

IEEE P802.3ck D1.3 100/200/400 Gb/s Electrical Interfaces Task Force 4th Task Force review comments

Cl 93A SC 93A.5.1 P202 L39 # 237

Dawe, Piers Nvidia
 Comment Type TR Comment Status D ERL tukey (bucket5)

Unexplained notation of up and down: v^{\wedge}

SuggestedRemedy

Remove it. Just say "and" "or" or whatever you mean. Or, don't cram with-Tukey and without-Tukey into one equation; you can easily say if Tw is zero, Htw is 1, and if it's one, the equation (somewhat simpler) applies.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Resolve using response to comment #34.

[Editor's note (to be removed when closing this comment): Added to bucket #5. The response to closed comment #34 addresses this comment.]

Cl 93A SC 93A.5.1 P202 L41 # 238

Dawe, Piers Nvidia
 Comment Type T Comment Status A ERL tukey (bucket4)

This way of writing the middle row of the equation is unnecessarily complicated.

SuggestedRemedy

Simplify it, remembering that $\cos(x)=\cos(-x)=-\cos(x+\pi)$. Notice that $f < f_b$ in this case and f_{per} is +ve, with f_b before f_r in the formula. Something like $0.5(1-\cos(2\pi(f_b-f)/f_{per}))$

Response Response Status C

ACCEPT IN PRINCIPLE.

Update the equation with the form proposed in the suggested remedy.

Cl 93A SC 93A.5.1 P202 L41 # 34

Healey, Adam Broadcom Inc.
 Comment Type E Comment Status A ERL tukey (bucket4)

The notation used in Equation (93A-58a) is unnecessarily obscure. I assume it is intended to set $H_{tw}(f)$ to 1 when $tw = 0$ and to the Tukey window function when $tw = 1$.

SuggestedRemedy

Remove the "tw" qualification from the terms in Equation (93A-58a). Add a sentence that states that $H_{tw}(f)$ is defined by Equation (93-58a) when tw is 1 and $H_{tw}(f)$ is 1 when tw is 0 or is not defined. Remove the definition of "tw" from the variable list (page 203, line 12).

Response Response Status C

ACCEPT IN PRINCIPLE.

Implement suggested remedy with editorial license.

Cl 120F SC 120.F.3.1 P208 L1 # 140

Ghiasi, Ali Ghiasi Quantum/Inphi
 Comment Type T Comment Status R TP0v (bucket4)

Until it is proven TP0v with real measurement the electrical characteristics should be at TP0a, there is no need create all this confusion and complexity by introducing TP0v when the solution is trivial just increase the DUT board loss to 2.4 dB as we have done for MCB and HCB!

SuggestedRemedy

Change TP0v to TP0a

Response Response Status C

REJECT.

Resolve using the response to comment #135.

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

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Cl 120F SC 120F.3.1 P207 L14 # 203
 Wu, Mau-Lin MediaTek
 Comment Type T Comment Status D ERL value (bucket5)
 dERL is still TBD
 SuggestedRemedy
 Suggest to set as some negative values. I had shared some information in wu_3ck_adhoc_01_092320.pdf. I plan to prepare one contribution, wu_3ck_02_1120.pdf, for this comment.
 Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.
 [Editor's note: Addresses incomplete specification.]
 The referenced ad hoc presentations is here:
https://www.ieee802.org/3/ck/public/adhoc/sept23_20/wu_3ck_adhoc_01a_092320.pdf
 Resolve using the value the response to comment #61.
 [Editor's note (to be removed when closing this comment): Added to bucket #5. The response to closed comment #61 provides value for transmitter dERL.]

Cl 120F SC 120F.3.1 P208 L14 # 82
 Brown, Matt Huawei
 Comment Type T Comment Status D ERL value (bucket5)
 A value for dERL is required. If an appropriate reference transmitter is defined, then a value of 0 should be correct.
 SuggestedRemedy
 Replace TBD with 0.
 Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.
 [Editor's note: Addresses incomplete specification.]
 The referenced ad hoc presentations is here:
https://www.ieee802.org/3/ck/public/adhoc/sept23_20/wu_3ck_adhoc_01a_092320.pdf
 Resolve using the value the response to comment #61.
 [Editor's note (to be removed when closing this comment): Added to bucket #5. The response to closed comment #61 provides value for transmitter dERL.]

Cl 120F SC 120F.3.1 P208 L39 # 188
 Calvin, John Keysight Technologies
 Comment Type T Comment Status D EO jitter (bucket5)
 The spec limit for Even-Odd jitter is only 358 femtoseconds, which is too low to be accurately measured with current state of the art test equipment.
 SuggestedRemedy
 Increase the spec limit from 0.019 UI to 0.025 UI
 Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.
 Resolve using the response to comment #190.
 [Editor's note: CC: 120F, 120G, 162, 163]
 [Editor's note: This comment was added to bucket #5. The response to comment #190 which provides a new limit value that addresses this comment.]

Cl 120F SC 120F.3.1.3 P210 L43 # 127
 Hidaka, Yasuo Credo Semiconductor
 Comment Type T Comment Status D EO jitter (bucket5)
 As Rob presented and we discussed at ad hoc on 9/16/2020, EOJ methodology defined in 120D.3.1.8.2 does not correctly measure EOJ due to length of PRBS13Q and 4MHz bandwidth of clock recovery.
 To prevent CDR from tacking two cycles of test pattern, the best solution may be to use a test pattern shorter than PRBS13Q.
 SuggestedRemedy
 Define PRBS9Q test pattern in clause 120.5.11.2, similar to PRBS13Q in 120.5.11.2.1, but using PRBS9 defined in Table 68-6.
 Choose 12 edges in PRBS9Q test pattern, and add a table similar to Table 120D-4.
 Add a sub clause how to measure EOJ using PRBS9Q, similar to 120D.3.1.8.2.
 Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.
 Resolve using the response to comment #190.
 [Editor's note: CC: 120F, 120G, 162, 163]
 [Editor's note: This comment was added to bucket #5. The response to comment #190 which provides a method to resolve this comment.]

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CI 120F SC 120F.3.1.3 P210 L43 # 190

Calvin, John Keysight Technologies

Comment Type T Comment Status A EO jitter

Based on Sleigh/Calvin/LeCheminant presentation https://grouper.ieee.org/groups/802/3/ck/public/adhoc/sept16_20/calvin_3ck_adhoc_01_091620.pdf it has been shown that the EOJ measurement is susceptible to a systematic error based on the test pattern length and baud rate. This is easily resolved by allowing the CDR loop BW to be reduced below 4 MHz

SuggestedRemedy

Update the text of page 210 line 43 to read Even-odd jitter is calculated using the measurement method specified in 120D.3.1.8.2. with the exception that EOJ may be measured with a clock recovery unit (CRU) with a corner frequency of <= 4 MHz and a slope of 20 dB/decade

Response Response Status C

ACCEPT IN PRINCIPLE.

The following presentations were reviewed by the task force:

- https://www.ieee802.org/3/ck/public/20_10/calvin_3ck_01_1020.pdf
- https://www.ieee802.org/3/ck/public/20_10/ran_3ck_01_1020.pdf
- https://www.ieee802.org/3/ck/public/20_10/ran_3ck_02a_1020.pdf

Implement the proposal on slides 3 to 5 in ran_3ck_02a_1020 with editorial license.

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

Straw poll #11 (decision)

I support resolving comments 48, 186, 189, 52, 187, 188, 127, 190 with the proposed changes in slides 3-5 of ran_3ck_02a_1020.

- 1: Yes -- 31
- 2: No -- 7

CI 120F SC 120F.3.2.1 P211 L40 # 85

Brown, Matt Huawei

Comment Type T Comment Status D ERL value (bucket5)

The receiver ERL should be defined and measured in the same way as for the transmitter.

SuggestedRemedy

Assuming that the receiver test fixture is aligned with the transmitter test fixture, specify the receiver ERL using the same specification as the transmitter ERL using dERL in 120F.3.1.1. In Table 120F-3, replace the the parameter name and set the specification to 0 dB.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

The referenced ad hoc presentations is here:

https://www.ieee802.org/3/ck/public/adhoc/sept23_20/wu_3ck_adhoc_01a_092320.pdf

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

Closed comment #40 aligned the RX test fixture with the TX test fixture and the replaced ERL with dERL.

Use the value provided in the response to comment #61.

[Editor's note (to be removed when closing this comment): Added to bucket #5.]

CI 120F SC 120F.4.3 P217 L44 # 87

Brown, Matt Huawei

Comment Type T Comment Status D ERL value (bucket5)

The ERL value is specified as TBD.

SuggestedRemedy

Replace TBD with an appropriate value.

Proposed Response Response Status W

PROPOSED REJECT.

[Editor's note: Addresses incomplete specification.]

The response to closed comment #114 indicates that there was no consensus to make the changes proposed in this comment.

[Editor's note (to be removed when closing this comment): Added to bucket #5. The response to closed comment #114 indicated there was no consensus to adopt the values with strikethrough in the referenced slide.]

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Cl 120G SC 120G.3.1 P226 L17 # 88

Brown, Matt

Huawei

Comment Type T Comment Status D ew/esmw (bucket5)

Host output eye symmetry mask width (ESMW) value is TBD. Discussion during D1.2 comment resolution revealed that an eye width measurement using the currently defined reference receiver and related methodology as defined is not meaningful.

SuggestedRemedy

Either fix the methodology and provide a value or replace with an appropriate alternative specification.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve this comment using the response to comment #41.

[Editor's note (to be removed when this comment is closed): This comment was added to bucket #5. Comment #41 removes all specifications for EW/ESMW and updates the EH/VEC test methodology.]

Cl 120G SC 120G.3.1 P226 L17 # 41

Healey, Adam

Broadcom Inc.

Comment Type T Comment Status A ew/esmw

ESMW (eye symmetry mask width) is "TBD". Similarly, eye width specifications for stressed input parameters are also "TBD". These parameters will be difficult to define for a reference receiver that includes decision feedback equalization unless the behavior of the feedback signal in the vicinity of the threshold crossings is clearly defined. However, there are other, simpler means to enforce that the reference receiver output has a useable eye width. The most straight-forward implementation for this draft is to expand on a feature of the eye height and vertical eye closure measurement procedure referred to in 120G.5.2 item h). This items points to 120E.4.2 and 120E.4.3 for the method to measure eye height, vertical eye closure, and other parameters. Step 4) in 120E.4.3 states that the distribution of the signal voltage (from which eye height and vertical eye closure are derived) is to be measured over a window "within 0.025 UI of time TCmid". This essentially averages the distribution over the time window or, thought of a different way, is similar to having a uniform jitter distribution around TCmid. Use of such a window reduces the measured eye height and vertical eye closure for signals with narrower eye widths. The width of the window can be increased to provide higher degrees of protection.

SuggestedRemedy

Remove references to ESMW and eye height from Annex 120G. Change 120G.5.2 item h) to the following: "From the eye diagram, compute eye height and vertical eye closure using the methodologies defined in 120E.4.2 and 120E.4.3 with the following exceptions. The value of TCmid is set to the sampling phase t_s determined in step d) (skipping steps 1) through 3) from 120E.4.2). The CDFs of the signal voltages computed in 120E.4.2 steps 4) through 6) are the average values over the time interval t_s-0.05 UI to t_s+0.05 UI. The feedback coefficients b(n) determined in step d) are constant over the averaging time interval."

Note that eye height and vertical eye closure limits may need to be adjusted to account for the reductions to these values via the averaging window.

Response Response Status C

ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

It is assumed that in the suggested remedy, the intent was to refer to eye width rather than eye height.

The EW and ESMW specifications are incomplete both in values and in method as the draft is currently written.

Implement suggested remedy with editorial license, except remove "eye width" rather than "eye height".

Add an editorial note that all EH and VEC values currently specified may need to be adjusted to account for this new methodology.

For task force discussion.

[Editor's note (to be removed prior to closing this comment): The following is an alternate

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response based on consensus presentation healey_02.]

The following related presentations were reviewed by the task force:
https://www.ieee802.org/3/ck/public/20_10/healey_3ck_01a_1020.pdf
https://www.ieee802.org/3/ck/public/20_10/dawe_3ck_01a_1020.pdf
https://www.ieee802.org/3/ck/public/20_10/healey_3ck_02_1020.pdf

Based on the results of straw poll #12 there is strong consensus for Alt #2 with TBD = 50 mUI.

Implement with editorial license the proposal for Alt 2 in healey_02 with TBD = 50 mUI.

Straw Poll #9:

I support the EW/ESMW direction of (Chicago rules):

- A: Keep ESMW and eye width
 - B: Replace EH, ESMW, and eye width with an eye mask as proposed in dawe_3ck_01_1020
 - C: Remove ESMW and eye width and redefine EH and VEC as proposed in healey_3ck_01a_1020
 - D: Remove ESMW and eye width and leave EH and VEC as is
- Results: A: 9, B: 10, C: 24, D: 6

Straw poll #12

[Chicago rules]

I would support replacing ESMW and EW with the following option from healey_3ck_02_1020:

- A. "Alt. 2" with TBD = 50 mUI
- B. "Alt. 1" with TBD1 = 25 mUI and TBD2 = 25 mUI
- C. "Alt. 1" with TBD1 = 50 mUI and TBD2 = 20 mUI
- D. "Alt. 2" with TBD = 70 mUI

A: 18 B: 8 C: 4 D: 9

CI 120G	SC 120G.3.1	P226	L17	# 240
Dawe, Piers		Nvidia		
Comment Type	TR	Comment Status	D	ew/esmw (bucket5)

We need an ESMW limit because in C2M, the effects of driver jitter and part-channel are limited in combination not separately. Eye width measurement works with or without a DFE in the reference receiver; examples in louchet_3ck_adhoc_01a_092320.pdf .
 If the VEC values in this draft and Annex 120E, and the ESMW in Annex 120E is right, ESMW should be between 0.22 and 0.3 UI.

Suggested Remedy

Write down a range of candidate limits in the next draft, or a single limit if we have enough information to choose one.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve this comment using the response to comment #41.

[Editor's note (to be removed when this comment is closed): This comment was added to bucket #5. Comment #41 removes all specifications for EW/ESMW and updates the EH/VEC test methodology.]

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CI 120G SC 120G.3.1 P226 L17 # 208

Ran, Adeel Intel
 Comment Type T Comment Status D ew/esmw (bucket5)

ESMW is TBD.

The importance of ESMW is not clear and there has been no proposal for a value for this parameter.

It is suggested to remove EMSW, at least until evidence of the need for it (in addition to the existing EH and VEC limits) and a robust measurement method are presented, and a value for limit is proposed.

SuggestedRemedy

Remove the EMSW row from this table (120G-1), and also from Table 120G-3 (twice), Table 120G-6, and Table 120G-9.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve using the response to comment #41.

[Editor's note (to be removed when this comment is closed): This comment was added to bucket #5. Comment #41 removes all specifications for EW/ESMW and updates the EH/VEC test methodology.]

CI 120G SC 120G.3.1 P226 L17 # 209

Ran, Adeel Intel
 Comment Type T Comment Status D ew/esmw (bucket5)

The reference for ESMW is subclause 120G.3.1.6 which does not address ESMW at all.

Note: In another comment, ESMW is proposed to be removed.

SuggestedRemedy

If ESMW is not removed, change the reference from 120G.3.1.6 to 120G.5.2 in Table 120G-1 and in Table 120G-3.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve using the response to comment #41.

[Editor's note (to be removed when this comment is closed): This comment was added to bucket #5. Comment #41 removes all specifications for EW/ESMW and updates the EH/VEC test methodology.]

CI 120G SC 120G.3.1 P226 L17 # 89

Brown, Matt Huawei
 Comment Type T Comment Status D ew/esmw (bucket5)

In Table 120G-1, the reference for host output eye symmetry mask width (ESMW) value points to 120G.3.1.6. However, 120G.3.1.6 does not specify how to measure ESMW or what to do with it.

SuggestedRemedy

In 120G.3.1.6, add methodology for ESMW and explain the relevance.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve this comment using the response to comment #41.

[Editor's note (to be removed when this comment is closed): This comment was added to bucket #5. Comment #41 removes all specifications for EW/ESMW and updates the EH/VEC test methodology.]

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CI **120G** SC **120G.3.1** P**226** L**23** # **90**
 Brown, Matt Huawei
 Comment Type **T** Comment Status **D** ERL value (bucket5)
 The host output ERL value is TBD.
 SuggestedRemedy
 Replace TBD with an appropriate value.
 Proposed Response Response Status **W**
 PROPOSED ACCEPT IN PRINCIPLE.
 [Editor's note: Addresses incomplete specification.]
 Resolve using the response to comment #114.
 [Editor's note (to be removed when closing this comment): Added to bucket #5. The response to closed comment #114 adopts a table of parameters and values that addresses this comment.]

CI **120G** SC **120G.3.1.3** P**227** L**46** # **143**
 Ghiasi, Ali Ghiasi Quantum/Inphi
 Comment Type **TR** Comment Status **D** ERL parameter (bucket5)
 Rx of 0.618 implies permitted reflection of -4.2 dB which can be problematic for C2M receiver with just 4T DFE, at 50G we have Rx of 0.19. Extensive analysis was performed by Mr. Mellitz but C2M measurement points are at TP1a and TP4 not an end-end link using COM
https://www.ieee802.org/3/ck/public/adhoc/jun10_20/mellitz_3ck_adhoc_01a_061020.pdf
 SuggestedRemedy
 Recommend changing back to the original Rx=0.19 which equates to -14.4 dB unless it can be proven that -4.2 dB would work on a link where compliance is not at the slicer.
 Proposed Response Response Status **W**
 PROPOSED REJECT.
 The response to closed comment #114 indicates that there was no consensus to make the changes proposed in this comment.
 [Editor's note (to be removed when closing this comment): Added to bucket #5. The response to closed comment #114 indicated there was no consensus to adopt the values with strikethrough in the referenced slide.]

CI **120G** SC **120G.3.2** P**229** L**17** # **94**
 Brown, Matt Huawei
 Comment Type **T** Comment Status **D** ew/esmw (bucket5)
 In Table 120G-3, the reference for module output near-end and far-end eye symmetry mask width (ESMW) points to 120G.3.1.6. However, 120G.3.1.6 does not specify how to measure ESMW or what to do with it.
 SuggestedRemedy
 In 120G.3.1.6, add methodology for ESMW and explain the relevance.
 Proposed Response Response Status **W**
 PROPOSED ACCEPT IN PRINCIPLE.
 [Editor's note: Addresses incomplete specification.]
 Resolve this comment using the response to comment #41.
 [Editor's note (to be removed when this comment is closed): This comment was added to bucket #5. Comment #41 removes all specifications for EW/ESMW and updates the EH/VEC test methodology.]

CI **120G** SC **120G.3.2** P**229** L**17** # **243**
 Dawe, Piers Nvidia
 Comment Type **TR** Comment Status **D** ew/esmw (bucket5)
 We need ESMW limits because in C2M, the effects of driver jitter and part-channel are limited in combination not separately. Eye width measurement works with or without a DFE in the reference receiver; examples in louchet_3ck_adhoc_01a_092320.pdf . Annex 120E has NE ESMW 0.265 UI. Here we expect worse reflections but a more capable equaliser. If we stay with the two-settings method, ESMW should be somewhere in the range 0.2 to 0.265 UI
 SuggestedRemedy
 Write down a range of candidate limits in the next draft, or a single limit if we have enough information to choose one.
 Proposed Response Response Status **W**
 PROPOSED ACCEPT IN PRINCIPLE.
 [Editor's note: Addresses incomplete specification.]
 Resolve this comment using the response to comment #41.
 [Editor's note (to be removed when this comment is closed): This comment was added to bucket #5. Comment #41 removes all specifications for EW/ESMW and updates the EH/VEC test methodology.]

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CI 120G SC 120G.3.2 P229 L17 # 93

Brown, Matt Huawei
 Comment Type T Comment Status D ew/esmw (bucket5)

Module output near-end and far-end eye symmetry mask width (ESMW) values are TBD. Discussion during D1.2 comment resolution revealed that an eye width measurement using the currently defined reference receiver and related methodology as defined is not meaningful.

SuggestedRemedy

Either fix the methodology and provide a value or replace with an appropriate alternative specification.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve this comment using the response to comment #41.

[Editor's note (to be removed when this comment is closed): This comment was added to bucket #5. Comment #41 removes all specifications for EW/ESMW and updates the EH/VEC test methodology.]

CI 120G SC 120G.3.2 P229 L22 # 245

Dawe, Piers Nvidia
 Comment Type T Comment Status D ew/esmw (bucket5)

We need ESMW limits because in C2M, the effects of driver jitter and part-channel are limited in combination not separately. Eye width measurement works with or without a DFE in the reference receiver; examples in louchet_3ck_adhoc_01a_092320.pdf . Annex 120E has FE ESMW 0.2 UI, no explicit VEC limit, and EH 30 mV. Here we expect worse reflections but a more capable equaliser. If we stay with the two-settings method, ESMW should be somewhere in the range 0.16 to 0.2 UI. But 0.16 seems too small.

SuggestedRemedy

Write down a range of candidate limits in the next draft, or a single limit if we have enough information to choose one.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve this comment using the response to comment #41.

[Editor's note (to be removed when this comment is closed): This comment was added to bucket #5. Comment #41 removes all specifications for EW/ESMW and updates the EH/VEC test methodology.]

CI 120G SC 120G.3.2 P229 L26 # 96

Brown, Matt Huawei
 Comment Type T Comment Status A precursor ISI ratio (bucket4)

Module output far-end pre-cursor ISI ratio value is TBD. The related measurement methodology was rewritten in D1.3.

SuggestedRemedy

Replace TBD with an appropriate value.

Response Response Status C

ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve using the response to comment #150.

CI 120G SC 120G.3.2 P229 L26 # 246

Dawe, Piers Nvidia
 Comment Type T Comment Status A precursor ISI ratio (bucket4)

We don't know what to do with far-end pre-cursor ISI ratio. It was copied in from a spec with a very different reference receiver. In this scenario, we don't know what it's for, what a limit should be, or why. I believe that the ordinary EH, EW and VEC specs with this reference receiver will defend receivers from the same threats that far-end pre-cursor ISI ratio in 120E was intended to guard against, except possibly for some drivers with exemplary noise, jitter and distortion but not so well tuned which can be received anyway.

SuggestedRemedy

We could leave this TBD hanging around in case someone finds a use for it, or clean it up for now while no-one has. We can bring it back later if justified.

Response Response Status C

ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve using the response to comment #150.

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Cl **120G** SC **120G.3.2** P**229** L**29** # **95**
 Brown, Matt Huawei
 Comment Type **T** Comment Status **D** ERL value (bucket5)
 The module output ERL value is TBD.
SuggestedRemedy
 Replace TBD with an appropriate value.
 Proposed Response Response Status **W**
 PROPOSED REJECT.
 [Editor's note: Addresses incomplete specification.]
 The response to closed comment #114 indicates that there was no consensus to make the changes proposed in this comment.
 [Editor's note (to be removed when closing this comment): Added to bucket #5. The response to closed comment #114 indicated there was no consensus to adopt the values with strikethrough in the referenced slide.]

Cl **120G** SC **120G.3.2.3** P**231** L**16** # **145**
 Ghiasi, Ali Ghiasi Quantum/Inphi
 Comment Type **TR** Comment Status **D** ERL parameter (bucket5)
 Rx of 0.618 implies permitted reflection of -4.2 dB which can be problematic for C2M receiver with just 4T DFE, at 50G we have Rx of 0.19. Extensive analysis was performed by Mr. Mellitz but C2M measurement points are at TP1a and TP4 not an end-end link using COM
https://www.ieee802.org/3/ck/public/adhoc/jun10_20/mellitz_3ck_adhoc_01a_061020.pdf
SuggestedRemedy
 Recommend changing back to the original Rx=0.19 which equates to -14.4 dB unless it can be proven that -4.2 dB would work on a link where compliance is not at the slicer.
 Proposed Response Response Status **W**
 PROPOSED REJECT.
 The response to closed comment #114 indicates that there was no consensus to make the changes proposed in this comment.
 [Editor's note (to be removed when closing this comment): Added to bucket #5. The response to closed comment #114 indicated there was no consensus to adopt the values with strikethrough in the referenced slide.]

Cl **120G** SC **120G.3.3** P**231** L**43** # **99**
 Brown, Matt Huawei
 Comment Type **T** Comment Status **D** ERL value (bucket5)
 The host input ERL value is TBD.
SuggestedRemedy
 Replace TBD with an appropriate value.
 Proposed Response Response Status **W**
 PROPOSED ACCEPT IN PRINCIPLE.
 [Editor's note: Addresses incomplete specification.]
 Resolve using the response to comment #114.
 [Editor's note (to be removed when closing this comment): Added to bucket #5. The response to closed comment #114 adopts a table of parameters and values that addresses this comment.]

Cl **120G** SC **120G.3.3.2** P**232** L**18** # **100**
 Brown, Matt Huawei
 Comment Type **T** Comment Status **D** ew/esmw (bucket5)
 In Table 120G-6 for host input stressed signal the value for eye width is TBD.
SuggestedRemedy
 Replace TBD with an appropriate value.
 Proposed Response Response Status **W**
 PROPOSED ACCEPT IN PRINCIPLE.
 [Editor's note: Addresses incomplete specification.]
 Resolve this comment using the response to comment #41.
 [Editor's note (to be removed when this comment is closed): This comment was added to bucket #5. Comment #41 removes all specifications for EW/ESMW and updates the EH/VEC test methodology.]

IEEE P802.3ck D1.3 100/200/400 Gb/s Electrical Interfaces Task Force 4th Task Force review comments

Cl **120G** SC **120G.3.3.2** P**232** L**18** # **101**
 Brown, Matt Huawei
 Comment Type **T** Comment Status **D** ew/esmw (bucket5)
 In Table 120G-6 for host input stressed signal there are specifications for both far-end eye symmetry mask width (ESMW) and eye width (EW). ESMW is not mentioned in the stressed input procedure nor does it seem relevant.
SuggestedRemedy
 Delete ESMW row in Table 120G-6.
Proposed Response Response Status **W**
 PROPOSED ACCEPT IN PRINCIPLE.
 [Editor's note: Addresses incomplete specification.]
 Resolve this comment using the response to comment #41.
 [Editor's note (to be removed when this comment is closed): This comment was added to bucket #5. Comment #41 removes all specifications for EW/ESMW and updates the EH/VEC test methodology.]

Cl **120G** SC **120G.3.3.2** P**232** L**18** # **211**
 Ran, Adeel Intel
 Comment Type **T** Comment Status **D** ew/esmw (bucket5)
 Eye width is only a parameter of host stressed input specification (Table 120G-6). There is no corresponding parameter in the module output signal.
 Similarly in module stressed input (Table 120G-9).
 Creating a special condition for the stress signal is burdensome for the test setup, and is not justified if there is no such specification for output signal.
SuggestedRemedy
 Delete the eye width rows in tables 120G-6 and 120G-9.
Proposed Response Response Status **W**
 PROPOSED ACCEPT IN PRINCIPLE.
 [Editor's note: Addresses incomplete specification.]
 Resolve this comment using the response to comment #41.
 [Editor's note (to be removed when this comment is closed): This comment was added to bucket #5. Comment #41 removes all specifications for EW/ESMW and updates the EH/VEC test methodology.]

Cl **120G** SC **120G.3.4** P**235** L**11** # **104**
 Brown, Matt Huawei
 Comment Type **T** Comment Status **D** ERL value (bucket5)
 The module input ERL value is TBD.
SuggestedRemedy
 Replace TBD with an appropriate value.
Proposed Response Response Status **W**
 PROPOSED REJECT.
 [Editor's note: Addresses incomplete specification.]
 The response to closed comment #114 indicates that there was no consensus to make the changes proposed in this comment.
 [Editor's note (to be removed when closing this comment): Added to bucket #5. The response to closed comment #114 indicated there was no consensus to adopt the values with strikethrough in the referenced slide.]

Cl **120G** SC **120G.3.4.1** P**231** L**35** # **105**
 Brown, Matt Huawei
 Comment Type **T** Comment Status **D** ew/esmw (bucket5)
 In Table 120G-9 for module input stressed signal the value for eye width is TBD.
SuggestedRemedy
 Replace TBD with an appropriate value.
Proposed Response Response Status **W**
 PROPOSED ACCEPT IN PRINCIPLE.
 [Editor's note: Addresses incomplete specification.]
 Resolve this comment using the response to comment #41.
 [Editor's note (to be removed when this comment is closed): This comment was added to bucket #5. Comment #41 removes all specifications for EW/ESMW and updates the EH/VEC test methodology.]

IEEE P802.3ck D1.3 100/200/400 Gb/s Electrical Interfaces Task Force 4th Task Force review comments

Cl 120G SC 120G.3.4.1 P235 L34 # 106

Brown, Matt

Huawei

Comment Type T Comment Status D ew/esmw (bucket5)

In Table 120G-9 for host input stressed signal there are specifications for both far-end eye symmetry mask width (ESMW) and eye width (EW). ESMW is not mentioned in the stressed input procedure nor does it seem relevant.

SuggestedRemedy

Delete ESMW row in Table 120G-6.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

[Editor's note: Changed subclause, page, and line number from 120G.3.3.2, 232, and 18.]

[Editor's note: Addresses incomplete specification.]

The commenter indicated that the suggested remedy should refer to Table 120G-9 rather than Table 120G-6.

Resolve this comment using the response to comment #41.

[Editor's note (to be removed when this comment is closed): This comment was added to bucket #5. Comment #41 removes all specifications for EW/ESMW and updates the EH/VEC test methodology.]

Cl 120G SC 120G.5.2 P241 L14 # 210

Ran, Adeel

Intel

Comment Type T Comment Status D ew/esmw (bucket5)

"Compute the receiver input signal $y_{rx}(k)$ by applying the effect of the DFE to $y_2(k)$ using the sampling phase t_s and tap weights $b(n)$ determined in the previous step"

It is not specified fully how the effect of the DFE is applied. Different methods can result in different eye shape. Although EH and VEC are not affected, if EW or ESMW spec are retained they will depend on the DFE application, so it needs to be specified

SuggestedRemedy

If ESMW and EW specifications are not removed, Change the quoted statement to

"Compute the receiver input signal $y_{rx}(k)$ by adding the output of a DFE with tap weights $b(n)$ determined in the previous step to $y_2(k)$. The DFE output is a piecewise-constant signal with transitions occurring at $t_s + UI/2$ ".

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve this comment using the response to comment #41.

[Editor's note (to be removed when this comment is closed): This comment was added to bucket #5. Comment #41 removes all specifications for EW/ESMW and updates the EH/VEC test methodology.]

IEEE P802.3ck D1.3 100/200/400 Gb/s Electrical Interfaces Task Force 4th Task Force review comments

Cl **120G** SC **120G.5.2** P**241** L**23** # **102**

Brown, Matt Huawei
 Comment Type **T** Comment Status **D** ew/esmw (bucket5)

For each C2M interface, there is a specification for eye symmetry mask width (ESMW) and there is a pointer to 120G.5.2. However, 120G.5.2 does not specify a method for ESMW; it specifies a method only EH, EW, and VEC. ESMW is discussed in 120E.4.2, but even there its not really clear what to do with it.

SuggestedRemedy

Add methodology for ESMW and explain the relevance.

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve this comment using the response to comment #41.

[Editor's note (to be removed when this comment is closed): This comment was added to bucket #5. Comment #41 removes all specifications for EW/ESMW and updates the EH/VEC test methodology.]

Cl **120G** SC **120G.5.2** P**241** L**27** # **257**

Dawe, Piers Nvidia
 Comment Type **TR** Comment Status **D** ew/esmw (bucket5)

We can't pass the signal when it passes EH but fails EW / ESMW, but it might be OK at another setting. Note this does not require optimising for EW, only rejecting candidate solutions that fail EW (constraint not goal). We did this in 120E, nothing new here. Pre-cursor ISI ratio would be a constraint too if it remains.

SuggestedRemedy

Change:
 where eye height also complies with the specification for eye height (min) as specified for the interface.
 to:
 where the eye also complies with the specifications for eye height, ESMW, and eye width if applicable, as specified for the interface.

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

Resolve this comment using the response to comment #41.

[Editor's note (to be removed when this comment is closed): This comment was added to bucket #5. Comment #41 removes all specifications for EW/ESMW and updates the EH/VEC test methodology.]

Cl **120G** SC **120G.5.3** P**241** L**34** # **258**

Dawe, Piers Nvidia
 Comment Type **TR** Comment Status **A** precursor ISI ratio (bucket4)

The valid setting would have to satisfy eye width / ESMW too.

SuggestedRemedy

Modify the definition of valid setting or delete the subclause.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #150.

Cl **120G** SC **120G.5.3** P**241** L**37** # **259**

Dawe, Piers Nvidia
 Comment Type **T** Comment Status **A** precursor ISI ratio (bucket4)

The pulse peak is not at the same time as the DFE sampling phase ts determined in step d of 120G.5.2, but it's close. No need for both.

SuggestedRemedy

Change from pmax to the pulse at the DFE sampling phase ts, or delete the subclause.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #150.

Cl **162** SC **162.5** P**137** L**19** # **120**

Kocsis, Sam Amphenol
 Comment Type **TR** Comment Status **R** medium delay

one-way delay no more than "14ns"

SuggestedRemedy

one-way delay no more than "16ns", for consistency with ERL parameter values

Response Response Status **C**

REJECT.

The following presentations was reviewed by the task force:
https://www.ieee802.org/3/ck/public/20_10/kocsis_3ck_01a_1020.pdf

Insufficient evidence to make the proposed change was provided. Increasing the medium delay allocation reduces the delay allocated to the PMD.

There is no consensus to make the proposed change.

IEEE P802.3ck D1.3 100/200/400 Gb/s Electrical Interfaces Task Force 4th Task Force review comments

Cl 162 SC 162.9.3 P146 L27 # 3

Mellitz, Richard Samtec

Comment Type TR Comment Status D ERL value (bucket5)

The ERL range is between 7.3 dB and 18.8 for published channels that representative of 100G Host designs.

SuggestedRemedy
Set ERL (min) to 7.3 dB in Table 162.-10

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve using the response to comment #114.

[Editor's note (to be removed when closing this comment): Added to bucket #5. The response to closed comment #114 adopts a table of parameters and values that addresses this comment.]

Cl 162 SC 162.9.3 P146 L48 # 48

Ran, Adeo Intel

Comment Type T Comment Status D EO jitter (bucket5)

(CC)
The even-odd jitter limit of 0.019 UI (less than 360 fs) was not met by several different transmitters tested in lab environment. The same parts showed good link performance over challenging channels.

This requirement seems difficult to meet and not too important for interoperability. It seems that much higher EOJ can be tolerated by existing receivers.

For reference, in multiple generations of NRZ PMDs the allowed EOJ is 0.035 UI; for C2M and for optical PMDs it is not defined at all.

Also applies to KR, Table 163-5 (163.9.2) and to AUI-C2C, Table 120F-1 (120F.3.1.1)

SuggestedRemedy
For parameter "Even-odd jitter, pk-pk" change "value" from 0.019 to 0.035, in all places listed in the comment.

Proposed Response Response Status W
PROPOSED REJECT.

Resolve using the response to comment #190.

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

[Editor's note: This comment was added to bucket #5. The response to comment #190 which provides a new limit value that addresses this comment.]

Cl 162 SC 162.9.3 P146 L48 # 186

Calvin, John Keysight Technologies

Comment Type T Comment Status D EO jitter (bucket5)

The spec limit for Even-Odd jitter is only 358 femtoseconds, which is too low to be accurately measured with current state of the art test equipment.

SuggestedRemedy
Increase the spec limit from 0.019 UI to 0.025 UI

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Resolve using the response to comment #190.

[Editor's note: This comment was added to bucket #5. The response to comment #190 which provides a new limit value that addresses this comment.]

IEEE P802.3ck D1.3 100/200/400 Gb/s Electrical Interfaces Task Force 4th Task Force review comments

Cl 162 SC 162.9.3.3 P150 L39 # 189

Calvin, John Keysight Technologies

Comment Type T Comment Status D EO jitter (bucket5)

Based on Sleigh/Calvin/LeCheminant presentation https://grouper.ieee.org/groups/802/3/ck/public/adhoc/sept16_20/calvin_3ck_adhoc_01_091620.pdf it has been shown that the EOJ measurement is susceptible to a systematic error based on the test pattern length and baud rate. This is easily resolved by allowing the CDR loop BW to be reduced below 4 MHz

SuggestedRemedy

Update the text of page 150 line 39 to read Even-odd jitter is calculated using the measurement method specified in 120D.3.1.8.2. with the exception that EOJ may be measured with a clock recovery unit (CRU) with a corner frequency of <= 4 MHz and a slope of 20 dB/decade

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Resolve using the response to comment #190.

[Editor's note: This comment was added to bucket #5. The response to comment #190 which provides a method to resolve this comment.]

Cl 162 SC 162.9.3.3 P150 L40 # 52

Ran, Adeo Intel

Comment Type T Comment Status D EO jitter (bucket5)

The method in 120D.3.1.8.2 is very specific about using PRBS13Q.

Physical measurements of even-odd jitter with PRBS13Q at 53.125 GBd show a much wider distribution and larger values compared with shorter test patterns.

Since even-odd jitter is inherently a high frequency effect (fb/2), this variability seems to be a measurement artifact. The considerations mentioned in NOTE 1 of 120D.3.1.8.2 may be limiting the accuracy of measurements at this signaling rate.

If a device can be tested with a shorter pattern which enables calculation of even-odd jitter, the measurement can be made more accurate; such results should be acceptable.

The comment also applies to 120F.3.1.3.

SuggestedRemedy

Add the following exception in 162.9.3.3:

The pattern used for Even-odd jitter measurement may be PRBS13Q or any shorter odd-length pattern that includes the 12 possible transitions between two different PAM4 symbols.

In 120F.3.1.3, change the cross-reference for EOJ measurement from 120D.3.1.8.2 to 162.9.3.3.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Resolve using the response to comment #190.

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

[Editor's note: This comment was added to bucket #5. The response to comment #190 which provides a method to resolve this comment.]

IEEE P802.3ck D1.3 100/200/400 Gb/s Electrical Interfaces Task Force 4th Task Force review comments

CI 162 SC 162.9.3.4 P151 L12 # 217

Dawe, Piers

Nvidia

Comment Type T Comment Status D ERL tfx (bucket5)

Both the parameter description and the note are incorrect: "Twice the propagation delay associated with the test fixture", "The specified Tfx value represents twice the transmission line delay which sufficiently mitigates the test point and transmission line return loss." And the terminology doesn't match: propagation delay, transmission line delay - are they the same thing or what?

SuggestedRemedy

Tfx is windowing time that is larger than twice the delay associated with the test point connector but less than twice the delay from the test point connector to the other end of the test fixture's transmission line.

Also Tfx needs to appear in 93A.5, which is where the explanation should go, not here. Make similar changes in each ERL section in the draft.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

!!! Need response for bucket. !!!

The response to comment #157 addresses the first part of the suggested remedy. T_fx is defined in the variable list for Equation 93A-61 in 802.3cd-2018.

However, the definition should be updated as follows:

Change:

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

To:

"is twice the propagation delay in ns associated with the test fixture, obtained by measurement or inspection, or as specified by the clause that invokes this method"

[Editor's note: CC: 162, 163, 93A]

CI 162 SC 162.9.3.4 P151 L16 # 157

Dudek, Mike

Marvell.

Comment Type E Comment Status D ERL tfx (bucket5)

The wording in the footnote doesn't properly describe what is being mitigated. In particular what is "the test point and transmission line". A test point doesn't have a return loss.

SuggestedRemedy

Change " which sufficiently mitigates the test point and transmission line return loss." to "which sufficiently mitigates the effect of reflections from the test connector and test fixture transmission line". Also on the footnote to table 162-17 on page 157 line 15

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

!!! Need response for bucket. !!!

T_fx is defined in the variable list for Equation 93A-61 in 802.3cd-2018. However, the definition should be updated as follows:

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

To: "is twice the propagation delay in ns associated with the test fixture, obtained by measurement or inspection, or as specified by the clause that invokes this method"

[Editor's note: CC: 162, 163, 93A]

CI 162 SC 162.9.4 P151 L44 # 4

Mellitz, Richard

Samtec

Comment Type TR Comment Status D ERL value (bucket5)

The ERL range is between 7.3 dB and 18.8 for published channel that representative of 100G Host designs.

SuggestedRemedy

Set ERL (min) to 7.3 dB in Table 162.-13

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Resolve using the response to comment #114.

[Editor's note (to be removed when closing this comment): Added to bucket #5. The response to closed comment #114 adopts a table of parameters and values that addresses this comment.]

IEEE P802.3ck D1.3 100/200/400 Gb/s Electrical Interfaces Task Force 4th Task Force review comments

Cl 162 SC 162.11 P156 L37 # 110

Champion, Bruce TE Connectivity

Comment Type T Comment Status D ERL value (bucket5)

Cable Assembly ERL listed as TBD in Table 162-16

SuggestedRemedy

TBD to be changed to 7.4 dB. See presentation

Proposed Response Response Status W

PROPOSED REJECT.

[Editor's note: Addresses incomplete specification.]

The response to closed comment #114 indicates that there was no consensus to make the changes proposed in this comment.

[Editor's note (to be removed when closing this comment): Added to bucket #5. The lack of consensus is noted directly in the comment response rather than in the referenced slide.]

Cl 162 SC 162.11 P156 L37 # 114

Kocsis, Sam Amphenol

Comment Type TR Comment Status A ERL value

Minimum cable assembly ERL = TBD

SuggestedRemedy

Change to "7.4dB", see background/consensus presentation

Response Response Status C

ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

The following presentations were reviewed by the task force:
https://www.ieee802.org/3/ck/public/20_10/kocsis_3ck_01a_1020.pdf
https://www.ieee802.org/3/ck/public/20_10/wu_3ck_02_1020.pdf

Additional presentations were posted for review:
https://www.ieee802.org/3/ck/public/20_10/champion_3ck_02_1020.pdf
https://www.ieee802.org/3/ck/public/20_10/wu_3ck_03_1020.pdf
https://www.ieee802.org/3/ck/public/20_10/wu_3ck_04_1020.pdf

ERL parameter and value comments were discussed together by reviewing
https://www.ieee802.org/3/ck/public/20_10/kochuparambil_3ck_03b_1020.pdf

There was no consensus to change the parameters values shown in red with strikethrough or the ERL value for the cable assembly.

Implement with editorial license the parameter values proposed in red without strikethrough in slide 3 of kochuparambil_3ck_03b_1020 with the exception of the cable assembly ERL value.

IEEE P802.3ck D1.3 100/200/400 Gb/s Electrical Interfaces Task Force 4th Task Force review comments

Cl 162 SC 162.11.2 P157 L8 # 173
 Haser, Alex Molex
 Comment Type TR Comment Status A CA IL
 The minimum IL is too strict to allow 0.5m 30awg cables (see support slide); need to relax min IL limit
 SuggestedRemedy
 More work needed to determine what the mask should be
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 The following related presentation was reviewed by the task force:
https://www.ieee802.org/3/ck/public/20_10/diminico_3ck_04_1020.pdf
 Implement with editorial license the insertion loss equation including frequency limits as provided on slide 4 of diminico_3ck_04_1020.

Cl 162 SC 162.11.2 P157 L10 # 17
 DiMinico, Christopher MC Communications
 Comment Type TR Comment Status D CA IL (bucket5)
 Replace TBD
 SuggestedRemedy
 Replace TBD with 0.05
 Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.
 [Editor's note: Addresses incomplete specification.]
 Resolve using the response to comment #173.
 [Editor's note (to be removed when closing this comment): Added to bucket #5. The response to closed comment #173 provides value in place of the TBD.]

Cl 162 SC 162.11.2 P157 L10 # 174
 Haser, Alex Molex
 Comment Type TR Comment Status D CA IL (bucket5)
 Fill in TBD. Low frequency cable loss can't vary wildly if the cable works at higher frequencies; no need to over-spec
 SuggestedRemedy
 Replace TBD with 0.05GHz
 Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.
 [Editor's note: Addresses incomplete specification.]
 Resolve using the response to comment #173.
 [Editor's note (to be removed when closing this comment): Added to bucket #5. The response to closed comment #173 provides value in place of the TBD.]

Cl 162 SC 162.11.2 P157 L26 # 221
 Dawe, Piers Nvidia
 Comment Type TR Comment Status D CA IL (bucket5)
 This minimum loss curve bends the wrong way at high frequencies
 SuggestedRemedy
 Change the limit (Eq 162-10) so it becomes flatter at high frequencies
 Proposed Response Response Status W
 PROPOSED REJECT.
 Resolve using the response to comment #173.
 [Editor's note (to be removed when closing this comment): Added to bucket #5. The response to closed comment #173 provides a IL curve that also address this comment.]

IEEE P802.3ck D1.3 100/200/400 Gb/s Electrical Interfaces Task Force 4th Task Force review comments

CI 162 SC 162.11.3 P158 L9 # 113

Kocsis, Sam Amphenol
 Comment Type TR Comment Status D ERL parameter (bucket5)

CR ERL parameter N is "3500"

SuggestedRemedy

Change to "5100", see background/consensus presentation

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

The following presentations was reviewed by the task force:
https://www.ieee802.org/3/ck/public/20_10/kocsis_3ck_01a_1020.pdf

Resolve using the response to comment #114.

[Editor's note (to be removed when closing this comment): Added to bucket #5. The response to closed comment #114 adopts a table of parameters and values that addresses this comment.]

CI 162 SC 162.11.3 P158 L12 # 175

Haser, Alex Molex
 Comment Type T Comment Status D ERL parameter (bucket5)

Setting a single vlaue for fixture delay is not flexible enough to account for variation between test fixtures

SuggestedRemedy

Specify a range for fixture delay (e.g., 2ns +/- 10%)

Proposed Response Response Status W

PROPOSED REJECT.

The response to closed comment #114 indicates that there was no consensus to make the changes proposed in this comment.

[Editor's note (to be removed when closing this comment): Added to bucket #5. The response to closed comment #114 indicated there was no consensus to adopt the values with strikethrough in the referenced slide.]

CI 162 SC 162.11.3 P158 L15 # 176

Haser, Alex Molex
 Comment Type ER Comment Status D ERL tfx (bucket5)

The note about fixture delay is misleading. The specified delay does not represent twice the transmission line delay. Only the coax is being removed from the fixture.

SuggestedRemedy

Change footnote to: "The specified Tfx value significantly mitigates the test point and transmission line return loss by removing the coax connector and via from the measurement." or something along those lines

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

!!! Need wording for bucket !!!

Resolve using the response to comment #157.

CI 162 SC 162.11.7 P158 L35 # 121

Kocsis, Sam Amphenol
 Comment Type TR Comment Status D CA XTALK

T_r is "7.5ps"

SuggestedRemedy

Change to "6.5ps", see background/consensus presentation

Proposed Response Response Status Z

REJECT.

This comment was WITHDRAWN by the commenter.

IEEE P802.3ck D1.3 100/200/400 Gb/s Electrical Interfaces Task Force 4th Task Force review comments

CI 162A SC 162A.4 P248 L42 # 18

DiMinico, Christopher

MC Communications

Comment Type TR

Comment Status A

Host IL

Replace TBD with equation

SuggestedRemedy

$ILPCB_{max}(fGHz)=0.9809*(0.471*SQRT(f)+0.1194*f+0.002*(f^2))$

for

0.01 GHz $\leq f \leq$ 50 GHz

See supporting presentation diminico_3ck_1020.pdf

Response

Response Status C

ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Implement the suggested remedy.

See slide 7 supporting presentation

https://www.ieee802.org/3/ck/public/20_10/diminico_3ck_01_1020.pdf

CI 162A SC 162A.4 P249 L39 # 19

DiMinico, Christopher

MC Communications

Comment Type TR

Comment Status A

Host IL

Replace TBD with equation

SuggestedRemedy

$ILHOST(f)=1.5658*(0.471*SQRT(f)+0.1194*f+0.002*(f^2))$

for

0.01 GHz $\leq f \leq$ 50 GHz

See supporting presentation diminico_3ck_1020.pdf

Response

Response Status C

ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Implement the suggested remedy.

See slide 8 of supporting presentation

https://www.ieee802.org/3/ck/public/20_10/diminico_3ck_01_1020.pdf

CI 162B SC 162B.1.1.1 P253 L32 # 268

Dawe, Piers

Nvidia

Comment Type T

Comment Status A

TF wording

I read "reference TP2 or TP3 test fixture insertion loss" as the insertion loss of a reference TP2 or TP3 test fixture. But I think it is the reference insertion loss of a TP2 or TP3 test fixture (similar to line 19).

SuggestedRemedy

It might be clearer to re-order "reference TP2 or TP3 test fixture insertion loss" to "TP2 or TP3 test fixture reference insertion loss", putting "reference" immediately before "insertion loss" as appropriate throughout 162B.

Response

Response Status C

ACCEPT IN PRINCIPLE.

With editorial license...

Replace:

"the reference TP2 or TP3 test fixture insertion loss"

With

"the TP2 or TP3 test fixture reference insertion loss"

CI 162B SC 162B.1.3.1 P255 L35 # 21

DiMinico, Christopher

MC Communications

Comment Type TR

Comment Status D

MTF IL

Modify Equation (162B-3) $ILMTF_{MAX} > 40$ GHz to align with achievable MTF insertion loss

SuggestedRemedy

See supporting presentation diminico_3ck_1020.pdf

Proposed Response

Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Modify Equation (162B-3) $ILMTF_{MAX} > 40$ GHz to align with achievable MTF insertion loss

See slide 11 supporting presentation

https://www.ieee802.org/3/ck/public/20_10/diminico_3ck_02a_1020.pdf

For task force discussion of cited presentation.

IEEE P802.3ck D1.3 100/200/400 Gb/s Electrical Interfaces Task Force 4th Task Force review comments

Cl **162B** SC **162B.1.3.1** P**256** L**12** # **269**

Dawe, Piers Nvidia
 Comment Type **E** Comment Status **D** MTF IL

Figure 162B-3, Mated test fixtures insertion loss, shows the maximum and minimum IL but not the reference IL.

SuggestedRemedy

Please show the reference insertion loss of the mated test fixture also, on the same graph.

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change upper frequency in Equation 162B-5 to 30 GHz.

Plot MTF reference IL in Figure 162B-3.

See slide 13 in the following presentation:
https://www.ieee802.org/3/ck/public/20_10/diminico_3ck_02a_1020.pdf

Cl **162B** SC **162B.1.3.1** P**256** L**25** # **177**

Haser, Alex Molex
 Comment Type **TR** Comment Status **A** MTF IL

Start frequency has minimal impact on FOM_ILD values (see haser_3ck_adhoc_01c_062420, slide 8); a start frequency of 50 MHz is more practical than a start frequency of 10 MHz due to current commonly available VNA capabilities

SuggestedRemedy

Change fmin for FOM_ILD calculation from 10 MHz to 50 MHz

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Change fmin for FOM_ILD calculation from 10 MHz to 50 MHz.

See slide 8 of the supporting presentation
https://www.ieee802.org/3/ck/public/adhoc/jun24_20/haser_3ck_adhoc_01c_062420.pdf

Cl **162B** SC **162B.1.3.2** P**256** L**40** # **178**

Haser, Alex Molex
 Comment Type **TR** Comment Status **A** MTF RL

Current RL mask doesn't accurately capture necessary RL performance

SuggestedRemedy

Remove RL mask and replace with ERL ; input values and ERL limit TBD

Response Response Status **C**

ACCEPT IN PRINCIPLE.

The response to closed comment #122 adds an MTF ERL specification.

Change the differential return loss specification from normative to informative.

Strawpoll #14 (choose 1)

I support:

A: retain MTF return loss specification as normative

B: retain MTF return loss specification as informative

C: remove MTF return loss specification

A: 11 B: 18 C: 10

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CI 162B SC 162B.1.3.2 P256 L41 # 122
 Kocsis, Sam Amphenol
 Comment Type TR Comment Status A MTF RL
 text says test fixture "shall meet" Eq 162B-6
 SuggestedRemedy
 Change to "is recommended to meet and shall meet an ERL of 8dB, see background/consensus presentation
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 The following presentation was reviewed by the task force:
https://www.ieee802.org/3/ck/public/20_10/kocsis_3ck_02a_1020.pdf
https://www.ieee802.org/3/ck/public/20_10/diminico_3ck_03_1020.pdf
 Add subclause for MTF ERL with TBD dB requirement.
 Add a table similar to Table 120G-4 with Tfx to "0" to use as reference for MTF ERL.
 Implement with editorial license.
 [Editor's note (to be removed when comment is closed): Response updated 2020/11/10.]
 Straw poll #13 (decision), choose 1
 I support closing comment #122 with:
 A: ERL specification with minimum of 9 dB
 B: ERL specification with minimum of TBD dB
 C: No ERL specification
 A: 21 B: 25 C: 1

CI 162B SC 162B.1.3.2 P256 L46 # 22
 DiMinico, Christopher MC Communications
 Comment Type TR Comment Status D MTF RL
 Modify Equation (162B-6) DRL(f) > 40 GHz to align with achievable MTF return loss
 SuggestedRemedy
 See supporting presentation diminico_3ck_1020.pdf
 Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.
 The following presentation was reviewed by the task force:
https://www.ieee802.org/3/ck/public/20_10/diminico_3ck_03_1020.pdf

CI 162B SC 162B.1.3.6 P260 L29 # 180
 Haser, Alex Molex
 Comment Type TR Comment Status D MTF XTALK
 Start and stop frequencies are not defined for ICN calculation. This section points to (should point to) 110B.1.3.6, which specifies 50 MHz to 19 GHz; this range is insufficient for this data rate
 SuggestedRemedy
 Somehow specify ICN calculations should be done 50 MHz to 40 GHz with a 10 MHz step size, either by adding text or adding values to Table 162B-1
 Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.
 Implement with editorial license the proposal on slide 24 of the following presentation:
https://www.ieee802.org/3/ck/public/20_07/diminico_3ck_02e_0720.pdf

CI 162C SC 162C.2.1 P268 L6 # 271
 Dawe, Piers Nvidia
 Comment Type E Comment Status R MDI (bucket4)
 "SFP+ supports one lane", "QSFP+ supports up to four lanes" and so on
 SuggestedRemedy
 Would it be clearer to say "SFP+ supports one lane in each direction" and similarly for the other connector types?
 Response Response Status C
 REJECT.
 Language usage is consistent with 802.3cd.
 Make no changes.

CI 162C SC 162C.2.2 P268 L46 # 272
 Dawe, Piers Nvidia
 Comment Type T Comment Status A MDI (bucket4)
 SFP-DD supports up to four lanes
 SuggestedRemedy
 SFP-DD supports up to four lanes [in each direction]
 Similarly for DSFP.
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 Change "SFP-DD supports up to four lanes" to "SFP-DD supports up to two lanes". Make the equivalent change for DSFP in 162C.2.3.

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CI 163 SC 163.9.2 P176 L44 # 202

Wu, Mau-Lin

MediaTek

Comment Type T Comment Status D ERL value (bucket5)

dERL is still TBD

SuggestedRemedy

Suggest to set as some negative values. I had shared some information in wu_3ck_adhoc_01_092320.pdf. I plan to prepare one contribution, wu_3ck_02_1120.pdf, for this comment.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

The referenced ad hoc presentation is here:

https://www.ieee802.org/3/ck/public/adhoc/sept23_20/wu_3ck_adhoc_01a_092320.pdf

The following presentation was reviewed by the task force:

https://www.ieee802.org/3/ck/public/20_10/wu_3ck_02_1020.pdf

Resolve using the value in the response to comment #61.

[Editor's note (to be removed when closing this comment): Added to bucket #5. The response to closed comment #61 provides value for transmitter dERL.]

CI 163 SC 163.9.2 P177 L16 # 187

Calvin, John

Keysight Technologies

Comment Type T Comment Status D EO jitter (bucket5)

The spec limit for Even-Odd jitter is only 358 femtoseconds, which is too low to be accurately measured with current state of the art test equipment.

SuggestedRemedy

Increase the spec limit from 0.019 UI to 0.025 UI

Proposed Response Response Status W

PROPOSED REJECT.

Resolved using the response to comment #190.

[Editor's note: This comment was added to bucket #5. The response to comment #190 which provides a new limit value that addresses this comment.]

CI 163 SC 163.9.2.2 P178 L33 # 204

Wu, Mau-Lin

MediaTek

Comment Type T Comment Status A example TF (bucket4)

The IL and ILD specs here are too challenging to achieve. In this case, I see no points to provide this kind of "example TX test fixture". Based on that, I proposed to relax the IL and ILD specs of this example TX test fixture (TP0a). Detailed information had been included in wu_3ck_adhoc_01_092320.pdf. I plan to prepare one contribution, wu_3ck_02_1120.pdf, for this comment.

SuggestedRemedy

Change IL and ILD specs of the example TX test fixture (TP0a) to "between 2.0 dB and 2.8 dB at 26.56 GHz". ILD is less than or equal to 0.2 dB from 0.05 to 26.56 GHz. Remove the Equation (163-1), Figure 163-4, and related paragraphs since TP0a is just an example and informative.

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #229.

CI 163 SC 163.9.2.2 P178 L33 # 162

Dudek, Mike

Marvell.

Comment Type TR Comment Status A example TF (bucket4)

The insertion loss of this example test fixture is un-realistically low. This applies to the Rx test fixture as well.

SuggestedRemedy

Change the loss to "between 2.4 and 3.2dB" and double the co-efficients in equation 163-1 and change Figure 163-4 to match. Note that the Rx test fixture refers to this equation and figure as well. Change the loss of the Rx test fixture to "between 2.4 and 3.2dB" on page 181 line 19.

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #229.

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Cl 163 SC 163.9.2.2 P178 L39 # 26

Ben-Artzi, Liav Marvell Semiconductor Ltd.
 Comment Type T Comment Status A example TF (bucket4)

The transmitter and receiver test fixture informative examples are irrelevant, since they have extremely low loss

SuggestedRemedy

Recommend changing equation 163.1 to $IL(F) = 0.01 + 0.292 \cdot \sqrt{F} + 0.0936 \cdot F$ (F in GHz), which is more realistic and meets 4dB of loss at 26.5625GHz. It is also referred to in 163.9.3.2 on page 181 lines 22-24

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to #229.

Cl 163 SC 163.9.2.2 P178 L33 # 136

Ghiasi, Ali Ghiasi Quantum/Inphi
 Comment Type TR Comment Status A example TF (bucket4)

Increase the loss from 1.2 dB and 1.6 dB

SuggestedRemedy

to 2.2 and 2.6 dB and update equation 163-1 to $= 0.0062 + 0.1753 \cdot \sqrt{f} + 0.0561 \cdot f$ the equation nominal loss is 2.4 dB

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #229.

Cl 163 SC 163.9.3 P180 L26 # 8

Mellitz, Richard Samtec
 Comment Type TR Comment Status D ERL value (bucket5)

There is no reason why the receive ERL specification should be different from the transmitter ones.

SuggestedRemedy

Point to the transmitter specification for DERL

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Closed comment #40 aligned the RX test fixture with the TX test fixture and the replaced ERL with dERL.

[Editor's note (to be removed when closing this comment): Added to bucket #5.]

Cl 163 SC 163.9.3.2 P181 L18 # 137

Ghiasi, Ali Ghiasi Quantum/Inphi
 Comment Type TR Comment Status A RX test fixture (bucket4)

Increase the loss from 1.2 dB and 1.6 dB

SuggestedRemedy

to 2.2 and 2.6 dB

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the responses to comments #40 and #229.

Cl 163 SC 163.10.3 P186 L41 # 10

Mellitz, Richard Samtec
 Comment Type TR Comment Status D ERL value (bucket5)

The ERL range is between 9.7 dB and 23.5 dB for published channel that representative of 100G KR designs.

SuggestedRemedy

change the TBD in line 41 to 9.7 dB

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve using the response to comment #114.

[Editor's note (to be removed when closing this comment): Added to bucket #5. The response to closed comment #114 adopts a table of parameters and values that addresses this comment.]

Cl 163 SC 163.13.4.3 P192 L8 # 12

Mellitz, Richard Samtec
 Comment Type TR Comment Status D ERL wording (bucket5)

We are not specifying ERL directly

SuggestedRemedy

Change TC2 to DERL at TP0v

Proposed Response Response Status Z

REJECT.

This comment was WITHDRAWN by the commenter.