

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI 180 SC 180.9.9 P485 L 8 # 82

Brown, Matt

Alphawave Semi

Comment Type TR Comment Status R Tx FRx (CO)

The quality of the jitter tolerance (clock tracking bandwidth) for the TXSEH functional receiver is unbounded. The only constraint is that it complies with (i.e., exceeds) the receiver characteristics in Table 180-8. Care is being taken to properly calibrate the vertical noise but no consideration is given for jitter (horizontal noise). A real receiver is required only to support a clock tracking bandwidth of 4 MHz based on jitter tolerance mask specified in 121.8.10.4. If the TXSEH functional has a tracking bandwidth much higher than 4 MHz then it would permit transmitters with excessive low-frequency jitter to pass.

SuggestedRemedy

Specify that the jitter tolerance of the TXSEH optical receiver (ORx) shall minimally comply with the jitter tolerance mask defined in 121.8.10.4 particularly for jitter frequencies 4 MHz and lower.

Response Response Status U

REJECT.

The CRG reviewed slide 24 of the following contribution:
https://www.ieee802.org/3/dj/public/25_11/brown_3dj_03_2511.pdf

There was some agreement with the intent of the comment. However, the suggested remedy provides inadequate detail for implementation. A detailed contribution and consensus building are required.

[Editor's note: Changed subclause from 180.9.9.1 to 180.9.9]

CI 180 SC 180.9.6.3 P478 L 18 # 116

El-Chayeb, Ahmad

Keysight (ahmad.el-chayeb@keysight.com)

Comment Type TR Comment Status R tap limit (O)

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

SuggestedRemedy

Remove b(1) from the equation

Response Response Status U

REJECT.

The tap limit change was agreed on in D2.2. 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.

CI 178A SC 178A P833 L 35 # 121

Mellitz, Richard

Samtec

Comment Type TR Comment Status R Modal ERL (E)

Modal ERL requires section to describe

SuggestedRemedy

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)

Response Response Status U

REJECT.

Resolve using the response to comment #126.

CI 178 SC 178.9.2 P387 L 24 # 123

Mellitz, Richard

Samtec

Comment Type TR Comment Status R Modal ERL (E)

There appears to be little connection between the Common-mode to common-mode return loss, RL_{cc} (min) mask and link performance, as small excursions beyond the mask may show negligible impact. See: Table 178-6

SuggestedRemedy

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)
 Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)

Remove row for "Common-mode to common-mode return loss, RL_{cc} (min)" and remove section: 178.9.2.3 Transmitter common-mode to common-mode return loss

Add 3 rows to Table 178-6

ERL_CC(min) = 3 dB

ERL_CD(min) = 20 dB

ERL_DC(min) = 20 dB

Reference: " Modal ERL and modal Return Loss" appendix

Response Response Status U

REJECT.

Resolve using the response to comment #126.

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI 178 SC 178.9.3 P 391 L 19 # 124

Mellitz, Richard

Samtec

Comment Type TR Comment Status R Modal ERL (E)

There appears to be little connection between the Differential-mode to common-mode return loss, RLcd mask and link performance, as small excursions beyond the mask may show negligible impact. See Table 178-9

SuggestedRemedy

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)
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)Remove row for "Differential-mode to common-mode return loss, RLcd" and remove section: 178.9.3.7 Receiver differential-mode to common-mode return loss
Add 3 rows to Table 178-9
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: " Modal ERL and modal Return Loss" appendix

Response Response Status U

REJECT.

Resolve using the response to comment #126.

CI 178 SC 178.10 P 398 L 10 # 125

Mellitz, Richard

Samtec

Comment Type TR Comment Status R Modal ERL (E)

There appears to be little connection between the Differential-mode to common-mode return loss, RLcd mask and link performance, as small excursions beyond the mask may show negligible impact. See Table 178-13

SuggestedRemedy

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)
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)Remove row for "Differential-mode to common-mode return loss, RLcd" and remove section: 178.10.4 Channel mode conversion insertion loss
Add 3 rows to Table 178-13
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: " Modal ERL and modal Return Loss" appendix

Response Response Status U

REJECT.

Resolve using the response to comment #126.

[Editor's note: Changed subclause from 178.1 to 178.10]

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI 179 SC 179.9.4 P 422 L 38 # 126

Mellitz, Richard

Samtec

Comment Type TR Comment Status R Modal ERL (E)

There appears to be little connection between the Common-mode to common-mode return loss, RLcc(min)" and "Common-mode to differential-mode return loss, RLdc (min) masks and link performance, as small excursions beyond the mask may show negligible impact. See Table 179-7

SuggestedRemedy

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)
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)
Remove rows for
Common-mode to common-mode return loss, RLcc(min)
Common-mode to differential-mode return loss, RLdc (min)
Remove sections
179.9.4.8 Common-mode to common-mode return loss
179.9.4.9 Common-mode to differential-mode return loss
Add 3 rows to Table 179-7
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: " Modal ERL and modal Return Loss" appendix

Response Response Status U

REJECT.
The presentation referred to in the suggested remedy is
<https://www.ieee802.org/3/dj/public/adhoc/electrical/25_1030/mellitz_3dj_adhoc_01a_251030.pdf>.

Straw polls #E-1 and #E-2 were taken.
Based on the results of straw poll #E-2, there is no consensus to make the change at this time.

Further work and contributions demonstrating the problem, data showing feasibility and consensus building would be welcome.

Straw poll #E-1 (Directional)
I would support the direction of modal ERL in the proposal mellitz_3dj_adhoc_01a_251030 and the suggested remedy.
Y: 20 N: 10 NMI: 13

Straw poll #E-2 (Decision)
I support adopting the proposal in mellitz_3dj_adhoc_01a_251030.
Y: 17 N: 19 A: 13

CI 179 SC 179.9.5 P 432 L 44 # 127

Mellitz, Richard

Samtec

Comment Type TR Comment Status R Modal ERL (E)

There appears to be little connection between the Differential-mode to common-mode return loss, RLcd mask and link performance, as small excursions beyond the mask may show negligible impact. See Table 179-11

SuggestedRemedy

Refer to the 10-30-2025 electrical ad-hoc presentation by mellitz "Moving toward an ERL CC, DC, and CC specification".
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)
Remove row for
" Differential-mode to common-mode return loss, RLcd (min)
Remove section
179.9.5.6 Receiver differential-mode to common-mode return loss
Add 3 rows to Table 179-11
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: " Modal ERL and modal Return Loss" appendix

Response Response Status U

REJECT.
Resolve using the response to comment #126.

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI 179 SC 179.11 P441 L 16 # 128

Mellitz, Richard

Samtec

Comment Type TR Comment Status R Modal ERL (E)

There appears to be little connection between the "Differential-mode to common-mode return loss, RLcd (min)" and "Common-mode to common-mode return loss, RLcc" masks to performance in Table 179-16.and link performance, as small excursions beyond the mask may show negligible impact.

SuggestedRemedy

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)
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)
Remove rows for
'Differential-mode to common-mode return loss, RLcd (min)'
"Common-mode to common-mode return loss, RLcc" (min)"
Remove sections
179.11.4 Differential-mode to common-mode return loss
179.11.5 Common-mode to common-mode return loss
Add 3 rows to Table 179-16
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: " Modal ERL and modal Return Loss" appendix

Response Response Status U

REJECT.
Resolve using the response to comment #126.

CI 176C SC 176C.6.3 P796 L 36 # 129

Mellitz, Richard

Samtec

Comment Type TR Comment Status R Modal ERL (E)

There appears to be little connection between the Common-mode to differential-mode return loss, RLdc mask and link performance, as small excursions beyond the mask may show negligible impact.
See Table 176C-2

SuggestedRemedy

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)
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)
Remove row for
Common-mode to differential-mode return loss, RLdc (min)
Remove sections
176C.6.3.7 Transmitter common-mode to differential-mode return loss
Add 3 rows to Table 176C-2
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: " Modal ERL and modal Return Loss" appendix

Response Response Status U

REJECT.

Resolve using the response to comment #126.

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI **176C** SC **176C.6.4** P **798** L **48** # **130**

Mellitz, Richard

Samtec

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

There appears to be little connection between the Differential-mode to common-mode return loss, RLcd mask and link performance, as small excursions beyond the mask may show negligible impact. See Table 176C-4

SuggestedRemedy

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)
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)
Remove row for
Common-mode to differential-mode return loss, RLdc (min)
Remove sections
176C.6.4.4 Receiver differential-mode to common-mode return loss
Add 3 rows to Table 176C-4
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: " Modal ERL and modal Return Loss" appendix

Response Response Status **U**

REJECT.

Resolve using the response to comment #126.

CI **176C** SC **176C.7** P **804** L **29** # **131**

Mellitz, Richard

Samtec

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

There appears to be little connection between the Differential-mode to common-mode return loss, RLcd mask and link performance, as small excursions beyond the mask may show negligible impact. See Table 176C-8

SuggestedRemedy

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)
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)
In table 176C-8 Remove row for "Differential-mode to common-mode return loss, RLcd" and remove section: 178.10.4 Channel differential-mode to common-mode return loss
Add 3 rows to Table 176C-8
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: " Modal ERL and modal Return Loss" appendix

Response Response Status **U**

REJECT.

Resolve using the response to comment #126.

[Editor's note: Change page/line from 777/17 to 804/29.]

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI 176D SC 176D.6.4 P 818 L 18 # 132

Mellitz, Richard

Samtec

Comment Type TR Comment Status R Modal ERL (E)

There appears to be little connection between the Common-mode to common-mode return loss, RLcc(min)" and "Common-mode to differential-mode return loss, RLdc (min) masks and link performance, as small excursions beyond the mask may show negligible impact. See Table 176D-2

SuggestedRemedy

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)
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)
Remove rows for
Common-mode to common-mode return loss, RLcc(min)
Common-mode to differential-mode return loss, RLdc (min)
Remove section
176D.8.4 Return loss specifications
Add 3 rows to 176D-2
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: " Modal ERL and modal Return Loss" appendix

Response Response Status U

REJECT.
Resolve using the response to comment #126.

CI 176D SC 176D.6.5 P 819 L 25 # 133

Mellitz, Richard

Samtec

Comment Type TR Comment Status R Modal ERL (E)

There appears to be little connection between the Common-mode to common-mode return loss, RLcc(min)" and "Common-mode to differential-mode return loss, RLdc (min) masks and link performance, as small excursions beyond the mask may show negligible impact. See Table 176D-3

SuggestedRemedy

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)
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)
Remove rows for
Common-mode to common-mode return loss, RLcc(min)
Common-mode to differential-mode return loss, RLdc (min)
Remove section
176D.8.4 Return loss specifications
Add 3 rows to 176D-3
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: " Modal ERL and modal Return Loss" appendix

Response Response Status U

REJECT.
Resolve using the response to comment #126.

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI 176D SC 176D.6.6 P 820 L 16 # 134

Mellitz, Richard

Samtec

Comment Type TR Comment Status R Modal ERL (E)

There appears to be little connection between the Differential-mode to common-mode return loss, RLcd mask and link performance, as small excursions beyond the mask may show negligible impact. See Table 176D-4

SuggestedRemedy

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)
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)
Remove row for
" Differential-mode to common-mode return loss, RLcd (min)
Remove section
176D.8.4 Return loss specifications
Add 3 rows to Table 176D-4
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: " Modal ERL and modal Return Loss" appendix

Response Response Status U

REJECT.
Resolve using the response to comment #126.

CI 176D SC 176D.6.7 P 820 L 47 # 135

Mellitz, Richard

Samtec

Comment Type TR Comment Status R Modal ERL (E)

There appears to be little connection between the Differential-mode to common-mode return loss, RLcd mask and link performance, as small excursions beyond the mask may show negligible impact. See Table 176D-5

SuggestedRemedy

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)
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)
Remove row for
" Differential-mode to common-mode return loss, RLcd (min)
Remove section
176D.8.4 Return loss specifications
Add 3 rows to Table 176D-5
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: " Modal ERL and modal Return Loss" appendix

Response Response Status U

REJECT.
Resolve using the response to comment #126.

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI 186A SC 186A P950 L18 # 152

Brown, Matt

Alphawave Semi

Comment Type TR Comment Status R ER1 test vectors (L)

No vectors have been provided for the Clause 186 FEC. This sublayer, though well-specified, is very complex and likely it is difficult to ensure interoperability without reference test vectors.

SuggestedRemedy

If no test vectors are provided delete Clause 186 and Clause 187.

Response Response Status U

REJECT.

The ER1 FEC and PMA are indeed very complex and clearly would benefit from test vectors being available for implementers to use, which is why Annex 186A was created. These PHYs are based on work done in OIF, which includes links to test vectors in their published specification that would work correctly in the case that the alignment marker location feature in clause 186 is not used.

There is no consensus at this time to remove Clauses 186 and 187. A presentation with test vectors to populate Annex 186A is expected for the next draft.

CI 180 SC 180.9.9 P485 L43 # 155

Maniloff, Eric

Ciena

Comment Type TR Comment Status R Tx FRx (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 occurrences.

SuggestedRemedy

Update the values in Table 180-18 for symbol errors > 9 to remove the flat mask.

Response Response Status U

REJECT.

In comment resolution of D2.1, the block error mask was discussed and agreed in the CRG, without overly tightening the Tx spec, to avoid screening out working Transmitters.

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

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

CI 180 SC 180.9.9.1 P486 L41 # 193

Dudek, Mike

Marvell

Comment Type ER Comment Status R Tx FRx (O)

It would be helpful to provide some guidance as to how to estimate the Test_SMF_DUT_CD penalty

SuggestedRemedy

Add an Informative Note. "Note:- If the test SMF has the dispersion characteristics of the optical channel used to measure TDECQ then Test_SMF_DUT_CD is equal to DUT_TDECQ-DUT_TECQ.

Response Response Status U

REJECT.

After CRG discussion it was agreed there are many ways to describe how to do the estimate and listing examples is not helpful. There is no consensus from making a change at this time.

CI 180 SC 180.9.5 P475 L2 # 211

Ran, Adeo Cisco Systems

Comment Type TR Comment Status R OMA_outer (O)

The text says "OMAouter is measured using the waveforms captured at the output of the reference receiver defined in 180.9.2". That means that the reference equalizer is not applied.

Figure 180-8 is supposed to illustrate runs of 7 threes and 6 zeros, but before the reference equalizer these runs will not be flat and will have significantly different levels compared to other symbols - contrary to what is shown in the figure. So the figure does not match the definition.

Ideally OMAouter would be measured after a long enough run such that any ISI will die out. But with the far ISI implied by the length of the reference receiver, the test patterns do not include such runs. If the signal is not stable at the measurement point then the OMAouter could be reduced and made dependent on the pattern or test setup. That would not match the assumed meaning of this parameter.

Since the reference equalizer is defined to have unity gain at DC, it is expected to preserve the asymptotic value of a long run, and to equalize the signal such that shorter runs will also reach the same value. Therefore, measuring after the reference receiver would provide a less ISI-dependent result that corresponds to long runs, which is arguably what OMAouter is expected to represent. It would also make Figure 180-8 representative of the measurement specification.

Note that this argument holds for the signal but not for the noise. The noise levels (N0 and N3, used for RINxxOMA) would be amplified by the reference equalizer. Whether the noise should be measured with or without the reference receiver is a separate question.

SuggestedRemedy

Change the quoted sentence to "OMAouter is measured using the waveforms captured at the output of the reference equalizer defined in 180.9.6.3".

Response Response Status U

REJECT.

Both OMAouter and RINxxOMA are implemented in test equipment and have been used by the optical industry for near a decade. Updating the definition brings major change to the field practice, therefore needs strong evidence proving the current method is failing. However, the current comment doesn't provide sufficient justification.

Further, disconnecting the reference point of OMA and RINxxOMA can be confusing.

The commenter is encouraged to bring more evidence on this topic.

CI 180 SC 180.7.1 P466 L15 # 223

Dawe, Piers Nvidia

Comment Type TR Comment Status R overshoot (O)

D2.1 comment 162: overshoot limit should be reduced. Notice that according to 140.7.7, 1% of the signal is allowed to be above the upper limit and another 1% below. Compare this with P=1e7 for electrical signals (176D.8.2), which recognises that rare excursions could defeat the FEC, although 1e-7 is impractical for an optical measurement without addressing the measurement noise.

SuggestedRemedy

Reduce the overshoot limit. Tighten the 1% to 0.3% as in 167.8.8 (100G/lane MMF).

Response Response Status U

REJECT.

The comment does not provide sufficient justification to support the suggested remedy, in particular the proposed new hit ratio of 0.3%.

Note: the suggested remedy mentions overshoot limit but is assumed the commentor was referring to the hit ratio. This is related to the response to comment #252.

CI 180 SC 180.9.9 P485 L41 # 225

Dawe, Piers Nvidia

Comment Type TR Comment Status R Tx FRx (O)

The FEC bin limits have been revised to address impossible test times, but still they are very far from consistent with the project objective "BER of better than or equal to 10^{-13} at the MAC/PLS service interface (or the frame loss ratio equivalent)". If the FEC bin curve has half the theoretical gradient, bin 9 at 3.5×10^{-13} might correspond to bin 16 at 1×10^{-27} , which is less than the age of the universe but (if my quick calculation is right) corresponds to a bad FEC block every 100 years on a million-link network - far beyond the lifetime of the equipment.

SuggestedRemedy

Rescale the x axis so that the last bin limit $> 3.5 \times 10^{-13}$ is bin 11, giving a BER equivalent substantially better than OIF's 1×10^{-15} target. Consider tightening the 1×10^{-13} objective.

Response Response Status U

REJECT.

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

This comment is related to comment #155.

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

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CI 180 SC 180.9.9.1 P 486 L 8 # 226

Dawe, Piers

Nvidia

Comment Type TR Comment Status A Tx FRx (CO)

Test receivers are usually well specified but the definition of the "functional receiver" is so loose that this test has very limited value. For example, without any control of the jitter tolerance spectrum, a bad transmitter matched with a high-jitter-bandwidth receiver will pass when it shouldn't. For another example, a "functional receiver" could tolerate mis-emphasised signals at the borderline of what TECQ and overshoot specs catch. For a third, the receiver does not need to achieve 3.5e-13 in bin 9 under any condition, so a good transmitter matched with an unknown receiver can fail when both, and the link they make, are compliant and good. The test cannot distinguish between transmitter and receiver; either can have memory effects. It only tells is if a pair "play nicely" with each other. We moved away from a line-rate receiver (TDP) to an oscilloscope (TxVEC -> TDEC -> T(D)ECQ and T(D)ECQ_CER) in 2014 (802.3bm) because the scope has very little memory effect and it is well calibrated. That reasoning is still valid. This "functional receiver" test is not suitable for compliance but could be developed to provide information about transmitter-receiver pairs to build an interop matrix (which is not the 802.3 way).

SuggestedRemedy

Move the method into an informative annex as a diagnostic of interest to network operators. Remove the rows in the optical transmitter spec tables. Plug some of the gaping holes in the "functional receiver" definition.

Response Response Status U

ACCEPT IN PRINCIPLE.

Add an editor's note as follows:

"Note: 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."

CI 180 SC 180.9.6.4 P 480 L # 227

Dawe, Piers

Nvidia

Comment Type TR Comment Status R TDECQ, DFE (CO)

Pulse shape of DFE feedback signal

SuggestedRemedy

Needs to be slowed down to make TDECQ respond consistently to jitter

Response Response Status U

REJECT.

The suggested remedy does not provide sufficient detail to implement.

CI 180 SC 180.9.9.1 P 486 L 12 # 228

Dawe, Piers

Nvidia

Comment Type TR Comment Status R Tx FRx (O)

It seems that VOA_level is derived from 9 powers or power-ratios, of which 7 are measured or estimated. As the headline margin is 1.5 dB, there are too many measurement errors.

SuggestedRemedy

This needs to be greatly simplified.

Response Response Status U

REJECT.

The suggested remedy does not provide sufficient detail to implement.

CI 180 SC 180.9.9.1 P 486 L 42 # 229

Dawe, Piers

Nvidia

Comment Type TR Comment Status A Tx FRx (O)

"Test_SMF_power_budget loss and penalty are zero": what is this? Is Test_SMF_power_budget a loss and penalty? Is Test_SMF_power_budget loss zero; if so why is there an equation for it?

SuggestedRemedy

Delete

Response Response Status U

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #194.

CI 180 SC 180.9.9.1 P 486 L 12 # 230

Dawe, Piers

Nvidia

Comment Type ER Comment Status R Tx FRx (O)

This section is quite involved with no introduction of what it is trying to do. It puts far too much burden on the reader's patience and reverse engineering skills.

SuggestedRemedy

Explain what the intention is. Show the various items adding and subtracting in a diagram.

Response Response Status U

REJECT.

The suggested remedy does not provide sufficient detail to implement.

Future work to develop a diagram to address the concern is encouraged.

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CI 180	SC 180.9.6.3	P 477	L 37	# 231
Dawe, Piers		Nvidia		
Comment Type	TR	Comment Status	R	tap limit (O)
D2.0 comments 448, 489 and 491 points out that over equalizing transmitters can cause BER floor issues as shown in kimber_3dj_01a_2505, and proposes adding aspecification line, Noise Enhancement Factor, Ceq (min) 1.				
SuggestedRemedy				
As an explicit tap weight limit is easier to implement in the TDECQ optimizer than a Ceq limit - in Table 180-16, increase main tap coefficient limit from 0.8 to 0.95.				
Response	Response Status U			
REJECT.				
The current tap limit was adopted in D2.2 based on the data brought to the CRG.				
The response to D2.2 comment #313 was: [The following presentation was reviewed https://www.ieee802.org/3/dj/public/25_09/rodes_3dj_01a_2509.pdf In Table 180-15, for Main tap coefficient limit minimum value change from "0.9" to "0.8". Apply same change to 181, 182, and 183. With editorial license.]				
Changing the main cursor limit needs further study on its relation with the DFE and overshoot limit.				
There is no consensus to make a change at this time.				

CI 180	SC 180.7.1	P 466	L 11	# 247
Rodes, Roberto		Coherent		
Comment Type	TR	Comment Status	R	CER TDECQ (CO)
The TDECQ CER specification was adopted despite experimental analyses revealing significant consistency issues. A fix from Keysight is expected soon; however, at this point, the specification remains untestable.				
SuggestedRemedy				
Remove the TDECQ CER from the spec				
Response	Response Status U			
REJECT.				
Resolve using the response to comment #137.				

CI 181	SC 181.7.1	P 506	L 28	# 248
Rodes, Roberto		Coherent		
Comment Type	TR	Comment Status	R	CER TDECQ (CO)
The TDECQ CER specification was adopted despite experimental analyses revealing significant consistency issues. A fix from Keysight is expected soon; however, at this point, the specification remains untestable.				
SuggestedRemedy				
Remove the TDECQ CER from the spec				
Response	Response Status U			
REJECT.				
Resolve using the response to comment #137.				

CI 182	SC 182.7.1	P 537	L 32	# 249
Rodes, Roberto		Coherent		
Comment Type	TR	Comment Status	R	CER TDECQ (CO)
The TDECQ CER specification was adopted despite experimental analyses revealing significant consistency issues. A fix from Keysight is expected soon; however, at this point, the specification remains untestable. In addition, no guidance has been presented or adopted for PMDs incorporating inner FEC.				
SuggestedRemedy				
Remove the TDECQ CER from the spec				
Response	Response Status U			
REJECT.				
Resolve using the response to comment #137.				

CI 183	SC 183.7.1	P 568	L 41	# 250
Rodes, Roberto		Coherent		
Comment Type	TR	Comment Status	R	CER TDECQ (CO)
The TDECQ CER specification was adopted despite experimental analyses revealing significant consistency issues. A fix from Keysight is expected soon; however, at this point, the specification remains untestable. In addition, no guidance has been presented or adopted for PMDs incorporating inner FEC.				
SuggestedRemedy				
Remove the TDECQ CER from the spec				
Response	Response Status U			
REJECT.				
Resolve using the response to comment #137.				

Cl 180	SC 180.7.1	P466	L 15	# 252
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Ghiasi Qunatum/Marvell

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

Reduce transmitter overshoot from 22% to 12% and see qhiasi 3dj 01 2511 as also suggested by unsatisfied comment 162

REJECT.

"REJECT.

https://www.ieee802.org/3/di/public/25_09/qhiasi_3di_01a_2509.pdf

The comment does not provide sufficient justification to support the suggested remedy. Further data is encouraged to bring to the task force for consideration."

https://www.ieee802.org/3/dj/public/25_11/qhiasi_3dj_03a_2511.pdf.

No consensus to make a change at this time.

<i>C/</i> 181	<i>SC</i> 181.7.1	<i>P</i> 506	<i>L</i> 24	# 253
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Ghiasi Qunatum/Marvell

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

Reduce transmitter overshoot from 22% to 12% and see qhiasi 3dj 01 2511 as also suggested by unsatisfied comment 163

REJECT.

Resolve using the response to comment #252.

<i>Cl</i> 182	SC 182.7.1	<i>P</i> 537	<i>L</i> 36	# 254
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Ghiasi Qunatum/Marvell

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

Reduce transmitter overshoot from 22% to 12% and see qhiasi 3dj 01 2511 as also suggested by unsatisfied comment 163

REJECT.

Resolve using the response to comment #252.

C/ 183 SC 183.7.1 P 569 L 8 # 255

Ghiasi Qunatum/Marvell

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

Reduce transmitter overshoot from 22% to 12% and see qhiasi 3dj 01 2511 as also suggested by unsatisfied comment 163

REJECT.

Resolve using the response to comment #252.

D2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI 180 SC 180.9.6.1 P 475 L 48 # 265

Ghiasi, Ali Ghiasi Qunatum/Marvell

Comment Type TR Comment Status R TDECQ mission mode (CO)

TDECQ mission mode test definition should be made more clear, see also unsatisfied comment 144

SuggestedRemedy

Proposed 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 U

REJECT.

This comment is a restatement of comment #144 against D2.1 as recorded in the following report:

https://www.ieee802.org/3/dj/comments/D2p1/8023dj_D2p1_comments_final_id.pdf

The response to that comment was:

" REJECT.

There was not sufficient consensus to adopt the proposed changes.

Straw poll TF-4 (directional) I support adopting the suggested remedy with or without some caveats for clauses 180 through 183.

Yes: 10 No: 11 NMI: 3 Abstain: 13."

However, during discussion it was revealed that there is some agreement that changes in the direction of the suggested remedy should be considered.

However, a complete solution defining the intended test configuration and conditions is required.

CI 180 SC 180.9.9 P 465 L 20 # 266

Ghiasi, Ali Ghiasi Qunatum/Marvell

Comment Type TR Comment Status R Tx FRx (CO)

Unless xAUI-n interface operate with condition of jitter tolerance Functional receiver will not catch anything, see also unsatisfied comment 145

SuggestedRemedy

Add: AUI lanes operate with receiver jitter tolerance condition defined by applicable instantiated xAUI-n.

Response Response Status U

REJECT.

This comment is a restatement of comment #145 against D2.1 as recorded in the following report:

https://www.ieee802.org/3/dj/comments/D2p1/8023dj_D2p1_comments_final_id.pdf

The response to that comment was:

" ACCEPT IN PRINCIPLE.

Resolve using the response to comment #510."

The resolution to comment #510 is to Implement slides 4, 6, 8, 9, 10, 12, 13, 15, 16, 18 and 19 of issenhuth_01a_2509.pdf. Where in these quoted slides, jitter tolerance condition was excluded for the xAUI-n interface of the transmitter under test.

However, during discussion it was revealed that there is some agreement that changes in the direction of the suggested remedy should be considered.

However, a complete solution defining the intended test configuration and conditions is required.

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI 181 **SC 181.9.6** **P 514** **L 50** # **267**

Ghiasi, Ali Ghiasi Qunatum/Marvell

Comment Type **ER** **Comment Status** **R** **TDECQ mission mode (CO)**

TDECQ mission mode test definition should be made more clear, see also unsatisfied comment 146

SuggestedRemedy

Proposed 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** **U**

REJECT.

Resolve using the response to comment #265.

CI 180 **SC 180.9.9** **P 465** **L 25** # **268**

Ghiasi, Ali Ghiasi Qunatum/Marvell

Comment Type **TR** **Comment Status** **R** **Tx FRx (CO)**

Unless xAUI-n interface operate with condition of jitter tolerance Functional receiver will not catch anything, see also unsatisfied comment 147

SuggestedRemedy

Add: AUI lanes operate with receiver jitter tolerance condition defined by applicable instantiated xAUI-n.

Response **Response Status** **U**

REJECT.

Resolve using the response to comment #266.

CI 182 **SC 182.9.6** **P 546** **L 38** # **269**

Ghiasi, Ali Ghiasi Qunatum/Marvell

Comment Type **TR** **Comment Status** **R** **TDECQ mission mode (CO)**

TDECQ mission mode test definition should be made more clear, see also unsatisfied comment 148

SuggestedRemedy

Proposed 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** **U**

REJECT.

Resolve using the response to comment #265.

CI 183 **SC 183.9.6** **P 579** **L 46** # **270**

Ghiasi, Ali Ghiasi Qunatum/Marvell

Comment Type **TR** **Comment Status** **R** **TDECQ mission mode (CO)**

TDECQ mission mode test definition should be made more clear, see also unsatisfied comment 144

SuggestedRemedy

Proposed 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** **U**

REJECT.

Resolve using the response to comment #265.

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI **183** *SC* **183.9.5** *P* **462** *L* **8** # **275**

Ghiasi, Ali Ghiasi Qunatum/Marvell

Comment Type **TR** *Comment Status* **R** *TDECQ mission mode (CO)*

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* **U**

REJECT.

Resolve using the response to comment #265.

CI **176D** *SC* **176D.6.4** *P* **817** *L* **37** # **276**

Ghiasi, Ali Ghiasi Qunatum/Marvell

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

We currentlly have no effective output compliance test method for C2M or input caliburton of stressor. We replaced VEC with with JRMS, EOJ, and J4U back in Sept 2024 and it has been more than a year without any proof that using jitter alone is sufficient for C2M interoperability. Number of other stadnard that generally follow 802.3 still will go with VEC or EECQ and number of Ethernet customers still want VEC or EECQ. See also unsatisfied comment 20352

SuggestedRemedy

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

Response *Response Status* **U**

REJECT.

This comment is a restatement of comment #352 and similar comments against D2.0, as well as comments received during task force review.

Comment #352 was rejected with a detailed response that addressed the statements in the comments (stating some of them are are counterfactual), explained the reason for using a different methodology than that of 802.3ck, indicated that there was no support for the suggested changes, and noted that there is no data showing that there is a problem that needs solving.

The current comment does not include any new information relative to the previously rejected comments.

The comment and the suggested remedy includes a call for action (show that current methodology works). Further work on this topic and consensus building is encouraged.

The suggested remedy does not include sufficient detail to implement.

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI **176D** SC **176D.6.5** P **817** L **39** # **277**

Ghiasi, Ali Ghiasi Qunatum/Marvell

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

We currently have no effective output compliance test method for C2M or input calibration of stressor. We replaced VEC with with JRMS, EOJ, and J4U back in Sept 2024 and it has been more than a year without any proof that using jitter alone is sufficient for C2M interoperability. Number of other standard that generally follow 802.3 still will go with VEC or EECQ and number of Ethernet customers still want VEC or EECQ. See also unsatisfied comment 20353

Suggested Remedy

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

Response Response Status **U**

REJECT.
Resolve using the response to comment #276.

CI **178B** SC **178B.8.3.5** P **889** L **43** # **291**

Maki, Jeffery Juniper Networks

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

The exit conditions from the "PATH_UP" state are not defined in the Training State Control diagram. In the absence of a defined exit path, there is a possibility that the link may remain down in certain scenarios. Example Scenario:

(1) A path, which includes 3 ISLs:

ISL1: the host-module electrical interface between host 1 and module 1, which implements Type E1 ILT.

ISL2: the optical link between optical module 1 and optical module 2, which implements Type O1 ILT.

ISL3: the host-module electrical interface between module 2 and host 2, which implements Type E1 ILT.

(2) The path is in DATA mode, which means all Training State Control state machines of all lanes of all interfaces on this path are in "PATH_UP" state.

(3) If ISL2 needs to re-do the O1 ILT, for example, plug out and then plug in the fiber connector.

(4) How should the interfaces of ISL1 and ISL3 behave?

Should all Training State Control state machines of all lanes of ISL1 and ISL3 stay at "PATH_UP" states? Since the interfaces of ISL2 are re-doing the ILT, during which process, the DATA is interrupted and there is no more recovered clock for interfaces of ISL1 and ISL3.

Should all Training State Control state machines of all lanes of ISL1 and ISL3 go back to "ISL_READY" states to wait for the ILT completion of ISL2 and then again switch to DATA mode? The local clock source is used in "ISL_READY" state. The recovered clock source is used in "PATH_UP" state. The two states are in different clock domains. Going back to "ISL_READY" state means back and forth switching of clock source. Is this permitted?

Should all Training State Control state machines of all lanes of ISL1 and ISL3 go back to the "QUIET" state (the beginning of Training Control State Diagram) to do ILTs again? Should the re-doing of ILTs at ISL1 and ISL3 be triggered automatically (by ?) or be triggered by host using "mr_restart" control?

Suggested Remedy

Define the exit conditions from the "PATH_UP" state in the Training State Control diagram for consistent behavior so vendor/user-specific implementations do not lead to a lack of interoperability.

Response Response Status **U**

REJECT.

The conditions to restart training are implementation specific and not defined by this standard. The user has the mr_restart_training variable that can be activated when it decides retraining is required.

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI **179B** SC **179B.4.2** P**905** L **20** # **306**

Noujeim, Leesa

Google

Comment Type **TR** Comment Status **R** test fixtures (E)

lidd_MTFmin is, at fNyquist, 4dB lower than lidd_MTFmax. This large allowed variation in MTF IL introduces too much uncertainty as to whether a given DUT (host or cable assembly) passes or fails due to variation in the test fixture.

SuggestedRemedy

Decrease the spread between llddMTFmin and llddMTFmax to ~2dB, by adjusting equations 179B-3 and 179B-4.

Response Response Status **U**

REJECT.

The comment identifies an area for potential improvement in the current draft. However, the suggested remedy does not provide sufficient detail to implement. A contribution with a detailed proposal would be helpful for the CRG to drive consensus on a specific change.

CI **179** SC **179.9.4** P**426** L **9** # **361**

Rysin, Alexander

NVIDIA

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

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

SuggestedRemedy

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

Response Response Status **U**

REJECT.

This comment is a restatement of comment #300 against D2.1. The response to that comment was:

"REJECT.

The CRG viewed the presentation

<https://www.ieee802.org/3/dj/public/25_09/rysin_3dj_01a_2509.pdf>.

The presentation includes proposed values for SNDR limits but does not address changing the reference transmitter parameters, which would also affect the COM parameter SNR_TX, and thus cable assembly receiver specifications.

There were requests for additional data.

There was no consensus to make the suggested changes."

There is no indication of additional data or consensus formed.

CI **179** SC **179.8.1** P**418** L **13** # **396**

Swenson, Norman

Nokia, Point2

Comment Type **ER** Comment Status **A** test points (E)

As described in Table 179-6, TP1, TP2, TP3, and TP4 are not at the locations shown in Figure 179-2. They are at the input or output of test fixtures that are not shown in the figure. However, the figure does show the corresponding locations in the link, though these locations are not accessible in a real system.

SuggestedRemedy

Change

"The test points are illustrated in Figure 179-2, which shows ..."

to

"The test points are illustrated at their corresponding link locations in Figure 179-2, which shows ..."

Response Response Status **U**

ACCEPT IN PRINCIPLE.

The CRG reviewed slides 9-10 of the contribution

<https://www.ieee802.org/3/dj/public/25_11/swenson_3dj_01a_2511.pdf>.

Implement the suggested remedy.

CI **179** SC **179.8.1** P**418** L **40** # **397**

Swenson, Norman

Nokia, Point2

Comment Type **ER** Comment Status **A** test points (E)

Note 3 would be clearer if reference were made to Figure 179A-1, as in Note 2.

SuggestedRemedy

Change Note 3 from

"A mated connector pair is included in transmitter specifications at TP2 and in receiver specifications at TP3."

to

"A mated connector pair is included in transmitter specifications at TP2 and in receiver specifications at TP3, as illustrated in Figure 179A-1."

Response Response Status **U**

ACCEPT IN PRINCIPLE.

While Figure 179A-1 includes "a mated connector pair", it is part of Annex 179A, which is informative. The figure illustrates host channels and other things, but not transmitter or receiver specifications. Therefore, adding it as a reference as suggested would be misleading.

However, the sentence subject of the comment can be improved; the connectors are not "included" per se in the specifications in Clause 179.

Change "A mated connector pair is included" to "A mated connector pair is accounted for".

[Editor's note: Changed line from 13 to 40.]

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general

COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn

SORT ORDER: Comment ID

Comment ID **397**

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J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI 176D SC 176D.7.1 P 821 L 27 # 406

Swenson, Norman

Nokia, Point2

Comment Type TR Comment Status A Loss budget (E)

The depiction of the connector in Figure 176D-6 is inconsistent with the connector shown in other figures in the document (e.g., Figures 120C-2, 135E-2, 135G-2, . The end point of the Host channel loss is ambiguous.

SuggestedRemedy

Change Figure 176D-6 to that shown to the right. Change the note under the figure to read: "NOTE-For loss budgeting purposes, the Host channel loss is from TP0d to the center of the edge connector of the module.

Response Response Status U

ACCEPT IN PRINCIPLE.

The CRG reviewed slides 2-8 of the contribution

<https://www.ieee802.org/3/dj/public/25_11/swenson_3dj_01a_2511.pdf>.

A proposed substitute for Figure 176D-6 has been attached to the comment. The difference is a vertical line in the middle of the "connector" rectangle.

Implement the suggested remedy with editorial license, considering the responses to other comments.

CI 176D SC 176D.6.3 P 745 L 38 # 20352

Ghiasi, Ali

Ghiasi Qunatum/Marvell

Comment Type TR Comment Status R (Electrical) VEC

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

SuggestedRemedy

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

Response Response Status U

REJECT.

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

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

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

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

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general

COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn

SORT ORDER: Comment ID

Comment ID 20352

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J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

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

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

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

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

Cl 176D SC 176D.6.4 P746 L38 # 20353

Ghiasi, Ali Ghiasi Qunatum/Marvell

Comment Type TR Comment Status R (Electrical) VEC

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

SuggestedRemedy

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

Response Response Status U

REJECT.
Resolve using the response to comment #352.

Cl 178B SC 178B.5.3 P789 L24 # 20376

Ghiasi, Ali Ghiasi Qunatum/Marvell

Comment Type TR Comment Status R (Common) ILT retimer

Figure can improve for better representation

SuggestedRemedy

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

Response Response Status U

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

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

Cl 185 SC 185.6.1 P564 L50 # 20398

Mi, Guangcan Huawei Technologies Co., Ltd

Comment Type TR Comment Status R (Optical) slew rate

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

SuggestedRemedy

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

Response Response Status U

REJECT.

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

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI 185 SC 185.1 P 556 L 40 # 20418

Ran, Adee Cisco Systems

Comment Type TR Comment Status R (Common) ILT coherent

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

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

SuggestedRemedy

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

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

Response Response Status U

REJECT.

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

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

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

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

Straw poll TF-3 (directional):

I support adding support for end-to-end path start-up in 802.3dj coherent PMDs.

Yes: 33

No: 1

Abstain: 12

Straw poll TF-4 (directional):

I support the the direction of supporting end-to-end path start-up in 802.3dj coherent PMDs proposed in ran_3dj_03a_2507.

Yes: 22

No: 2

NMI: 16

Abstain: 10

CI 187 SC 187.1 P 630 L 44 # 20419

Ran, Adee Cisco Systems

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

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

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

SuggestedRemedy

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

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

Response Response Status U

REJECT.

Resolve using the response to comment #418.

CI 180 SC 180.7.1 P 438 L 44 # 20488

Kimber, Mark Semtech

Comment Type TR Comment Status R (Optical) Ceq

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

SuggestedRemedy

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

Response Response Status U

REJECT.

Resolve using the response to comment #491.

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI **181** SC **181.7.1** P**462** L **26** # **20489**

Kimber, Mark Semtech

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

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

SuggestedRemedy

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

Response Response Status **U**

REJECT.
Resolve using the response to comment #491.

CI **182** SC **182.7.1** P**487** L **9** # **20490**

Kimber, Mark Semtech

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

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

SuggestedRemedy

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

Response Response Status **U**

REJECT.
Resolve using the response to comment #491.

CI **183** SC **183.7.1** P**512** L **37** # **20491**

Kimber, Mark Semtech

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

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

SuggestedRemedy

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

Response Response Status **U**

REJECT.

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

Further work using the new reference receiver is encouraged.

CI **178** SC **178.9.2** P**362** L **36** # **20495**

Dudek, Mike Marvell

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

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

SuggestedRemedy

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

Response Response Status **U**

REJECT.

The comment does not indicate a problem that needs to be solved. There is a minimum SNR_ISI specification for the purpose mentioned in the comment.

The suggested remedy is a new idea (difference SNR_ISI) that deviates from existing specifications, e.g. clauses 162 and 163, and would result in a lot of changes in the draft. It has insufficient justification for such changes and insufficient details to implement.

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

CI **170** SC **170.4.3** P**207** L **7** # **20684**

Dawe, Piers Nvidia

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

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

SuggestedRemedy

Split this item into two

Response Response Status **U**

REJECT.

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

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI 171 SC 171.9.5.1 P 231 L 47 # 20688

Dawe, Piers

Nvidia

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

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

SuggestedRemedy

Use separate items for PHY XS and DTE XS

Response Response Status U

ACCEPT IN PRINCIPLE.

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

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

CI 175 SC 175.2.4.6.1 P 266 L 10 # 20694

Dawe, Piers

Nvidia

Comment Type TR Comment Status R (Logic)

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

SuggestedRemedy

Change

Let am_x<119:0> be the alignment marker for PCS lane x, x=0 to 15, where bit 0 is the first bit transmitted.

to

The alignment marker for PCS lane x, where x=0 to 15, is defined as am_x<119:0>. Bit 0 is the first bit transmitted.

Make similar changes elsewhere.

Response Response Status U

REJECT.

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

CI 177 SC 177.4.5 P 333 L 20 # 20699

Dawe, Piers

Nvidia

Comment Type TR Comment Status R (Logic)

x

SuggestedRemedy

Define

Response Response Status U

REJECT.

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

CI 177 SC 177.4.5 P 333 L 25 # 20701

Dawe, Piers

Nvidia

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

MSB

SuggestedRemedy

Define

Response Response Status U

REJECT.

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

CI 177 SC 177.4.5 P 334 L 1 # 20704

Dawe, Piers

Nvidia

Comment Type TR Comment Status A (Logic) matrix math

⁻¹

SuggestedRemedy

Define

Response Response Status U

ACCEPT IN PRINCIPLE.

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

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

Implement with editorial license.

02.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI 178 SC 178.9 P361 L40 # 20707

Dawe, Piers Nvidia

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

characteristics

SuggestedRemedy specifications

Response Response Status U

REJECT.

The language in the header is consistent with prior electrical PMD clauses and with other subclauses in this draft.

There is no consensus to implement the change.

CI 178 SC 178.9.2 P361 L47 # 20708

Dawe, Piers Nvidia

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

characteristics

SuggestedRemedy specifications

Response Response Status U

REJECT.

Resolve using the response to comment #707.

CI 178 SC 178.9.2 P361 L53 # 20709

Dawe, Piers Nvidia

Comment Type TR Comment Status R icketp) TX measurement filter

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

SuggestedRemedy Change to 5th order, 53.125 GHz

Response Response Status U

REJECT.

The comment lacks justification to support the suggested remedy.

CI 178 SC 178.9.2.4 P364 L34 # 20710

Dawe, Piers Nvidia

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

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

SuggestedRemedy Change Nv to 100 wherever it is 400 in this draft

Response Response Status U

REJECT.

The pulse response length is intended to measure the steady-state voltage, which may have a long settling time. Limiting the measurement length does not serve any purpose and may cause test fixture dependence.

The probability argument in the comment is irrelevant since in practice the transmit equalizer will likely not be in preset 1 anyway, and in that case v_f will never be encountered.

The comment lacks justification to support the suggested remedy.

CI 178 SC 178.10.1 P371 L15 # 20712

Dawe, Piers Nvidia

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

Indices that look like exponents, should be subscripts

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

Response Response Status U

REJECT.

Resolve using the response to comment #378.

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI 178 SC 178.10.1 P 371 L 25 # 20713

Dawe, Piers Nvidia

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

Confusion between z and Z

SuggestedRemedy

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

Response Response Status **U**

REJECT.

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

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

There is no consensus to make the suggested change.

CI 178 SC 178.10.1 P 372 L 46 # 20714

Dawe, Piers Nvidia

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

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

SuggestedRemedy

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

Response Response Status **U**

REJECT.

"Gaussian jitter" appears in only 3 places in 802.3 and is never defined. The first instance is in 48B.1.2 which is titled "Random Jitter".

The suggested remedy deviates from established 802.3 terminology and would cause confusion, since the parameter sigma_RJ is used in multiple previous clauses.

There is no consensus to make the suggested change.

CI 178 SC 178.10.1 P 372 L 46 # 20715

Dawe, Piers Nvidia

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

Unrealistic jitter values

SuggestedRemedy

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

Response Response Status **U**

REJECT.

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

CI 179 SC 179.1 P 384 L 35 # 20718

Dawe, Piers Nvidia

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

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

SuggestedRemedy

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

Response Response Status **U**

REJECT.

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

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

There is no consensus to make the suggested change.

CI 179 SC 179.9 P 393 L 19 # 20719

Dawe, Piers Nvidia

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

PMD electrical characteristics

SuggestedRemedy

PMD electrical specifications

Response Response Status **U**

REJECT.

Resolve using the response to comment #708.

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI 179 SC 179.11.7 P415 L11 # 20720

Dawe, Piers

Nvidia

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

Add 4th host class:

SuggestedRemedy

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

Response Response Status **U**

REJECT.

There is no definition of HH2.

The comment does not indicate a problem that needs to be solved.

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

The proposed change does not contain sufficient detail to implement.

CI 180 SC 180.9.5 P447 L24 # 20721

Dawe, Piers

Nvidia

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

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

SuggestedRemedy

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

Response Response Status **U**

REJECT.

There is some agreement that further work is needed.

There is no consensus to make the proposed changes.

CI 179 SC 179.9.4 P393 L43 # 20734

Dawe, Piers

Nvidia

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

Transmitter characteristics

SuggestedRemedy

Transmitter specifications

Response Response Status **U**

REJECT.

Resolve using the response to comment #708.

CI 179 SC 179.9.4.6.1 P402 L1 # 20738

Dawe, Piers

Nvidia

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

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

SuggestedRemedy

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

Response Response Status **U**

REJECT.

The comment refers to the mathematical symbol ?.

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

There is no consensus to make the change.

CI 179 SC 179.9.4.6.2 P402 L18 # 20739

Dawe, Piers

Nvidia

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

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

SuggestedRemedy

Delete, combine with other impairments into EECQ

Response Response Status **U**

REJECT.

The suggested remedy does not provide sufficient detail to implement.

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI 179 SC 179.9.4.6 P401 L 28 # 20741

Dawe, Piers Nvidia

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

Dud jitter method. Turning off aggressor lanes is desperate

SuggestedRemedy

Don't attempt to isolate jitter

Response Response Status **U**

REJECT.

The suggested remedy does not provide sufficient detail to implement.

CI 179 SC 179.9.4.6.3 P402 L 43 # 20742

Dawe, Piers Nvidia

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

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

SuggestedRemedy

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

Response Response Status **U**

REJECT.

Even-odd jitter is a specification parameter for multiple generations of electrical transmitter specifications.

The comment does not indicate a problem that needs to be solved.

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

The suggested remedy does not provide sufficient detail to implement.

CI 179 SC 179.9.4.7 P403 L 5 # 20743

Dawe, Piers Nvidia

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

mating interface discontinuity - ambiguous and not defined.

SuggestedRemedy

Clarify what this means

Response Response Status **U**

REJECT.

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

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

CI 185A SC 185A P910 L 4 # 21126

Zimmerman, George ADI,APLgp,Cisco,Marvell,OnSemi,Sony

Comment Type **TR** Comment Status **A** shall statements (O)

Annex 185A is considered normative, but in the entire clause I cannot find a single requirement statement ("shall" does NOT appear). As such, the entire clause is currently tutorial. Curiously there is a "may" which would normally be considered "is permitted", but that is meaningless in the absence of even a basic requirement. Without identifying requirements, it is impossible for the user of the methodologies to determine what is required and what is simply tutorial. I had considered a remedy of something like, ETCC shall be computed according to the method in steps... but there is too much. I have, in other comments attempted to identify some requirements - however, I suspect the experts defining this method may have more. As a result, while I have offered some possible requirements below, I have not marked those as required comments.

SuggestedRemedy

Identify the subset of statements in Annex 185A that are mandatory requirements and list them with shall statements, or, alternatively, label Annex 185A as informative.

Response Response Status **U**

ACCEPT IN PRINCIPLE.

In 185A.2 change the last sentence from

"The ETCC parameter is defined in this annex"

To

"The ETCC parameter shall be calculated using the method described in this annex."

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI 180 SC 180.9.5 P462 L 8 # 21144

Ghiasi, Ali Ghiasi Qunatum/Marvell

Comment Type TR Comment Status R TDECQ method (CO)

TDECQ mission mode test definition should be made more clear

SuggestedRemedy

Proposed 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 U

REJECT.

There was not sufficient consensus to adopt the proposed changes.

Straw poll TF-4 (directional)
I support adopting the suggested remedy with or without some caveats for clauses 180 through 183.
Yes: 10
No: 11
NMI: 3
Abstain: 13

CI 180 SC 180.9.7.1 P465 L 25 # 21145

Ghiasi, Ali Ghiasi Qunatum/Marvell

Comment Type TR Comment Status A TX FRX (O)

Unless xAUI-n interface operate with condition of jitter tolerance FRx will not catch anything

SuggestedRemedy

Add: AUI lanes operate with receiver jitter tolerance condition defined by applicable instantiated xAUI-n.

Response Response Status U

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #510.

CI 181 SC 181.9.5 P492 L 44 # 21146

Ghiasi, Ali Ghiasi Qunatum/Marvell

Comment Type TR Comment Status R TDECQ method (CO) (bucket2)

TDECQ mission mode test definition should be made more clear

SuggestedRemedy

Proposed 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 U

REJECT.

Resolve using the response to comment #144.

CI 181 SC 181.9.5 P492 L 44 # 21147

Ghiasi, Ali Ghiasi Qunatum/Marvell

Comment Type TR Comment Status R TDECQ method (CO) (bucket2)

TDECQ mission mode test definition should be made more clear

SuggestedRemedy

Proposed 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 U

REJECT.

Resolve using the response to comment #144.

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI 182 SC 182.9.5 P 524 L 27 # 21148

Ghiasi, Ali Ghiasi Qunatum/Marvell

Comment Type TR Comment Status R JECQ method (CO) (bucket2)

TDECQ mission mode test definition should be made more clear

SuggestedRemedy

Proposed 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 U

REJECT.
Resolve using the response to comment #144.

CI 183 SC 183.9.5 P 555 L 32 # 21149

Ghiasi, Ali Ghiasi Qunatum/Marvell

Comment Type TR Comment Status R JECQ method (CO) (bucket2)

TDECQ mission mode test definition should be made more clear

SuggestedRemedy

Proposed 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 U

REJECT.
Resolve using the response to comment #144.

CI 176D SC 176D.8.12 P 801 L 10 # 21152

Ghiasi, Ali Ghiasi Qunatum/Marvell

Comment Type TR Comment Status R ITOL (E)

Interference tolerance is missing Sinusoidal Jitter SJ

SuggestedRemedy

Include table 176D-10 in this section and following text to 176D.8.12.2 after C) before D)
Adjust pattern generator Sinusoidal jitter based on amplitude in table 176D-10.

Response Response Status U

REJECT.
The SJ in Table 176D-10 is included in the jitter tolerance test (176D.8.13).
In the interference tolerance test it is recommended to have jitter that matches the specification limits (see item d in 176D.8.12.2)
Receivers are required to pass both tests.

Note that the JTOL includes additional noise (calibrated using COM), added in Annex 176D by comment #306.
Adding SJ to the ITOL would create duplicate tests.

CI 176D SC 176D.8.12.2 P 803 L 51 # 21153

Ghiasi, Ali Ghiasi Qunatum/Marvell

Comment Type TR Comment Status R ITOL (E)

SJ not mentioned in item d)

SuggestedRemedy

Add following sentence to d):
Pattern generator jitter may need to be reduced to accommodate 0.05 UI Sinusoidal Jitter (SJ). With SJ at maximum limit J4u03 and JRMS are adjusted as close as practical to their limit.

Response Response Status U

REJECT.
The comment is about interference tolerance test (ITOL).
The combination of jitter sources that achieves the J4u03 and JRMS values, as recommended in item d, is not prescribed in the CR ITOL methodology used here (nor in several other test methods). Test implementers have been capable of finding such combination in past generations.
The suggested remedy refers to "SJ at maximum limit" but there is no such definition.
Note that SJ with specified values is used in the JTOL test.
See also the response to comment #152.

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI 180 SC 180.7.1 P454 L7 # 21162

Ghiasi, Ali Ghiasi Qunatum/Marvell

Comment Type TR Comment Status R TX overshoot (O)

In D2.0 1T DFE was added to the TDECQ equalizer where DFE is superior to improve TDECQ for bandlimited transmitters over using large overshoot/undershoot which can have 1-2 dB of SNR penalty given TDECQ doesn't incorporate peak-to-average penalty. Large overshoot/undershoot can also result in clipping which can have much higher penalty than peak-to-average penalty. Another penalty of using overshoot/undershoot is reduction of OMA.

SuggestedRemedy

Given that TDECQ equalizer now has 1T DFE reduce overshoot from 22% to 12%
see ghiasi_3dj_01_2509

Response Response Status U

REJECT.

The following presentation was reviewed
https://www.ieee802.org/3/dj/public/25_09/ghiasi_3dj_01a_2509.pdf

The comment does not provide sufficient justification to support the suggested remedy.
Further data is encouraged to bring to the task force for consideration.

CI 181 SC 181.7.1 P484 L30 # 21163

Ghiasi, Ali Ghiasi Qunatum/Marvell

Comment Type TR Comment Status R TX overshoot (O)

In D2.0 1T DFE was added to the TDECQ equalizer where DFE is superior to improve TDECQ for bandlimited transmitters over using large overshoot/undershoot which can have 1-2 dB of SNR penalty given TDECQ doesn't incorporate peak-to-average penalty. Large overshoot/undershoot can also result in clipping which can have much higher penalty than peak-to-average penalty. Another penalty of using overshoot/undershoot is reduction of OMA.

SuggestedRemedy

Given that TDECQ equalizer now has 1T DFE reduce overshoot from 22% to 12%
see ghiasi_3dj_01_2509

Response Response Status U

REJECT.

Resolve using the response to comment #162.

CI 182 SC 182.7.1 P516 L24 # 21164

Ghiasi, Ali Ghiasi Qunatum/Marvell

Comment Type TR Comment Status R TX overshoot (O)

In D2.0 1T DFE was added to the TDECQ equalizer where DFE is superior to improve TDECQ for bandlimited transmitters over using large overshoot/undershoot which can have 1-2 dB of SNR penalty given TDECQ doesn't incorporate peak-to-average penalty. Large overshoot/undershoot can also result in clipping which can have much higher penalty than peak-to-average penalty. Another penalty of using overshoot/undershoot is reduction of OMA.

SuggestedRemedy

Given that TDECQ equalizer now has 1T DFE reduce overshoot from 22% to 12%
see ghiasi_3dj_01_2509

Response Response Status U

REJECT.

Resolve using the response to comment #162.

CI 183 SC 183.7.1 P545 L42 # 21165

Ghiasi, Ali Ghiasi Qunatum/Marvell

Comment Type TR Comment Status R TX overshoot (O)

In D2.0 1T DFE was added to the TDECQ equalizer where DFE is superior to improve TDECQ for bandlimited transmitters over using large overshoot/undershoot which can have 1-2 dB of SNR penalty given TDECQ doesn't incorporate peak-to-average penalty. Large overshoot/undershoot can also result in clipping which can have much higher penalty than peak-to-average penalty. Another penalty of using overshoot/undershoot is reduction of OMA.

SuggestedRemedy

Given that TDECQ equalizer now has 1T DFE reduce overshoot from 22% to 12%
see ghiasi_3dj_01_2509

Response Response Status U

REJECT.

Resolve using the response to comment #162.

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI 178 SC 178.9.2 P375 L 36 # 21253

Mellitz, Richard

Samtec

Comment Type TR Comment Status R mode conversion (E)

There appears to be little connection between the Common-mode to common-mode return loss, RLcc (min) mask and link performance, as small excursions beyond the mask may show negligible impact.
See: Table 178-6

SuggestedRemedy

Add an appendix titled "Modal ERL and Modal Return Loss" to provide a performance-based alternative to frequency-domain masks.
Modal Return Losses from Single-Ended S-Parameters:
Modal return losses can be derived from a 2-port single-ended S-parameter measurement taken at a test point. The modal components are calculated using the following formulas:
Differential-to-Differential (DD): $SDD_{11} = RL_{DD} = (S11 - S12 - S21 + S22) / 2$
Common-to-Common (CC): $SCC_{11} = RL_{CC} = (S11 + S12 + S21 + S22) / 2$
Common-to-Differential (CD): $SCD_{11} = RL_{CD} = (S11 - S12 + S21 - S22) / 2$
Differential-to-Common (DC): $SDC_{11} = RL_{DC} = (S11 + S12 - S21 - S22) / 2$
Modal ERL Computation:
The modal Effective Return Loss values-ERL_CC, ERL_CD, and ERL_DC-measured at the test point are computed using the procedure described in IEEE 802.3 Clause 93A.5. The following substitutions and parameters apply:
Replace the scalar return loss term S_{ii} with the respective modal return loss (RL_CC, RL_CD, RL_DC).
* Use the single-ended reference impedance specified in the referring section or annex (typically 46.25 ohms).
* Set the fixture delay (Tfx) equal to twice the delay from TP0 to TP0v.
* For further details and derivations, refer to the presentation:
https://www.ieee802.org/3/dj/public/adhoc/electrical/25_0828/mellitz_3dj_01_adhoc_250828.pdf

Remove row for "Common-mode to common-mode return loss, RLcc (min)" and remove section: 178.9.2.7 Transmitter common-mode to differential-mode return loss

Add 3 rows to Table 178-6

ERL_CC(min) = 5 dB

ERL_CD(min) = 20 dB

ERL_DC(min) = 20 dB

Reference: "Modal ERL and modal Return Loss" appendix

Response Response Status U

REJECT.

There are similar comments suggesting multiple changes in the draft.

The suggested specifications were mentioned in the ad hoc presentation

<https://www.ieee802.org/3/dj/public/adhoc/electrical/25_0828/mellitz_3dj_adhoc_01a_250828.pdf> but a proposal for their definitions was not included. The suggested remedy includes some additional details, but is not sufficient to implement.

The following straw poll was taken.

Straw poll #E-1 (direction):

I would support the direction of modal ERL and modal RL as in the suggested remedy and the referenced presentation.

Y: 15 N: 4 NMI: 15 A: 8

Based on the straw poll there is interest in exploring the proposed method. However, there is no consensus to implement the proposed changes at this time.

Further contributions including a detailed proposal of the intended implementation and consensus building are encouraged.

CI 178 SC 178.9.3 P380 L 13 # 21254

Mellitz, Richard

Samtec

Comment Type TR Comment Status R mode conversion (E)

There appears to be little connection between the Differential-mode to common-mode return loss, RLcd mask and link performance, as small excursions beyond the mask may show negligible impact.
See Table 178-9

SuggestedRemedy

Remove row for "Differential-mode to common-mode return loss, RLcd" and remove section: 178.9.3.7 Receiver differential-mode to common-mode return loss

Add 3 rows to Table 178-9

ERL_CC(min) = 5 dB

ERL_CD(min) = 20 dB

ERL_DC(min) = 20 dB

Reference: "Modal ERL and modal Return Loss" appendix

Response Response Status U

REJECT.

Resolve using the response to comment #253.

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI 178 SC 178.10 P 384 L 42 # 21255

Mellitz, Richard

Samtec

Comment Type TR Comment Status A mode conversion (E)

In Table 178-11, the rows labeled:
Differential-mode to common-mode insertion loss (ILcd) and
Common-mode to differential-mode insertion loss (ILdc)
appear to describe a impairments already captured by the SCMR_CH metric. Both are like
SNR as the delta is like an SNR.
In addition, there appears to be little connection between the ILcd and ILdc masks and link
performance, as small excursions beyond the mask may show negligible impact.

SuggestedRemedy

Remove the following rows from Table 178-11:
Differential-mode to common-mode insertion loss (ILcd)
Common-mode to differential-mode insertion loss (ILdc)
Add SCMR_DC_CH to Clause 179.11.8 "Channel signal to common-mode ratio"
Replace references to CD with DC to align with the updated SCMR terminology and COM
implementation.
Add the following row to Table 178-11:
SCMR_DC_CH (min) = 20 dB
Reference Supporting Material:
See presentation: mellitz_COM_01_250819.pdf
This document outlines the COM implementation updates for SCMR_DC and SCMR_CD,
including frequency-domain and time-domain computations, and supports the proposed
simplification and consolidation of mode conversion metrics.

Response Response Status U

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #260.

CI 178 SC 178.10 P 384 L 40 # 21256

Mellitz, Richard

Samtec

Comment Type TR Comment Status R mode conversion (E)

There appears to be little connection between the
Differential-mode to common-mode return loss, RLcd mask
and link performance, as small excursions beyond the mask may show negligible impact.
See Table 178-11

SuggestedRemedy

Remove row for "Differential-mode to common-mode return loss, RLcd" and remove
section: 178.10.5 Channel mode conversion insertion loss
Add 3 rows to Table 178-9
ERL_CC(min) = 5 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: " Modal ERL and modal Return Loss" appendix

Response Response Status U

REJECT.
Resolve using the response to comment #253.

CI 179 SC 179.9.4 P 408 L 31 # 21257

Mellitz, Richard

Samtec

Comment Type TR Comment Status R Mode conversion (E)

There appears to be little connection between the
Common-mode to common-mode return loss, RLcc(min)" and "Common-mode to
differential-mode return loss, RLdc (min) masks
and link performance, as small excursions beyond the mask may show negligible impact.
See Table 179-7

SuggestedRemedy

Remove rows for
Common-mode to common-mode return loss, RLcc(min)
Common-mode to differential-mode return loss, RLdc (min)
Remove sections
179.9.4.8 Common-mode to common-mode return loss
179.9.4.9 Common-mode to differential-mode return loss
Add 3 rows to Table 179-7
ERL_CC(min) = 5 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: " Modal ERL and modal Return Loss" appendix

Response Response Status U

REJECT.
Resolve using the response to comment #253.

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI 179 SC 179.9.5 P 418 L 44 # 21258

Mellitz, Richard

Samtec

Comment Type TR Comment Status R Mode conversion (E)

There appears to be little connection between the Differential-mode to common-mode return loss, RLcd mask and link performance, as small excursions beyond the mask may show negligible impact. See Table 179-11

SuggestedRemedy

Remove row for
" Differential-mode to common-mode return loss, RLcd (min)
Remove section
179.9.5.6 Receiver differential-mode to common-mode return loss
Add 3 rows to Table 179-11
ERL_CC(min) = 5 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: " Modal ERL and modal Return Loss" appendix

Response Response Status U

REJECT.
Resolve using the response to comment #253.

CI 179 SC 179.11 P 425 L 32 # 21259

Mellitz, Richard

Samtec

Comment Type TR Comment Status R Mode conversion (E)

There appears to be little connection between the " Differential-mode to common-mode return loss, RLcd (min)" and "Common-mode to common-mode return loss, RLcc" masks to performance in Table 179-14.and link performance, as small excursions beyond the mask may show negligible impact.

SuggestedRemedy

Remove rows for
'Differential-mode to common-mode return loss, RLcd (min)"
"Common-mode to common-mode return loss, RLcc" (min)"
Remove sections
179.11.4 Differential-mode to common-mode return loss
179.11.6 Common-mode to common-mode return loss
Add 3 rows to Table 179-14
ERL_CC(min) = 5 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: " Modal ERL and modal Return Loss" appendix

Response Response Status U

REJECT.
Resolve using the response to comment #253.

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI **176C** SC **176C.6.3** P **770** L **31** # **21261**

Mellitz, Richard

Samtec

Comment Type **TR** Comment Status **R** mode conversion (E)

There appears to be little connection between the Common-mode to differential-mode return loss, RLdc mask and link performance, as small excursions beyond the mask may show negligible impact. See Table 176C-2

SuggestedRemedy

Remove row for
Common-mode to differential-mode return loss, RLdc (min)
Remove sections
176C.6.3.7 Transmitter common-mode to differential-mode return loss
Add 3 rows to Table 176C-2
ERL_CC(min) = 5 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: "Modal ERL and modal Return Loss" appendix

Response Response Status **U**

REJECT.
Resolve using the response to comment #253.

CI **176C** SC **176C.6.4** P **773** L **13** # **21262**

Mellitz, Richard

Samtec

Comment Type **TR** Comment Status **R** mode conversion (E)

There appears to be little connection between the Differential-mode to common-mode return loss, RLcd mask and link performance, as small excursions beyond the mask may show negligible impact. See Table 176C-4

SuggestedRemedy

Remove row for in table 176C-4: "Differential-mode to common-mode return loss, RLcd" and remove section: 176C.6.4.4 Receiver differential-mode to common-mode return loss
Add 3 rows to Table 176C-4
ERL_CC(min) = 5 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: "Modal ERL and modal Return Loss" appendix

Response Response Status **U**

REJECT.
Resolve using the response to comment #253.

CI **176C** SC **176C.7** P **777** L **17** # **21264**

Mellitz, Richard

Samtec

Comment Type **TR** Comment Status **R** mode conversion (E)

There appears to be little connection between the Differential-mode to common-mode return loss, RLcd mask and link performance, as small excursions beyond the mask may show negligible impact. See Table 176C-6

SuggestedRemedy

In table 176C-6 Remove row for "Differential-mode to common-mode return loss, RLcd" and remove section: 176C.7.4 Channel differential-mode to common-mode return loss
Add 3 rows to Table 176C-6
ERL_CC(min) = 5 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: "Modal ERL and modal Return Loss" appendix

Response Response Status **U**

REJECT.
Resolve using the response to comment #253.

CI **176D** SC **176D.6.4** P **791** L **12** # **21265**

Mellitz, Richard

Samtec

Comment Type **TR** Comment Status **R** Mode conversion (E)

There appears to be little connection between the Common-mode to common-mode return loss, RLcc(min)" and "Common-mode to differential-mode return loss, RLdc (min) masks and link performance, as small excursions beyond the mask may show negligible impact. See Table 176D-2

SuggestedRemedy

Remove rows for
Common-mode to common-mode return loss, RLcc(min)
Common-mode to differential-mode return loss, RLdc (min)
Remove section
176D.8.3 Return loss specifications
Add 3 rows to 176D-2
ERL_CC(min) = 5 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: "Modal ERL and modal Return Loss" appendix

Response Response Status **U**

REJECT.
Resolve using the response to comment #253.

J2.3dj D2.2 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Ethernet 2nd Working Group recirculation ballot c

CI 176D	SC 176D.6.5	P792	L 25	# 21266
Mellitz, Richard		Samtec		
Comment Type	TR	Comment Status	R	Mode conversion (E)
There appears to be little connection between the Common-mode to common-mode return loss, RLcc(min)" and "Common-mode to differential-mode return loss, RLdc (min) masks and link performance, as small excursions beyond the mask may show negligible impact. See Table 176D-3				
SuggestedRemedy				
Common-mode to common-mode return loss, RLcc(min)				
Common-mode to differential-mode return loss, RLdc (min)				
Remove section				
176D.8.3 Return loss specifications				
Add 3 rows to 176D-3				
ERL_CC(min) = 5 dB				
ERL_CD(min) = 20 dB				
ERL_DC(min) = 20 dB				
Reference: " Modal ERL and modal Return Loss" appendix				
Response	Response Status U			
REJECT.				
Resolve using the response to comment #253.				

CI 176D	SC 176D.6.6	P 793	L 16	# 21267
Mellitz, Richard		Samtec		
Comment Type	TR	Comment Status	R	Mode conversion (E)
There appears to be little connection between the Differential-mode to common-mode return loss, RLcd mask and link performance, as small excursions beyond the mask may show negligible impact. See Table 176D-4				
SuggestedRemedy				
Remove row for " Differential-mode to common-mode return loss, RLcd (min)				
Remove section 176D.8.3 Return loss specifications				
Add 3 rows to Table 176D-4 ERL_CC(min) = 5 dB ERL_CD(min) = 20 dB ERL_DC(min) = 20 dB Reference: " Modal ERL and modal Return Loss" appendix				
Response	Response Status U			
REJECT. Resolve using the response to comment #253.				

CI 176D	SC 176D.6.7	P793	L 47	# 21268
Mellitz, Richard		Samtec		
Comment Type	TR	Comment Status	R	Mode conversion (E)
There appears to be little connection between the Differential-mode to common-mode return loss, RLcd mask and link performance, as small excursions beyond the mask may show negligible impact. See Table 176D-5				
SuggestedRemedy				
Remove row for " Differential-mode to common-mode return loss, RLcd (min)				
Remove section 176D.8.3 Return loss specifications				
Add 3 rows to Table 176D-5				
ERL_CC(min) = 5 dB				
ERL_CD(min) = 20 dB				
ERL_DC(min) = 20 dB				
Reference: " Modal ERL and modal Return Loss" appendix				
Response	Response Status U			
REJECT.				
Resolve using the response to comment #253.				

CI 180	SC 180.9.5	P462	L 3	# 21351
Swenson, Norman		Nokia, Point2		
Comment Type	TR	Comment Status	R	TDECQ method (CO)
TDECQ appears to have two errors on its estimation of symbol error rate. It tripple counts errors because if computes the probability of crossing each of three thresholds separately and adds those probabilities together, whereas any given symbol can only make one symbol error. It underestimates the probability of error because it ignores the tail of the Gaussian noise beyond the magnitude of the furthest y value from the threshold of interest.				
SuggestedRemedy				
Use a modified TDECQ where the symbol error probability is estimated as the more usual $\sum_y \{p(y) (\text{prob}(n>T_{-1}-y)+\text{prob}(n<T_{-2}-y))\}$ for Gaussian noise n, T_{-1} is the threshold above y, and T_{-2} is the threshold below y. If y is above the top threshold (or below the bottom threshold) drop the T_{-1} (or T_{-2}) term. A presentation will explain this.				
Response	Response Status U			
REJECT.				
The following presentation was reviewed https://www.ieee802.org/3/dj/public/25_09/swenson_3dj_01a_2509.pdf				
After CGR discussion there was no consensus to make a change at this time. We encourage further work on this subject.				

CI 180A SC 180A.2 P 901 L 29 # 21419

Ran, Adee Cisco Systems

Comment Type TR Comment Status R MDI breakout (O)

Table 180A-1 (and this whole Annex) are based on the idea that DR modules can be used in a breakout configuration or with multiple PMDs per connector. But this concept is not mentioned.

The sentence "Table 180A-1 shows the number of PMDs supported by each MDI type" is odd - typically an MDI is the interface of a single PMD to its medium, and the term "MDI type" (which is apparently something else) is only used here and has never been defined. The reader should be informed that having multiple PMDs that share one connector requires proper configuration of the host to match the PMDs with their respective link partners.

SuggestedRemedy

Add a paragraph that describes the concept of an MDI connector (which can include multiple MDIs, depending on the PHY type). This paragraph should not include a requirement from a host to support any possible combination of MDIs.

Change "MDI type" to "MDI connector" (or "MDI receptacle" if it's more suitable) in the text and in the table.

Add cross-references in the first column to 180A.3.1 and 180A.3.2.

Add an informative NOTE about the need to configure the host when multiple PMDs share a connector.

Implement with editorial license.

Response Response Status U

REJECT.

The suggested remedy does not provide sufficient detail to implement. Significant changes have been agreed for the annex and the commentor is encouraged to review the updated draft.