

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** P **202** L **39** # **237**

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

Unexplained notation of up and down: v ^

*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 **120F** SC **120F.3.1** P **207** L **14** # **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](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** P **208** L **14** # **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](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** P **208** L **39** # **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.]

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

CI 120F SC 120F.3.1.3 P 210 L 43 # 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.]

CI 120F SC 120F.4.3 P 217 L 44 # 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.]

CI 120G SC 120G.3.1 P 226 L 17 # 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.]

CI 120G SC 120G.3.1 P 226 L 17 # 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.

*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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Cl **120G** SC **120G.3.1** P **226** L **17** # **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.]

Cl **120G** SC **120G.3.1** P **226** L **17** # **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.]

Cl **120G** SC **120G.3.1** P **226** L **17** # **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.]

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

Cl **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.]

Cl **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](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.3.2** 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.]

Cl **120G** SC **120G.3.2** P **229** L **17** # **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.]

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Cl **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.]

Cl **120G** SC **120G.3.2** P **229** L **22** # **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.]

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.]

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

CI 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](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.3.3 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.]

CI 120G SC 120G.3.3.2 P 232 L 18 # 211

Ran, Adeo 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.]

CI 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.]

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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.]

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.]

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 **235** L **34** # **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.]

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

CI 120G SC 120G.5.2 P 241 L 14 # 210

Ran, Adeel

Intel

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

"Compute the receiver input signal  $y_r(k)$  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 unambiguously.

*SuggestedRemedy*

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

"Compute the receiver input signal  $y_r(k)$  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.]

CI 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.]

CI 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.]



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 P 146 L 27 # 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.]

CI 162 SC 162.9.3 P 146 L 48 # 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.]

CI 162 SC 162.9.3 P 146 L 48 # 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 ACCEPT IN PRINCIPLE.

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.]

[Editor's note (to be removed when this comment is closed): Modified after bucket deadline. Changed from REJECT to ACCEPT IN PRINCIPLE.]

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 P 150 L 39 # 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](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  $\leq 4$  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 P 150 L 40 # 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.]

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Cl 162 SC 162.9.3.4 P 151 L 12 # 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.

Rename the Tfx parameter to "Time-gated propagation delay".

With editorial license, add Tfx to Table 93A-4 and modify 93A-5 explanation of Tfx recognizing variation between clauses that invoke the method.

Given IEEE Standards Style manual, convert footnote to informative note.

Modify the note text from "the specified Tfx value represents twice the transmission line delay which sufficiently mitigates the test point and transmission line return loss" to "The specified Tfx value represents a propagation delay which sufficiently mitigates the effect of reflections from the test connector and test fixture transmission line" or otherwise appropriate given 93A description."

Implement across clauses with editorial license.

[Editor's note: CC: 162, 163, 120F, 120G, 93A]

[Editor's note (to be removed when this comment is closed): Added to bucket #5. This comment was updated reflecting the result of offline consensus building.]

[Editor's note (to be removed when this comment is closed): Modified after bucket deadline. Fixed type in response changing "with sufficiently" to "which sufficiently".

Cl 162 SC 162.9.3.4 P 151 L 16 # 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.

Resolve using the response to comment #176.

[Editor's note (to be removed when this comment is closed): Added to bucket #5. This comment was updated reflecting the result of offline consensus building.]

Cl 162 SC 162.9.4 P 151 L 44 # 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.]

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Cl 162 SC 162.11 P 156 L 37 # 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 162.11.2 P 157 L 10 # 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 P 157 L 10 # 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 P 157 L 26 # 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 ACCEPT IN PRINCIPLE.  
 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.]  
 [Editor's note (to be removed when this comment is closed): Modified after bucket deadline. Changed from REJECT to ACCEPT IN PRINCIPLE.]

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

Cl 162 SC 162.11.3 P 158 L 9 # 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](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.]

Cl 162 SC 162.11.3 P 158 L 12 # 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.]

Cl 162 SC 162.11.3 P 158 L 15 # 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.  
 Resolve using the response to comment #217.  
 [Editor's note (to be removed when this comment is closed): Added to bucket #5. This comment was updated reflecting the result of offline consensus building.]

Cl 163 SC 163.9.2 P 176 L 44 # 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](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](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.]

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Cl 163 SC 163.9.2 P 177 L 16 # 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 ACCEPT IN PRINCIPLE.

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.]

[Editor's note (to be removed when this comment is closed): Modified after bucket deadline. Changed from REJECT to ACCEPT IN PRINCIPLE.]

Cl 163 SC 163.10.3 P 186 L 41 # 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 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.]