a decision, has not been provided.

Further work and consensus building on this topic is encouraged.
This topic can be reconsidered in SA ballot and the commenter is encouraged to resubmit at that time.

Cl **174A** *SC* **174A.10.5** *P* **751** *L* **42** # 106

Dudek, Mike Marvell

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

An LR1 PMD (the subject of 174A.10) can be used with AUIs and therefore should use the codeword error ratio limit appropriate for a PMD not a PCS to PCS link. (Also 174A.6 is titled PCS to PCS not PHY to PHY path. PHY ro PHY path is not described in 174A.6. Also this section does not call out the BERadded.

SuggestedRemedy

Replace "The expected BLER is met if the measured value is less than the codeword error ratio limit specified in 174A.6 for a PHY-to-PHY path" with "The expected BLER is met if the measured value is less than the codeword error ratio limit specified in 185.2"

Consider deleting the whole section 174A.10, or replacing it with just a single paragraph (no subsections). "The test methods for an ISL (see 178B.3) with 800 Gb/s per lane signaling between a pair of 800GBASE-LR1 Inner FEC sublayers including a PMD and Inner FEC at each end and the medium between use the tests defined in 174A.9 with p=1.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The comment correctly points out that "PHY-to-PHY" should be replaced with "PCS-to-PCS". This error seems to be due to incomplete implementation of D2.0 comment #292.

The target codeword error ratio (or block error ratio) is the same whether measuring the whole PHY or the PMD (1.45E-11); it is the PCS-to-PCS path that terminates the FEC and thus determines the codeword error ratio. This is specified similarly in 174A.9.6. Instead it is the BER_added value that is different.

A separate subclause 174A.10 (than 174A.9) is used for the 800GBASE-LR1 PHY type since the test configuration is slightly different than for the IMDD PHY types since the PRBS31 is in the Inner FEC sublayer rather than in the PMA sublayer above. It might be possible to merge into 174A.9 but it would take a great deal of descriptive changes. It is correct as written.

The use of BER_added in the test method is called out indirectly in 174A.10.5 by reference to 174A.9.5. The BER_added value is provided where the method in 174A.10 is called out; see 185.2. It is not necessary (nor desirable) to create a circular reference back to 185.2.

Throughout Annex 174A change "PHY-to-PHY" to "PCS-to-PCS".

Note that this is an editorial change only.

Cl **179C** *SC* **179C.1** *P* **921** *L* **4** # 107

Dudek, Mike Marvell

Comment Type **TR** *Comment Status* **R** *MDI connectors (CG)*

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"

SuggestedRemedy

Change "When an MDI connector is not fully utilized the lower PMD numbers in Table 179C–2 should be used." to "When an MDI connector is not fully utilized the lower PMD numbers in Table 179C–2 shall be used". Or "When all the lanes of an MDI connector do not have signals connected the lower PMD numbers in Table 179C–2 shall be used.e.g. if a QSFP224 connector is used for a single 400GBASE-CR2 connection then PMD 0 and 1 are used."

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The following contribution was reviewed by the CRG:
https://www.ieee802.org/3/dj/public/26_01/ran_3dj_03a_2601.pdf

There was some agreement that changes to the wording in 179C would improve the quality of the draft. However, there was no agreement on specific changes. Further work on this topic is required.

There was no consensus to make any of the proposed changes at this time.

Cl **180** *SC* **180.7.1** *P* **470** *L* **38** # 108

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *Overshoot (O)*

In D2.0 1T DFE was added to the TDECQ equalizer which reduces the need for transmiteer overshoot where TDECQ doesn't capture peak-to-average ratio and may result in BER degradation with improving TDECQ.

SuggestedRemedy

Reduce transmitter overshoot from 22% to 12% or alternatively incorporate overshoot penalty assuming ENOB of 6 bits into TDECQ
see ghiasi_3dj_01_2601 also see unsatisfied comment

Response *Response Status* **C**

REJECT.
This comment is a resubmission of Draft 2.1 Comment #162 and Draft 2.2 Comment #252 in the following comment reports:
https://www.ieee802.org/3/dj/comments/D2p1/8023dj_D2p1_comments_unsatisfied_id.pdf
https://www.ieee802.org/3/dj/comments/D2p2/8023dj_D2p2_comments_unsatisfied_id.pdf

The noted comments were rejects with suggested remedies of the comment does not provide sufficient justification to support the suggested remedy.

The CRG review the following contribution:
https://www.ieee802.org/3/dj/public/26_01/ghiasi_3dj_01_2601.pdf

The new contribution provides some additional data but further analysis and evidence is necessary to support the proposed changes.

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

Cl **181** *SC* **181.7.1** *P* **510** *L* **24** # 109

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *Overshoot (O)*

In D2.0 1T DFE was added to the TDECQ equalizer which reduces the need for transmiteer overshoot where TDECQ doesn't capture peak-to-average ratio and may result in BER degradation with improving TDECQ.

SuggestedRemedy

Reduce transmitter overshoot from 22% to 12% or alternatively incorporate overshoot penalty assuming ENOB of 6 bits into TDECQ
see ghiasi_3dj_01_2601 also see unsatisfied comment

Response *Response Status* **C**

REJECT.
This comment is a resubmission of Draft 2.2 Comment 162 in the following comment report:
https://www.ieee802.org/3/dj/comments/D2p1/8023dj_D2p1_comments_unsatisfied_id.pdf,

In Draft 2.2, the response was written as: "The comment does not provide sufficient justification to support the suggested remedy.
Further data is encouraged to bring to the task force for consideration."

The CRG review the following contribution:
https://www.ieee802.org/3/dj/public/26_01/ghiasi_3dj_01_2601.pdf

The new contribution provides some additional data but further analysis and evidence is necessary to support the proposed changes.

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

Cl **182** *SC* **182.7.1** *P* **541** *L* **36** # 110

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *Overshoot (O)*

In D2.0 1T DFE was added to the TDECQ equalizer which reduces the need for transmiteer overshoot where TDECQ doesn't capture peak-to-average ratio and may result in BER degradation with improving TDECQ.

SuggestedRemedy

Reduce transmitter overshoot from 22% to 12% or alternatively incorporate overshoot penalty assuming ENOB of 6 bits into TDECQ
see ghiasi_3dj_01_2601 also see unsatisfied comment

Response *Response Status* **C**

REJECT.
Resolve using the response to comment #108.

Cl **183** *SC* **183.7.1** *P* **573** *L* **8** # 111

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *Overshoot (O)*

In D2.0 1T DFE was added to the TDECQ equalizer which reduces the need for transmiteer overshoot where TDECQ doesn't capture peak-to-average ratio and may result in BER degradation with improving TDECQ.

SuggestedRemedy

Reduce transmitter overshoot from 22% to 12% or alternatively incorporate overshoot penalty assuming ENOB of 6 bits into TDECQ
see ghiasi_3dj_01_2601 also see unsatisfied comment

Response *Response Status* **C**

REJECT.

Resolve using the response to comment #108. In addition, the proposed limits for FR4 and LR4 as well as the effect on TDECQ and TECQ need to be explicitly considered.

Cl **180** *SC* **180.9.2** *P* **478** *L* **10** # 112

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *CRU (CO)*

With TDECQ expected to capture jitter more accuratly now that explicit jitter measurmeent are removed the CRU maximum peaking must be defined, also the slope should be -20 dB not 20 dB.

SuggestedRemedy

Origonal text: The clock recovery unit (CRU) has a corner frequency of 4 MHz and a slope of 20 dB/decade.
proposed text: The clock recovery unit (CRU) has a 3 dB corner frequency of 4 MHz and a slope of -20 dB/decade. The CRU maximum jitter transfer peak is ≤0.3 dB from 40 kHz to 20 MHz.

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The comment does not provide sufficient justification to support the suggested remedy. A contribution is encouraged to support the proposed change and to reach consensus.

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

Cl **181** *SC* **181.7.1** *P* **506** *L* **44** # 113

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

With TDECQ expected to capture jitter more accuratly now that explicit jitter measurmeent are removed the CRU maximum peaking must be defined, also the slope should be -20 dB not 20 dB.

SuggestedRemedy

Origonal text: The clock recovery unit (CRU) has a corner frequency of 4 MHz and a slope of 20 dB/decade.
proposed text: The clock recovery unit (CRU) has a 3 dB corner frequency of 4 MHz and a slope of -20 dB/decade. The CRU maximum jitter transfer peak is ≤0.3 dB from 40 kHz to 20 MHz.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **182** *SC* **182.7.1** *P* **538** *L* **18** # 114

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

With TDECQ expected to capture jitter more accuratly now that explicit jitter measurmeent are removed the CRU maximum peaking must be defined, also the slope should be -20 dB not 20 dB.

SuggestedRemedy

Origonal text: The clock recovery unit (CRU) has a corner frequency of 4 MHz and a slope of 20 dB/decade.
proposed text: The clock recovery unit (CRU) has a 3 dB corner frequency of 4 MHz and a slope of -20 dB/decade. The CRU maximum jitter transfer peak is ≤0.3 dB from 40 kHz to 20 MHz.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **183** *SC* **183.7.1** *P* **569** *L* **22** # 115

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

With TDECQ expected to capture jitter more accuratly now that explicit jitter measurmeent are removed the CRU maximum peaking must be defined, also the slope should be -20 dB not 20 dB.

SuggestedRemedy

Origonal text: The clock recovery unit (CRU) has a corner frequency of 4 MHz and a slope of 20 dB/decade.
proposed text: The clock recovery unit (CRU) has a 3 dB corner frequency of 4 MHz and a slope of -20 dB/decade. The CRU maximum jitter transfer peak is ≤0.3 dB from 40 kHz to 20 MHz.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **180** *SC* **180.9.9** *P* **489** *L* **13** # 116

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *TFSEH (O)*

Lets better organize 180.9.9

SuggestedRemedy

Propose changes
Rename 180.9.9 to Transmitter Functional Test
Add new section 180.9.9.1 Transmitter functional symbol error histogram
Move 1st and 2nd paragraph into 180.9.9.1 and leave the test setup in 180.9.9

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

Changes to the "transmitter functional symbol error histogram" subclauses were proposed in other comments but there were concerns that more work is necessary to refine the proposals and further work on this topic is encouraged during SA Ballot.

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

Cl **180** *SC* **180.9.9** *P* **489** *L* **36** # 117

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *TFSEH - CDR (O)*

In DJ D2.2 it was proposed to add JTOL to FRx which overlay complex and difficult to meet, but if just define CDR loop BW is ≤ 4 MHz that would be sufficent

SuggestedRemedy

Add: Transmitter functional receiver CDR has a 3 dB loop bandwidth of ≤4.0 MHz.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **181** *SC* **181.9.9** *P* **520** *L* **26** # 118

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *TFSEH (O)*

Lets better organize 181.9.9

SuggestedRemedy

Propose changes
Rename 181.9.9 to Transmitter Functional Test
Change the reference for functional symbol error histogram from 180.9.9 to 180.9.9.1

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

Changes to the "transmitter functional symbol error histogram" subclauses were proposed in other comments but there were concerns that more work is necessary to refine the proposals and further work on this topic is encouraged during SA Ballot.

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

Cl **181** *SC* **181.9.9** *P* **520** *L* **12** # 119

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *TFSEH - CDR (O)*

In DJ D2.2 it was proposed to add JTOL to FRx which overlay complex and difficult to meet, but if just define CDR loop BW is ≤ 4 MHz that would be sufficent

SuggestedRemedy

Add: Transmitter functional receiver CDR has a 3 dB loop bandwidth of ≤4.0 MHz.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **182** *SC* **182.9.9** *P* **552** *L* **25** # 120

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *TFSEH (O)*

Lets better organize 182.9.9

SuggestedRemedy

Propose changes
Rename 182.9.9 to Transmitter Functional Test
Change the reference for functional symbol error histogram from 180.9.9 to 180.9.9.1

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

Changes to the "transmitter functional symbol error histogram" subclauses were proposed in other comments but there were concerns that more work is necessary to refine the proposals and further work on this topic is encouraged during SA Ballot.

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

Cl **182** *SC* **182.9.9** *P* **552** *L* **36** # 121

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *TFSEH - CDR (O)*

In DJ D2.2 it was proposed to add JTOL to FRx which overlay complex and difficult to meet, but if just define CDR loop BW is ≤ 4.27 MHz that would be sufficent

SuggestedRemedy

Add: Transmitter functional receiver CDR has a 3 dB loop bandwidth of ≤4.27 MHz.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **183** *SC* **183.9.9** *P* **585** *L* **26** # 122

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *TFSEH (O)*

Lets better organize 183.9.9

SuggestedRemedy

Propose changes
Rename 183.9.9 to Transmitter Functional Test
Change the reference for functional symbol error histogram from 180.9.9 to 180.9.9.1

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

Changes to the "transmitter functional symbol error histogram" subclauses were proposed in other comments but there were concerns that more work is necessary to refine the proposals and further work on this topic is encouraged during SA Ballot.

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

Cl **183** *SC* **183.9.9** *P* **585** *L* **36** # 123

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *TFSEH - CDR (O)*

In DJ D2.2 it was proposed to add JTOL to FRx which overlay complex and difficult to meet, but if just define CDR loop BW is ≤ 4.27 MHz that would be sufficent

SuggestedRemedy

Add: Transmitter functional receiver CDR has a 3 dB loop bandwidth of ≤4.27 MHz.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **180** *SC* **180.9.6** *P* **479** *L* **25** # 124

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *TDECQ and jitter (CO)*

802.3dj has spend last 1 year to best capture jitter in TDECQ and FRx, unless xAUI-n (C2M) interface operate with jitter tolerance condition in 176D.8.14 TDECQ measurement maybe be too optimistic see also unsatisfied comment 147 D2.2

SuggestedRemedy

Add sentence on 46: For thoes cases there is a xAUI-n chipto-module (C2M) interface TDECQ must be met with Module stressed input condition in 176D.8.14 for 200 Gb/s AUI and in 120E.3.4.1 for 100 Gb/s AUI.
See ghiasi_3dj_02_2601

Response *Response Status* **C**

REJECT.

This comment is a resubmission of Draft 2.1 Comment #144 and Draft 2.2 Comment #265 in the following comment reports:
https://www.ieee802.org/3/dj/comments/D2p1/8023dj_D2p1_comments_unsatisfied_id.pdf
https://www.ieee802.org/3/dj/comments/D2p2/8023dj_D2p2_comments_unsatisfied_id.pdf

The noted comments were an accept in principle with some updates made and a reject with no consensus to make a change at this time.

The following contribution was reviewed by the CRG:
https://www.ieee802.org/3/dj/public/26_01/ghiasi_3dj_02a_2601.pdf

There was interest expressed in the direction proposed by this comment and related contribution. However, the proposed changes are not sufficiently detailed. A more complete proposal and related consensus building is encouraged.

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

Cl **180** *SC* **180.9.9** *P* **489** *L* **40** # 125

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *TFSEH (CO)*

802.3dj has spend last 1 year to best capture jitter in TDECQ and FRx, unless xAUI-n (C2M) interface operate with jitter tolerance condition in 176D.8.14 TDECQ measurement maybe be too optimistic see also unsatisfied comments aginst D2.1 and D2.2

SuggestedRemedy

Add sentence on 46: For thoes cases there is a xAUI-n chipto-module (C2M) interface TDECQ must be met with Module stressed input condition in 176D.8.14 for 200 Gb/s AUI and in 120E.3.4.1 for 100 Gb/s AUI.The received test patterns shall be asynchronous to the pattern used to test the transmitter, and shall
have power levels as specified in Table 180–8 for the aggressor lanes in the stressed receiver
sensitivity test.
See ghiasi_3dj_02_2601

Response *Response Status* **C**

REJECT.

This comment is a resubmission of Draft 2.1 Comment #145 and Draft 2.2 Comment #266 in the following comment reports:
https://www.ieee802.org/3/dj/comments/D2p1/8023dj_D2p1_comments_unsatisfied_id.pdf
https://www.ieee802.org/3/dj/comments/D2p2/8023dj_D2p2_comments_unsatisfied_id.pdf

The noted comments were rejects with suggested remedies of there was no consensus to make a change at that time and while there was some agreement that changes in the direction of the suggested remedy should be considered a complete solution defining the intended test configuration and conditions would be required.

The following contribution was reviewed by the CRG:
https://www.ieee802.org/3/dj/public/26_01/ghiasi_3dj_02a_2601.pdf

There was interest expressed in the direction proposed by this comment and related contribution. However, the proposed changes are not sufficiently detailed. A more complete proposal and related consensus building is encouraged.

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

Cl **181** *SC* **181.9.6** *P* **518** *L* **46** # 126

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *TDECQ method (CO)*

802.3dj has spend last 1 year to best capture jitter in TDECQ and FRx, unless xAUI-n (C2M) interface operate with jitter tolerance condition in 176D.8.14 TDECQ measurement maybe be too optimistic see also unsatisfied comments aginst D2.1 and D2.2

SuggestedRemedy

Add sentence on 46: For thoes cases there is a xAUI-n chipto-module (C2M) interface TDECQ must be met with Module stressed input condition in 176D.8.14 for 200 Gb/s AUI and in 120E.3.4.1 for 100 Gb/s AUI.
See ghiasi_3dj_02_2601

Response *Response Status* **C**

REJECT.
Resolve using the respone to comment #125.

Cl **182** *SC* **182.9.6** *P* **550** *L* **38** # 127

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *TDECQ method (CO)*

802.3dj has spend last 1 year to best capture jitter in TDECQ and FRx, unless xAUI-n (C2M) interface operate with jitter tolerance condition in 176D.8.14 TDECQ measurement maybe be too optimistic see also unsatisfied comments aginst D2.1 and D2.2

SuggestedRemedy

Add sentence on 46: For thoes cases there is a xAUI-n chipto-module (C2M) interface TDECQ must be met with Module stressed input condition in 176D.8.14 for 200 Gb/s AUI and in 120E.3.4.1 for 100 Gb/s AUI.
See ghiasi_3dj_02_2601

Response *Response Status* **C**

REJECT.
Resolve using the response to comment #125.

Cl **183** *SC* **183.9.6** *P* **583** *L* **46** # 128

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *TDECQ method (CO)*

802.3dj has spend last 1 year to best capture jitter in TDECQ and FRx, unless xAUI-n (C2M) interface operate with jitter tolerance condition in 176D.8.14 TDECQ measurement maybe be too optimistic see also unsatisfied comments aginst D2.1 and D2.2

SuggestedRemedy

Add sentence on 46: For thoes cases there is a xAUI-n chipto-module (C2M) interface TDECQ must be met with Module stressed input condition in 176D.8.14 for 200 Gb/s AUI and in 120E.3.4.1 for 100 Gb/s AUI.
See ghiasi_3dj_02_2601

Response *Response Status* **C**

REJECT.
Resolve using the response to comment #125.

Cl **182** *SC* **182.9.9** *P* **546** *L* **7** # 129

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *TFSEH (O)*

Section 182.9.9 Transmitter functional symbol error histogram that should move into 182.9.9.1

SuggestedRemedy

Propsoed modification:
Make 182.9.9 Functional Receiver
Add the following to section 182.9.9 - "Functional receiver is an optical receiver with a PMA that meets or exceed receiver sensitivity condition in table 182-8 and is capable of symbol error reporting."
and Move 3rd paragraph in 182.9.9 into the same section "For thoes cases ..."
Move the current content of 182.9.9 into 182.9.9.1

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

Changes to the "transmitter functional symbol error histogram" subclauses were proposed in other comments but there were concerns that more work is necessary to refine the proposals and further work on this topic is encouraged during SA Ballot.

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

Cl **183** *SC* **183.9.9** *P* **581** *L* **10** # 130

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *TFSEH (O)*

Section 183.9.9 Transmitter functional symbol error histogram that should move into 183.9.9.1

SuggestedRemedy

Propsoed modification:
Make 183.9.9 Functional Receiver
Add the following to section 183.9.9 - "Functional receiver is an optical receiver with a PMA that meets or exceed receiver sensitivity condition in table 183-8 and is capable of symbol error reporting."
and Move 3rd paragraph in 183.9.9 into the same section "For thoes cases ..."
Move the current content of 183.9.9 into 183.9.9.1

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

Changes to the "transmitter functional symbol error histogram" subclauses were proposed in other comments but there were concerns that more work is necessary to refine the proposals and further work on this topic is encouraged during SA Ballot.

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

Cl **183** *SC* **183.9.5** *P* **462** *L* **8** # 131

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

TDECQ mission mode test definition should be made more clear

SuggestedRemedy

Propsoed text
TDECQ is defined with all receive xAUI-n lanes when instantiated in operation using test pattern 3 or 5 (see Table 180–13). xAUI-n lanes operate with receiver jitter tolerance condition defined by applicable instantiated xAUI-n.
The received test patterns shall be asynchronous to the pattern used to test the transmitter, and shall
have power levels as specified in Table 180–8 for the aggressor lanes in the stressed receiver
sensitivity test.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **178** *SC* **178.10.1** *P* **405** *L* **15** # 132

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **ER** *Comment Status* **R** *editorial (E)*

Nfix<j is confusing

SuggestedRemedy

Better written j>Nfix two instances

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

Resolve using the response to comment #133.

Cl **179** *SC* **179.11.6.1** *P* **450** *L* **15** # 133

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

Nfix<j is confusing

SuggestedRemedy

Better written j>Nfix two instances

Response *Response Status* **C**

REJECT.
[Editor's note: subclause changed from 179.10.1 to 179.11.6.1]

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The text is correct as written.
There is no consensus to make a change at this time.

Cl **176C** *SC* **176C.7.1** *P* **812** *L* **18** # 134

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

Nfix<j is confusing

SuggestedRemedy

Better written j>Nfix two instances

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

Resolve using the response to comment #133.

Cl **176D** *SC* **176D.7.2** *P* **829** *L* **42** # 135

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

Nfix<j is confusing

SuggestedRemedy

Better written j>Nfix two instances

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

Resolve using the response to comment #133.

Cl **176D** *SC* **176D.7.2** *P* **827** *L* **26** # 136

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *channel model (E)*

Devcie package model missing class type

SuggestedRemedy

Update the table as following:
Pacakge on page 822. line 30 add Host Class B

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

Annex 176D has one reference package for host and one reference package for module. There is no choice between package models for C2M host. Hence, the text is correct as written.

The package model for the host is the same as the one labeled "class B" in Table 179–19 (a different clause). This fact could be mentioned as an informative note. However, there is no consensus for adding such note at this time.

Cl **176D** *SC* **176D.7.2** *P* **828** *L* **5** # 137

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *channel model (E)*

Partial host channel model in the table not clear is needed or for what is the purpose!

SuggestedRemedy

Either descibe the purpose of partial host channel otherwise remove it

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **176D** *SC* **176D.7.2** *P* **827** *L* **41** # 138

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *channel model (E)*

Typical module implemenation will use mSAP where there is not 1st level pacakge and if some implementation uses a package for CDR it will be core-less

SuggestedRemedy

Add note to "Device pacakge model, module"
Note. If module PMA/CDR function doesn't use 1st level package then replace module pacakge with the null package.

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The package model is used in COM calculation for calibration of additive noise in module receiver compliance tests.
The internal implementation of the module is not necessarily known, and cannot be a parameter in this calibration.
Note that implementations are not required to match the model, but only to meet the compliance requirements.

There was no consensus to make the suggested changes at this time.

Cl **176D** *SC* **176D.7.2** *P* **827** *L* **49** # 139

Ghiasi, Ali — Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *channel model (E)*

If an implementation has a 1st level package then it will be a core-less pacakge and RDL via through the substrate will be <<1.8 mm

SuggestedRemedy

Replace 1.8 mm transmission line length 2 with 0.2 mm

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

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

Cl **45** *SC* **2** *P* **109** *L* # 140

Fuller, Paul — Infineon

Comment Type **E** *Comment Status* **R** *(bucket) (L)*

This might be extremely picky, but degrade and degraded is used almost interchangeably throughout the document. It seems like degraded is the appropriate usage?

SuggestedRemedy

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The comment appears to be referring to subclauses 45.2.1.217.6c and 45.2.1.217.6d as an example of FEC degrade(d) used throughout the document. The terms "degrade" and "degraded" are used interchangably here and in other clauses throughout the draft. Changes would be pervasive and a more complete proposal and consensus building of the changes is needed.

This topic can be reconsidered in SA ballot and the commenter is encouraged to resubmit at that time.

Cl **179** *SC* **179.9.4.7** *P* **432** *L* **11** # 141

Calvin, John — Keysight Technolgies

Comment Type **T** *Comment Status* **R** *jitter (E)*

Jrms needs to be added to the list which presently only includes JH4u and EOJ03.

SuggestedRemedy

Add Jrms after the JH4u as in "For JH4u, Jrms and EOJ03 measurements"

Response *Response Status* **C**

REJECT.
Resolve using the response to comment #105.

Cl **179** *SC* **179.9.4.7** *P* **432** *L* **17** # 142

Calvin, John — Keysight Technolgies

Comment Type **T** *Comment Status* **R** *jitter (E)*

Empirical measurments indicate physical clock recovery systems benefit from being able to lower PLL corner down from 4 MHz to 1 MHz, for reasons similar to those discussed in the 802.3ck project contribution
https://www.ieee802.org/3/ck/public/adhoc/sept16_20/calvin_3ck_adhoc_01_091620.pdf
The jitter decompositon for 106Gbd systems have very small margins and they are improved by offering an option on to reduce the loop BW.

SuggestedRemedy

In the paragraph at line 17 describing the PLL corder frequency at 4MHz. Consider this revised tex "Measurement is performed with a clock recovery unit (CRU) with a corner frequency of either 4 MHz or 1 MHz and a slope of 20 dB/decade."
The fact that lowering the loop BW from 4 to 1 MHz improves jitter is a little counter-intuitive and will likely require a contribution to make this point.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **179** *SC* **179.9.4.7.1** *P* **432** *L* **23** # 143

Calvin, John — Keysight Technolgies

Comment Type **T** *Comment Status* **R** *jitter (E)*

The proposed text that follows the "using the methods described in this subclause" works well on oversampled acquisition architectures, not so well on undersampled systems (Equivalent Time /DCA platforms) The DCA architecture acquires data slower but can place samples strategically to model edges for jitter measurements. Characterizing the edges and the amplitude noise allows the DCA to back out a more exact amount of jitter from each edge, accounting for asymmetric edge shape around the thresholds.
This current text is too perscriptive and need to cited as an example method, not THE method.

SuggestedRemedy

Replace the text at line 23 from "using the method described in this subclause" to "An example method is described below." to suggest this is one of several methods to extract the phase only jitter content, and allow alternative methods better suited for different measurment technology.

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The method described in this subclause should be the reference, not just an example, to avoid ambiguity.
Similarly in in 179.9.4.7.2 and 179.9.4.7.3.
In all cases, implementations of specified tests may employ any functionally equivalent methods that provide the same result.

Additional phrases explicitly allowing equivalent methods could be added. However, there was no consensus to make such change at this time.

This topic can be reconsidered in SA ballot and the commenter is encouraged to resubmit at that time.

Cl **179** *SC* **179.9.4.7.2** *P* **432** *L* **52** # 144

Calvin, John — Keysight Technolgies

Comment Type **T** *Comment Status* **R** *jitter (E)*

The method of jitter decompositon oulined in this this "using the method described in this subclause" has been proven effective but is not the only way. An alternate method better suited to Equivalent Time / DCA platforms undersampled acquisiton has been proven effective and equivalent in final result using a variation of this published method. The request here is for this to be a little less perscriptive and cites as an example method but not the only method.

SuggestedRemedy

Replace the text at line 52 from "using the method described in this subclause" to "An example method is described below." to suggest that variation on this POJ technique are also valid.

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

Resolve using the response to comment #143.

Cl **176C** *SC* **176C.6.3** *P* **800** *L* **16** # 145

Kutscher, Noam — Marvell

Comment Type **T** *Comment Status* **R** *TX EQ limits (E)*

The coefficients values under 'Transmitter Output equalization' section are different from the C2M, KR and CR - I think they need to be the same

SuggestedRemedy

Change the values to be consistent with CR, KR and C2C

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The comment points out a difference between the equalization requirements of AUI-C2C vs. all other interfaces.

There was some support for having the same coefficient ranges in Annex 176C as in annex 176D and clauses 178 and 179. However, there was no consensus to make a change at this time. Further work on this topic and consensus building are encouraged.

This topic can be reconsidered in SA ballot and the commenter is encouraged to resubmit at that time.

Cl **178B** *SC* **178B.8.3.5** *P* **889** *L* **43** # 146

Maki, Jeffery — Hewlett Packard Enterprise

Comment Type **TR** *Comment Status* **R** *State diagrams (CA)*

Follow-up to comment #291 against D2.2.
The peer-end (far-end) electrical interface (AUI component) can cause the near-end electrical interface (AUI component) to do E1 retraining. There are no exit conditions from the “PATH_UP” state defined in Figure 178B–10—Training control state diagram to cover any alternative to avoid complete retraining of all ISLs in the path since only MR_Restart is available.

SuggestedRemedy

Affirm that recovery from fault conditions always requires retraining of all ISLs such as near-end E1, O1, and peer-end E1. Alternatively, define the exit conditions from the “PATH_UP” state in the Training control state diagram to avoid complete retraining across the entire path for consistent behavior so vendor/user-specific implementations do not lead to a lack of interoperability.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **73A** *SC* **73A.1a** *P* **723** *L* **40** # 147

Slavick, Jeff — Broadcom

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

Message code 2 is known as the "Extended FEC and Technology Message code" not the "Technology Ability and FEC Extension" Message code.

SuggestedRemedy

Change "Technology Ability and FEC Extension" to "Extended FEC and Technology Ability" in the 2nd sentence

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

However, the comment points out a clear and obvious inconsistancy in the text which should be fixed.

Implement the suggested remedy with editorial license.

Cl **177** *SC* **177.5.5** *P* **366** *L* **20** # 148

Slavick, Jeff — Broadcom

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

The statement that the counters are mapped to management variables is specified in 177.10 shouldn't be part of the definition of the corrected_cw_counter but rather a global statement in 177.5.5

SuggestedRemedy

Move "Mapping of counters to management variables is specified in 177.10." to be its own paragraph at the very end of 177.5.5.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The mapping of all counters to management variables is specified in 177.10, and does not need to be stated within the defintion of an individual counter.

Delete the sentence "Mapping of counters to management variables is specified in 177.10." from the definition of Inner_FEC_corrected_cw_counter.

Cl **184** *SC* **184.5.7** *P* **609** *L* **48** # 149

Slavick, Jeff — Broadcom

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

Clause 177 normatively states that last error bin increments when more bits are changed than its value, while Clause 184 states it as a Note.

SuggestedRemedy

Change "Note that bin 4 is for 4 for more" to "Error bin 4 increments when 4 or more"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The suggested remedy is a minor change that will make Clause 184 consistent with Clause 177.

In 177.5.5, the definition of the counter Inner_FEC_codeword_error_bin_k is worded as:
"A set of four 32-bit counters where k = 0 to 3. [some text removed]. Error bin 3 increments when three or more bits are corrected in an Inner FEC codeword."

In 184.5.7, the definition of the counter Inner_FEC_codeword_error_bin_k is worded as:
"A set of five 32-bit counters where k = 0 to 4. [some text removed]. Note that bin 4 is for 4 or more bits corrected in an Inner FEC codeword."

In 184.5.7, change the last sentence of the definition of Inner_FEC_codeword_error_bin_k
From:
"Note that bin 4 is for 4 or more bits corrected in an Inner FEC codeword."
To:
"Error bin 4 increments when four or more bits are corrected in an Inner FEC codeword."

Cl **177** *SC* **177.5.5** *P* **366** *L* **43** # 150

Slavick, Jeff — Broadcom

Comment Type **TR** *Comment Status* **R** *bin counters (L)*

The definition of the error_bin calls for the bin to contain CW with k bits "corrected". I believe the intent is that error bin 0 is to count CW received with 0 errors in them. However, an uncorrected CW could also have 0 corrected bits as the decoder couldn't figure out what to do and thus changed nothing.
I believe we want corrected_cw + uncorrected_cw + error_bin_0 = cw_counter. And that error_bin_1 + error_bin_2 + error_bin_3 = corrected_cw.
So we should explicIty call out that error_bin_0 is a CW received with 0 errors.

SuggestedRemedy

In 177.5.5 and 184.5.7 add the following to the definition of Inner_FEC_codeword_error_bin_k:

Error bin 0 increments when the Inner FEC codeword contains no detected bits in error.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **181** *SC* **181.7.1** *P* **510** *L* **19** # 151

He, Michael He — TeraHop

Comment Type **T** *Comment Status* **R** *OMA value (O)*

With volume production transceiver data available, we need to rebalance Tx and Rx OMAouter spec to optimize for cost, power efficiency.

SuggestedRemedy

Recommend to reduce Rx sens. by 0.7dB, and shift Tx OMAouter down by 0.7dB accordingly. May discuss it as a follow up contribution to support our comments.

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

The following contribution was reviewed by the CRG:
https://www.ieee802.org/3/dj/public/26_01/he_3dj_01b_2601.pdf

There is some support for changes in the direction of the suggested remedy and contribution. However, further analysis, a complete proposal, and consensus building is required. There is no consensus to make changes at this time. The commenter is encouraged to resubmit in SA ballot.

Cl **181** *SC* **181.7.2** *P* **511** *L* **26** # 152

He, Michael He — TeraHop

Comment Type **T** *Comment Status* **R** *OMA value (O)*

same as above

SuggestedRemedy

same as above

Response *Response Status* **C**

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

While the comment and suggested remedy are incomplete, it is the editor's understanding that the comment is associated with comment #151 suggesting to reduce the Rx sens and OMAouter by 0.7dB.

Resolve using the response to comment #151.

Cl **183** *SC* **183.7.1** *P* **573** *L* **25** # 153

He, Michael He — TeraHop

Comment Type **T** *Comment Status* **R** *OMA value (O)*

same as above

SuggestedRemedy

same as above

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

While the comment and suggested remedy are incomplete, it is the editor's understanding that the comment is associated with comment #151 suggesting to reduce the Rx sens and OMAouter by 0.7dB.

Resolve using the response to comment #151.

Cl **183** *SC* **183.7.2** *P* **575** *L* **26** # 154

He, Michael He TeraHop

Comment Type **T** *Comment Status* **R** *OMA value (O)*

same as above

SuggestedRemedy

same as above

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

While the comment and suggested remedy are incomplete, it is the editor's understanding that the comment is associated with comment #151 suggesting to reduce the Rx sens and OMAouter by 0.7dB.

Resolve using the response to comment #151.

Cl **178A** *SC* **178A.1.8.1** *P* **857** *L* **49** # 155

Mi, Guangcan Huawei Technologies Co., Ltd.

Comment Type **T** *Comment Status* **R** *COM (E)*

In euqation 178-20, variable d_h was used but not defined.

SuggestedRemedy

Add definition of d_h.

Response *Response Status* **C**

REJECT.
This comment does not apply to the substantive changes between IEEE P802.3dj D2.2 and D2.3 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.
However, the definition for the variable d_h (which is used in Equation 178A-30) is indeed missing and should be provided.

A potential change that was discussed is adding text similar to the following phrase following Equation (178A-30):
"...and d_h is the number of pre-cursor terms in the sampled pulse response. The value of d_h is floor(t_s^(0)/T_b) where floor(x) is the largest integer less than or equal to x."

However, there was no consesnus on the exact wording and there was concern about the correctness of the expression in certain conditions.

Further work and consensus building on this topic is encouraged.

Cl **180** *SC* **180.9.7.1** *P* **489** *L* **5** # 156

Mi, Guangcan Huawei Technologies Co., Ltd.

Comment Type **E** *Comment Status* **R** *TDECQ (O)*

Equation 180-27 provides the definition of Qt function, which is first provoked in definiton of TDECQ. For better reading experience, this equation should be moved to where Qt was first used.

SuggestedRemedy

move equation 180-27 to after 180-12. change the text of Qt in page 485 to "is 3.428, consistent with the target symbol error ratio for Gray mapped PAM4,
and can be calculated according to Equation (180–13)". Change the text of Qt inpage489 to “is 3.428, consistent with the target symbol error ratio for Gray mapped PAM4, and can be calculated according to Equation (180–13)”

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **180** *SC* **180.9.6.4** *P* **485** *L* **42** # 157

Mi, Guangcan Huawei Technologies Co., Ltd.

Comment Type **T** *Comment Status* **A** *TDECQ and OMA (O)*

TDECQ is comparing the maximum additive noise to the optical power in OMA as measurement of the eye opening. Therefore the OMA used in equation 180-12 and noise R should be measured at the same point, which is OMA_outer

SuggestedRemedy

change the OMA_TDECQ in equation 180-12 to OMA_outer, and update its definition text accordingly.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #4.

Cl **180** *SC* **180.9.6.4** *P* **482** *L* **53** # 158

Mi, Guangcan
Huawei Technologies Co., Ltd.

Comment Type **T** *Comment Status* **A** *TDECQ and OMA (O)*

OMA_TDECQ is used to calculate the threshold power, Pth_1 and Pth_2, which is set accroding to the equalized eye diagram as shown in Figure 180-11. OMA_TDECQ should not be measured at the input of the equalizer.

SuggestedRemedy

add the definition of OMA_TDECQ, "is measured as defined in 180.9.5 except using waveforms captured at the output
of the reference equalizer". Noise is added at the input of the reference equalizer.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #4.