

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 A 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.

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using response to comment #34.

Cl 120F SC 120F.3.1 P 207 L 14 # 203

Wu, Mau-Lin MediaTek
 Comment Type T Comment Status A 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.

Response Response Status C

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.

Cl 120F SC 120F.3.1 P 208 L 14 # 82

Brown, Matt Huawei
 Comment Type T Comment Status A 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.

Response Response Status C

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.

Cl 120F SC 120F.3.1 P 208 L 39 # 188

Calvin, John Keysight Technologies
 Comment Type T Comment Status A 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

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #190.

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

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 A 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.

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #190.

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

CI 120F SC 120F.4.3 P 217 L 44 # 87

Brown, Matt Huawei
 Comment Type T Comment Status R ERL value (bucket5)

The ERL value is specified as TBD.

SuggestedRemedy

Replace TBD with an appropriate value.

Response Response Status C

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.

CI 120G SC 120G.3.1 P 226 L 17 # 240

Dawe, Piers Nvidia
 Comment Type TR Comment Status A 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.

Response Response Status C

ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve this comment using the response to comment #41.

CI 120G SC 120G.3.1 P 226 L 17 # 89

Brown, Matt Huawei
 Comment Type T Comment Status A 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.

Response Response Status C

ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve this comment using the response to comment #41.

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 **17** # **208**

Ran, Adeel Intel
 Comment Type **T** Comment Status **A** 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 ESMW, 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 ESMW row from this table (120G-1), and also from Table 120G-3 (twice), Table 120G-6, and Table 120G-9.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve using the response to comment #41.

Cl **120G** SC **120G.3.1** P **226** L **17** # **88**

Brown, Matt Huawei
 Comment Type **T** Comment Status **A** 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.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve this comment using the response to comment #41.

Cl **120G** SC **120G.3.1** P **226** L **17** # **209**

Ran, Adeel Intel
 Comment Type **T** Comment Status **A** 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.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve using the response to comment #41.

Cl **120G** SC **120G.3.1** P **226** L **23** # **90**

Brown, Matt Huawei
 Comment Type **T** Comment Status **A** ERL value (bucket5)

The host output ERL value is TBD.

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 #114.

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

Cl **120G** SC **120G.3.1.3** P **227** L **46** # **143**

Ghiasi, Ali Ghiasi Quantum/Inphi
 Comment Type **TR** Comment Status **R** 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.

Response Response Status **C**

REJECT.

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

Cl **120G** SC **120G.3.2** P **229** L **17** # **243**

Dawe, Piers Nvidia
 Comment Type **TR** Comment Status **A** 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.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve this comment using the response to comment #41.

Cl **120G** SC **120G.3.2** P **229** L **17** # **94**

Brown, Matt Huawei
 Comment Type **T** Comment Status **A** 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.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve this comment using the response to comment #41.

Cl **120G** SC **120G.3.2** P **229** L **17** # **93**

Brown, Matt Huawei
 Comment Type **T** Comment Status **A** 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.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve this comment using the response to comment #41.

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

Cl **120G** SC **120G.3.2** P **229** L **22** # **245**

Dawe, Piers Nvidia
 Comment Type **T** Comment Status **A** 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.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve this comment using the response to comment #41.

Cl **120G** SC **120G.3.2** P **229** L **29** # **95**

Brown, Matt Huawei
 Comment Type **T** Comment Status **R** ERL value (bucket5)

The module output ERL value is TBD.

SuggestedRemedy

Replace TBD with an appropriate value.

Response Response Status **C**

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.

Cl **120G** SC **120G.3.2.1** P **229** L **51** # **182**

Maki, Jeffery Juniper Networks
 Comment Type **T** Comment Status **A** C2M modes

For host management of module equalization, it would be aligned with modern management interface specifications (e.g., CMIS with use of SFF-8024 Table 4-5 Host Electrical Interface Codes) to designate a nomenclature for the configuration that the module advertises it supports and the host selects. Since there are only two states to choose between, short and long, this is a very practical approach.

SuggestedRemedy

Add immediately after first occurrence of tx_eq_state the text, "also designated as 100GAUI-1-S or 100GAUI-1-L for 100GAUI-1 C2M, 200GAUI-2-S or 200GAUI-2-L for 200GAUI-2 C2M and 400GAUI-4-S or 400GAUI-4-L for 400GAUI-4 C2M." For the second occurrence of tx_eq_state, insert immediately after "tx_eq_state is 0" the text "or 100GAUI-1-S is selected for 100GAUI-1 C2M, or 200GAUI-2-S is selected for 200GAUI-2 C2M or 400GAUI-4-S is selected for 400GAUI-4 C2M." For the third occurrence of tx_eq_state, insert immediately after "tx_eq_state is 1" the text "or 100GAUI-1-L is selected for 100GAUI-1 C2M, or 200GAUI-2-L is selected for 200GAUI-2 C2M or 400GAUI-4-L is selected for 400GAUI-4 C2M." For the fourth occurrence of tx_eq_state, insert immediately after "tx_eq_state" the text "or the use of 100GAUI-1-S or 100GAUI-1-L for 100GAUI-1 C2M, 200GAUI-2-S or 200GAUI-2-L for 200GAUI-2 C2M and 400GAUI-4-S or 400GAUI-4-L for 400GAUI-4 C2M." Note this is very similar to BiDi optics that designate a base PMD name and an extended name for the "down" and "up" PMD. See for example Clause 58.1 for 100BASE-BX10, where it is written "100BASE-BX10-D PMD at one end and a 100BASE-BX10-U PMD at the other." Here we use the extended AUI name to indicate choice of equalization, short or long.

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/maki_3ck_01b_1020.pdf

Implement with editorial license the proposal in slide 9 of the referenced presentation.

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

Cl **120G** SC **120G.3.2.2** P **230** L **6** # **183**

Maki, Jeffery Juniper Networks
 Comment Type **T** Comment Status **A** C2M modes

For host management of module equalization, it would be aligned with modern management interface specifications (e.g., CMIS with use of SFF-8024 Table 4-5 Host Electrical Interface Codes) to designate a nomenclature for the configuration that the module advertises it supports and the host selects. Since there are only two states to choose between, short and long, this is a very practical approach.

SuggestedRemedy

Insert immediately after "tx_eq_state set to 0" the text "or 100GAUI-1-S is selected for 100GAUI-1 C2M, or 200GAUI-2-S is selected for 200GAUI-2 C2M or 400GAUI-4-S is selected for 400GAUI-4 C2M." Insert immediately after "tx_eq_state set to 1" the text "or 100GAUI-1-L is selected for 100GAUI-1 C2M, or 200GAUI-2-L is selected for 200GAUI-2 C2M or 400GAUI-4-L is selected for 400GAUI-4 C2M."

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #182.

Cl **120G** SC **120G.3.2.3** P **231** L **16** # **145**

Ghiasi, Ali Ghiasi Quantum/Inphi
 Comment Type **TR** Comment Status **R** 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.

Response Response Status **C**

REJECT.

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

Cl **120G** SC **120G.3.3** P **231** L **43** # **99**

Brown, Matt Huawei
 Comment Type **T** Comment Status **A** ERL value (bucket5)

The host input ERL value is TBD.

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 #114.

Cl **120G** SC **120G.3.3.2** P **232** L **18** # **211**

Ran, Adeo Intel
 Comment Type **T** Comment Status **A** 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.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve this comment using the response to comment #41.

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** # **100**
 Brown, Matt Huawei
 Comment Type **T** Comment Status **A** 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.
 Response Response Status **C**
 ACCEPT IN PRINCIPLE.
 [Editor's note: Addresses incomplete specification.]
 Resolve this comment using the response to comment #41.

Cl **120G** SC **120G.3.3.2** P **232** L **18** # **101**
 Brown, Matt Huawei
 Comment Type **T** Comment Status **A** 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.
 Response Response Status **C**
 ACCEPT IN PRINCIPLE.
 [Editor's note: Addresses incomplete specification.]
 Resolve this comment using the response to comment #41.

Cl **120G** SC **120G.3.4** P **235** L **11** # **104**
 Brown, Matt Huawei
 Comment Type **T** Comment Status **R** ERL value (bucket5)
 The module input ERL value is TBD.
SuggestedRemedy
 Replace TBD with an appropriate value.
 Response Response Status **C**
 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.

Cl **120G** SC **120G.3.4.1** P **231** L **35** # **105**
 Brown, Matt Huawei
 Comment Type **T** Comment Status **A** 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.
 Response Response Status **C**
 ACCEPT IN PRINCIPLE.
 [Editor's note: Addresses incomplete specification.]
 Resolve this comment using the response to comment #41.

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

CI 120G SC 120G.3.4.1 P 235 L 34 # 106

Brown, Matt Huawei

Comment Type T Comment Status A 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.

Response Response Status C

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.

CI 120G SC 120G.3.4.1.1 P 237 L 14 # 109

Brown, Matt Huawei

Comment Type T Comment Status A TP4a criteria

For the module input stressed eye high-loss case the criteria to have CTLE setting greater than a certain value is not relevant because: (a) there are two gain parameters and (b) the reference receiver includes a DFE. Regardless, the minimum CTLE setting value is TBD.

SuggestedRemedy

Either:

(a) delete the following text:

"This CTLE setting has to be greater than or equal to TBD dB." on line 13, and "except that the restriction that the CTLE setting has to be greater than or equal to TBD dB does not apply" on line 18

OR

(b) provide an alternate relevant criteria.

Response Response Status C

ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Replace the sentence with the following:

"The CTLE setting, gdc+gdc2, has to be less than or equal to -13 dB."

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

Ran, Adeo Intel

Comment Type T Comment Status A 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 unambiguously.

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 $t_s + UI/2$ ".

Response Response Status C

ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve this comment using the response to comment #41.

CI 120G SC 120G.5.2 P 241 L 23 # 102

Brown, Matt Huawei

Comment Type T Comment Status A 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.

Response Response Status C

ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve this comment using the response to comment #41.

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CI 120G SC 120G.5.2 P 241 L 27 # 257

Dawe, Piers Nvidia
 Comment Type TR Comment Status A 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.

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve this comment using the response to comment #41.

CI 120G SC 120G.6.3 P 243 L 29 # 185

Maki, Jeffery Juniper Networks
 Comment Type T Comment Status A (bucket1p)

Major capability/option for the host is missing that is already listed for the module.

SuggestedRemedy

Add row to table with Item = ADE-H; Feature = Adaptive Equalization; Subclause = 120G.3.3; Value/Comment = See 120G.3.3; Status = M; Support = Yes [].

Response Response Status C

ACCEPT IN PRINCIPLE.

The capability is specified in 120G.3.3, but has not yet been listed in the PICS.

A PICS item for a similar requirements against the module input (see 120G.3.4)

Implement the suggested remedy with editorial license, except insert the new item ahead of RH1 in the table in 120G.6.4.3.

Also, move the PICS item ADE from 120G.6.3 to 120G.6.4.4. Implement with editorial license.

CI 120G SC 120G.6.3 P 243 L 30 # 184

Maki, Jeffery Juniper Networks
 Comment Type T Comment Status A C2M modes

Major capability/option for the module is missing.

SuggestedRemedy

Add one row to the table. (1) with Item = EQ; Feature = (100GAUI-1-S and 100GAUI-1-L) or (200GAUI-2-S and 200GAUI-2-L) or (400GAUI-4-S and 400GAUI-4-L); Subclause = 120G.3.2.1; Value/Comment = See 120G.3.2.1; Status = M; Support = Yes [].

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #182.

CI 162 SC 162.9.3 P 146 L 27 # 3

Mellitz, Richard Samtec
 Comment Type TR Comment Status A 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

Response Response Status C

ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve using the response to comment #114.

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 P 146 L 42 # 47

Ran, Adeel Intel
 Comment Type T Comment Status A PMD control

(CC)
 for c(0), PRESET 2 in Table 162-11 has a value of 0.5 (+/-half of a step). To enable this value, the maximum value at minimum state should be no higher than 0.5.

Change should also be applied in 162.9.3.1.5.

Also applies to KR, Table 163-5 (163.9.2) and to AUI-C2C, Table 120F-1 (120F.3.1.1) which should work over lower-loss channels.

SuggestedRemedy

Change 0.54 to 0.5, in all places listed in the comment.

Response Response Status C
 ACCEPT.

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

Cl 162 SC 162.9.3 P 146 L 48 # 48

Ran, Adeel Intel
 Comment Type T Comment Status A 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.

Response Response Status C
 ACCEPT IN PRINCIPLE.

Resolve using the response to comment #190.

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

Cl 162 SC 162.9.3 P 146 L 48 # 186

Calvin, John Keysight Technologies
 Comment Type T Comment Status A 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

Response Response Status C
 ACCEPT IN PRINCIPLE.

Resolve using the response to comment #190.

Cl 162 SC 162.9.3.1.2 P 149 L 6 # 124

Hidaka, Yasuo Credo Semiconductor
 Comment Type T Comment Status A vf

The definition of steady-state voltage vf in clause 136.9.3.1.2 uses the linear fit pulse p(k). The linear fit pulse p(k) is calculated with Dp=3 in clause 136, whereas it is calculated with Dp=4 in clause 162. It is not clear which procedure is used to calculate the linear fit pulse p(k).

SuggestedRemedy

Change "The steady-state voltage vf is defined in 136.9.3.1.2, and is determined using Nv=200."

to

"The steady-state voltage vf is defined in 136.9.3.1.2, and is determined using Nv=200 and linear fitted pulse p(k) calculated by the procedure in 162.9.3.1.1."

Response Response Status C
 ACCEPT.

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Cl 162 SC 162.9.3.1.4 P 149 L 43 # 50
 Ran, Adeel Intel
 Comment Type E Comment Status A TX coefficients
 "When coef_sel is -3, -2, -1, 0, or 1," - the list includes all possible values, so there is no need for this phrase.
 SuggestedRemedy
 Delete the quoted phrase.
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 Implement the suggested remedy with editorial license.

Cl 162 SC 162.9.3.3 P 150 L 39 # 189
 Calvin, John Keysight Technologies
 Comment Type T Comment Status A EO jitter (bucket5)
 Based on Sleight/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
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 Resolve using the response to comment #190.

Cl 162 SC 162.9.3.3 P 150 L 40 # 52
 Ran, Adeel Intel
 Comment Type T Comment Status A 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.
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 Resolve using the response to comment #190.
 [Editor's note: CC: 120F, 162]

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Cl 162 SC 162.9.3.4 P 151 L 12 # 217

Dawe, Piers

Nvidia

Comment Type T Comment Status A 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.

Response Response Status C

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]

Cl 162 SC 162.9.3.4 P 151 L 16 # 157

Dudek, Mike

Marvell.

Comment Type E Comment Status A 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

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #176.

Cl 162 SC 162.9.4 P 151 L 44 # 4

Mellitz, Richard

Samtec

Comment Type TR Comment Status A 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

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #114.

Cl 162 SC 162.9.4.3 P 152 L 32 # 131

Ghiasi, Ali

Ghiasi Quantum/Inphi

Comment Type TR Comment Status D RITT

Given that for low loss cable the loss is controlled to 1 dB, we should do the same for high loss cable

SuggestedRemedy

Increase the cable assembly test case min loss from 17.75 to 18.75 dB

Proposed Response Response Status Z

REJECT.

This comment was WITHDRAWN by the commenter.

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Cl 162 SC 162.11 P 156 L 37 # 110
 Champion, Bruce TE Connectivity
 Comment Type T Comment Status R ERL value (bucket5)
 Cable Assembly ERL listed as TBD in Table 162-16
 SuggestedRemedy
 TBD to be changed to 7.4 dB. See presentation
 Response Response Status C
 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.

Cl 162 SC 162.11.2 P 157 L 10 # 174
 Haser, Alex Molex
 Comment Type TR Comment Status A 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
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 [Editor's note: Addresses incomplete specification.]
 Resolve using the response to comment #173.

Cl 162 SC 162.11.2 P 157 L 10 # 17
 DiMinico, Christopher MC Communications
 Comment Type TR Comment Status A CA IL (bucket5)
 Replace TBD
 SuggestedRemedy
 Replace TBD with 0.05
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 [Editor's note: Addresses incomplete specification.]
 Resolve using the response to comment #173.

Cl 162 SC 162.11.2 P 157 L 26 # 221
 Dawe, Piers Nvidia
 Comment Type TR Comment Status A 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
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 Resolve using the response to comment #173.

Cl 162 SC 162.11.3 P 158 L 9 # 113
 Kocsis, Sam Amphenol
 Comment Type TR Comment Status A ERL parameter (bucket5)
 CR ERL parameter N is "3500"
 SuggestedRemedy
 Change to "5100", see background/consensus presentation
 Response Response Status C
 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.

Cl 162 SC 162.11.3 P 158 L 12 # 175
 Haser, Alex Molex
 Comment Type T Comment Status R 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%)
 Response Response Status C
 REJECT.
 The response to closed comment #114 indicates that there was no consensus to make the changes proposed in this comment.

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Cl 162 SC 162.11.3 P 158 L 15 # 176

Haser, Alex Molex
 Comment Type ER Comment Status A 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

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #217.

Cl 162B SC 162B.1.3.1 P 255 L 35 # 21

DiMinico, Christopher MC Communications
 Comment Type TR Comment Status A MTF IL

Modify Equation (162B-3) ILMTFMAX > 40 GHz to align with achievable MTF insertion loss

SuggestedRemedy

See supporting presentation diminico_3ck_1020.pdf

Response Response Status C

ACCEPT IN PRINCIPLE.

Slides 8 to 11 of the following presentation was reviewed:
https://www.ieee802.org/3/ck/public/20_10/diminico_3ck_03a_1020.pdf

The MAX IL mask proposed on slide 11 of diminico_03a relaxes IL at frequencies greater than 40 GHz.

Implement the ILMTFMAX specifications proposed on slide 11 of diminico_03a.

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

Dawe, Piers Nvidia
 Comment Type E Comment Status A 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.

Response Response Status C

ACCEPT.

Cl 162B SC 162B.1.3.2 P 256 L 46 # 22

DiMinico, Christopher MC Communications
 Comment Type TR Comment Status R 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

Response Response Status C

REJECT.

The following presentation was reviewed by the task force:
https://www.ieee802.org/3/ck/public/20_10/diminico_3ck_03a_1020.pdf

The response to closed comment #178 changes the differential return loss specification from normative to informative.

The RL mask proposed on slide 12 of diminico_03a relaxes RL at frequencies greater than 40 GHz.

There is no consensus to make the proposed change.

Cl 162B SC 162B.1.3.6 P 260 L 48 # 20

DiMinico, Christopher MC Communications
 Comment Type TR Comment Status A MTF XTALK

Replace TBD

SuggestedRemedy

Replace TBD with 1.6 mV

Response Response Status C

ACCEPT.

[Editor's note: Addresses incomplete specification.]

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Cl 163 SC 163.9.2 P 176 L 44 # 202
 Wu, Mau-Lin MediaTek
 Comment Type T Comment Status A 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.
 Response Response Status C
 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.

Cl 163 SC 163.9.2 P 177 L 16 # 187
 Calvin, John Keysight Technologies
 Comment Type T Comment Status A 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
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 Resolved using the response to comment #190.

Cl 163 SC 163.9.2.3 P 179 L 39 # 31
 Healey, Adam Broadcom Inc.
 Comment Type T Comment Status D ERL tfx
 It seems that "T_fx" should be 0 for TP0v-based ERL method given the test fixture is to be embedded and not de-embedded (and not time-domain gated).
 SuggestedRemedy
 Replace the following sentence "The value of Tfx is twice the delay from TP0 to TP0v." with "The value of T_fx is 0." A similar change would also be appropriate for 120F.3.1.1.
 Proposed Response Response Status Z
 REJECT.
 This comment was WITHDRAWN by the commenter.

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Cl 163 SC 163.9.3.1 P 180 L 33 # 67

Ran, Adeel Intel
 Comment Type T Comment Status A ERL value

The method of Annex 163A can be used for receiver ERL just like it is for transmitter ERL, that is, specify difference from a reference value.

In the case of the receiver, there may be a tradeoff between optimizing for ERL and optimizing for BER. The receiver should be allowed more design freedom. Therefore the minimum dERL should be lower than for the receiver.

A minimum dERL of -5 dB may be acceptable. Alternatively, dERL can be made informative (recommendation).

Also applies to 120F.3.2.1.

SuggestedRemedy

Change receiver ERL subclause (163.9.3.1) to match 163.9.2.3.

In Table 163-9, change ERL (min) to dERL(Min) with value -5 dB.

Change subclause 120F.3.2.1 to match 163.9.3.1 (apply the change above).

In Table 120F-4, change ERL (min) to dERL(Min) with value -5 dB.

Consider changing Rx dERL from a normative specification (shall) to a recommendation (should).

Response Response Status C

ACCEPT IN PRINCIPLE.

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 (-3 dB).

There was no consensus to make a change to the normative nature of RX dERL.

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

Cl 163 SC 163.10.3 P 186 L 41 # 10

Mellitz, Richard Samtec
 Comment Type TR Comment Status A 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

Response Response Status C

ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Resolve using the response to comment #114.

Cl 163 SC 163.13.4.3 P 192 L 8 # 12

Mellitz, Richard Samtec
 Comment Type TR Comment Status D ERL wording

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.