

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

Cl 93A SC 93A.1 P 195 L 24 # 27

Healey, Adam Broadcom Inc.

Comment Type E Comment Status A description

What is a "pad" in this context and does the description really fit this parameter? Note that this change to the parameter name, should it persist, should be propagated to every COM parameter table in IEEE Std 802.3 and not just the ones created or modified by this amendment. This does not seem worthwhile since the change to the name does not add any descriptive value.

SuggestedRemedy

Remove "pad" from the description of this parameter (i.e., undo the change). Update Tables 162-18, 163-11, and 120F-7 accordingly.

Response Response Status C

ACCEPT IN PRINCIPLE.

Implement the suggested remedy. Also change "single-ended device bump capacitance" to "single-ended bump capacitance".

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

Cl 93A SC 93A.1.2.1 P 198 L 10 # 234

Dawe, Piers Nvidia

Comment Type T Comment Status R cascade

It may be helpful to the reader (particularly someone programming this function) to know that cascade() is associative.

SuggestedRemedy

Add a sentence:
cascade is associative: $\text{cascade}(S(w), \text{cascade}(S(x), S(y))) = \text{cascade}(\text{cascade}(S(w), S(x)), S(y))$.

Response Response Status C

REJECT.

Although the forms shown in the suggested remedy are valid, they can be deduced from equations already provided.

Cl 120F SC 120F.3.1 P 208 L 18 # 83

Brown, Matt Huawei

Comment Type T Comment Status A vf

A value for dv_f 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.

[Editor's note: Addresses incomplete specification.]

Cl 120F SC 120F.3.1 P 208 L 20 # 13

Mellitz, Richard Samtec

Comment Type TR Comment Status A vpeak

We need to specify V_peak/V_f not V_peak I.e. pulse peak loss

SuggestedRemedy

Change
Difference between measured and reference linear fit pulse peak
To
Difference between measured and reference linear fit pulse peak loss (min) $d(V_{\text{peak}}/V_f)$

Response Response Status C

ACCEPT IN PRINCIPLE.

It is assumed that the comment is requesting that the specification be for the ratio of V_peak/V_f, rather than just V_peak.

If that is the case, implement the following with editorial license...

To make the parameter easier to read and use, define the ratio R_peak equal to V_peak/V_f.

Define the difference between the reference and measured ratio as dR_peak.

For task force review.

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

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Cl 120F SC 120F.3.1 P 208 L 21 # 84

Brown, Matt Huawei

Comment Type T Comment Status A vpeak

A value for dv_peak 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 response to comment #13 replaces the specification of dv_peak to dR_peak.

Change the name of dv_peak to dR_peak and use the value 0 with no units.

Cl 120F SC 120F.3.1.1 P 209 L 18 # 78

Brown, Matt Huawei

Comment Type E Comment Status A parameter name

The parameter name "Difference between measured and reference steady-state voltage" is a real mouthful. A more concise name would be beneficial.

SuggestedRemedy

Change "Difference between measured and reference steady-state voltage" to "difference steady-state voltage". Apply throughout 163, 120F, and 163A.

Response Response Status C

ACCEPT.

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

Cl 120F SC 120F.3.1.1 P 209 L 21 # 79

Brown, Matt Huawei

Comment Type E Comment Status A parameter name

The parameter name "Difference between measured and reference linear fit pulse peak" is a real mouthful. A more concise name would be beneficial.

SuggestedRemedy

Change "Difference between measured and reference linear fit pulse peak" to "linear fit pulse peak". Apply throughout 163, 120F, and 163A.

Response Response Status C

ACCEPT IN PRINCIPLE.

The response to comment #13 proposes to replace v_peak with R_peak.

Change "Difference between measured and reference linear fit pulse peak" to "difference peak ratio".

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

Cl 120F SC 120F.3.1.1 P 209 L 14 # 77

Brown, Matt Huawei

Comment Type E Comment Status A parameter name

The parameter name "Difference between measured and reference effective return loss" is a real mouthful. A more concise name would be beneficial.

SuggestedRemedy

Change "Difference between measured and reference effective return loss" to "difference effective return loss". Apply throughout 163, 120F, and 163A.

Response Response Status C

ACCEPT IN PRINCIPLE.

Note that the proposed response to comment #56 proposes to use "ERL" rather than "effective return loss".

Implement the suggested remedy considering the closed response to comment #56 with editorial license.

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

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

Cl 120F SC 120F.3.2 P211 L 32 # 14
 Mellitz, Richard Samtec
 Comment Type TR Comment Status A TP5v (bucket2)
 TP5a is moot and replaced by TP5v
 SuggestedRemedy
 point to Rx table in 163 line done in table 120F-1
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 Resolve using the response to comment #40.

Cl 120F SC 120F.3.2.3 P213 L 1 # 280
 Li, Mike Intel
 Comment Type TR Comment Status A RITT
 Np TBD
 SuggestedRemedy
 Np = 11, see li_3ck_01_0920
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 [Editor's note: Addresses incomplete specification.]
 The following presentation was reviewed by the task force:
https://www.ieee802.org/3/ck/public/20_10/li_3ck_01_1020.pdf
 Implement the suggested remedy.

Cl 120F SC 120F.3.2.3 P213 L 1 # 86
 Brown, Matt Huawei
 Comment Type T Comment Status A RITT
 For the SNDR measurement in item e) of receiver interference tolerance test considerations the value for N_p is not set.
 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 #280.

Cl 120F SC 120F.3.2.3 P213 L 31 # 2
 Mellitz, Richard Samtec
 Comment Type TR Comment Status R RITT
 DFE4_RSS > 0.05 may be difficult to achieve with test equipment. The published C2C have a DFE4_RSS range between 0.03 V and 0.065 with a mean of 0.047 .
 SuggestedRemedy
 Since these represent design expectation set DFE4_RSS to 0.03 which would be achievable in test setups.
 Response Response Status C
 REJECT.
 There is no consensus to make the proposed change.

Cl 120F SC 120F.3.2.4 P214 L 16 # 201
 Wu, Mau-Lin MediaTek
 Comment Type T Comment Status A RITT
 It mentions that "The receiver under test shall meet the FEC symbol error ratio requirement for each case in Table 162-15". However, the FEC symbol error ratio requirement is 1e-3 in Table 162-15, which is for KR & CR. For C2C application, the FEC symbol error ratio requirement shall be 1e-4.
 SuggestedRemedy
 Change the sentence to "The receiver under test shall meet 1e-4 FEC symbol error ratio requirement for each case in Table 162-15."
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 The comment points out a valid issue. However, it would be better to coordinate the specification method of symbol error ratio for the 3 interfaces.
 The text in 162 points to Table 162-14 for the FEC symbol error ratio so having it in the jitter tolerance table is not necessary or helpful.
 Remove FEC symbol error ratio row in Table 162-15.
 In 163.9.3.4, change the sentence on page 183, line 50 to:
 "The receiver under test shall meet the FEC symbol error ratio in Table 163-10, for each case in Table 162-15."
 In 120F.3.2.4, change the sentence on page 214, line 16 to:
 "The receiver under test shall meet the FEC symbol error ratio in Table 120F-5 for each case in Table 162-15."
 In several locations fix capitalization and change "FEC Symbol error ratio" to "FEC symbol error ratio".
 [Editor's note: CC: 162, 163, 120F]

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Cl **120G** SC **120G.3.1** P **224** L **9** # **148**

Ghiasi, Ali Ghiasi Quantum/Inphi

Comment Type **TR** Comment Status **R** CM DC voltage

KR/CR chips are defiend with common mode of 0.2 V to 1.0 V, there is no reason to define the same host to have such large output common mode voltage. If the CDR in the module is BiCMOS and uses 3.3 V then one will use the right voltage rating but if the CDR in the module is CMOS then one doesn't need to use 3.3V+ DC blocks.

SuggestedRemedy

Reduce common mode min to 0.2 V and common mode max to 1.0 V

Response Response Status **C**

REJECT.

In 802.3ck...

CR TX DC CM voltage (max) = 1.9 V

KR TX DC CM voltage (max/min) = 1.0/0.2 V

C2C TX DC CM voltage (max/min) = 1.9/0 V

C2M host in/out CM voltage (max/min) = 2.8/-0.3 V

C2M module in/out CM voltage (max/min) = 2.85/-0.35 V

There is not good alignment of CM voltage amongst each of the interfaces listed above. It would make more sense align the module interfaces with the CR specifications. Alternately, align all of the interfaces.

There is no consensus to make the proposed changes.

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

Cl **120G** SC **120G.3.2** P **229** L **34** # **147**

Ghiasi, Ali Ghiasi Quantum/Inphi

Comment Type **TR** Comment Status **D** CM DC voltage

KR/CR chips are defiend with common mode of 0.2 V to 1.0 V, there is no reason to define the same host with such high common mode.

If the CDR in the module is BiCMOS and uses 3.3 V then one will use the right voltage rating but if the CDR in the module is CMOS then one doesn't need to use 3.3V+ DC blocks.

SuggestedRemedy

Reduce common mode min to 0.2 V and common mode max to 1.0 V

Proposed Response Response Status **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **120G** SC **120G.3.3** P **231** L **47** # **146**

Ghiasi, Ali Ghiasi Quantum/Inphi

Comment Type **TR** Comment Status **D** CM DC voltage

KR/CR chips are defiend with common mode of 0.2 V to 1.0 V, there is no reason to define the same host with such high common mode

SuggestedRemedy

Reduce common mode min to 0.2 V and common mode max to 1.0 V

Proposed Response Response Status **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **120G** SC **120G.3.4** P **235** L **18** # **149**

Ghiasi, Ali Ghiasi Quantum/Inphi

Comment Type **TR** Comment Status **D** CM DC voltage

KR/CR chips are defiend with common mode of 0.2 V to 1.0 V, there is no reason to define the same host to have such large output common mode voltage. If the CDR in the module is BiCMOS and uses 3.3 V then one will use the right voltage rating but if the CDR in the module is CMOS then one doesn't need to use 3.3V+ DC blocks.

SuggestedRemedy

Reduce common mode min to 0.2 V and common mode max to 1.0 V

Proposed Response Response Status **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

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CI 120G SC 120G.4.1 P 238 L 34 # 255

Dawe, Piers Nvidia
 Comment Type T Comment Status A Channel IL

I'm sure there could be an acceptable channel that failed this mask at 45 GHz

SuggestedRemedy

Make the straight section curve down and/or truncate it at 50 GHz

Response Response Status C

ACCEPT IN PRINCIPLE.

It makes sense to align the high-frequency limit with channel IL specifications in 162, 163, and/or 120F. However, even those are inconsistent.

162 specifies 40 GHz.

163 specifies 45 GHz.

120F specifies 53.125 GHz.

Change the upper frequency limit of the informative channel loss for 163, 120F, and 120G to 40 GHz.

CI 162 SC 162.9.3 P 147 L 1 # 49

Ran, Adeel Intel
 Comment Type T Comment Status A editorial

Footnote d includes important information for measurement that should be stated in the test procedure, not as a comment on the table (it does not change the specification).

SuggestedRemedy

Delete footnote d and instead add an informative NOTE in 162.9.3.3 (which is referred to by clause 163 and should also be used for 120F).

Also delete footnote e in Table 163-5.

Response Response Status C

ACCEPT IN PRINCIPLE.

Implement the suggested remedy with editorial license in 163 and equivalently in 120F.

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

CI 162 SC 162.11 P 156 L 18 # 129

Ghiasi, Ali Ghiasi Quantum/Inphi
 Comment Type TR Comment Status R AC coupling

802.3cd standards specified 50 kHz AC coupling but this standard is operating 2x the Baudrate

SuggestedRemedy

Replace 50 KHz with 100 kHz

Response Response Status C

REJECT.

The AC-coupling specification is used throughout 802.3ck and applied to predictive models as well as implemented in 802.3cd cable assemblies. The comment does not provide sufficient evidence for the proposed changed.

CI 162 SC 162.11 P 156 L 19 # 130

Ghiasi, Ali Ghiasi Quantum/Inphi
 Comment Type TR Comment Status R AC coupling

If the AC coupling needs to be 50 KHz or 100 KHz why are we defining capacitor value, actually 100 nF results in 32 KHz cut off

SuggestedRemedy

Remove recommended AC coupling value

Response Response Status C

REJECT.

Resolve using the response to comment #129.

CI 162B SC 162B.1.3.1 P 256 L 26 # 115

Kocsis, Sam Amphenol
 Comment Type TR Comment Status D MTF RL

MTF "FOM_ILD shall be less than (TBD) dB"

SuggestedRemedy

Change to "is recommended to be less than 0.18dB, and ILD(f) shall meet the values determined using the equation below."

ILD(f)<|1|dB for f<26.56GHz

ILD(f)<|3|dB for 26.56<f<40GHz,

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

Cl 163 SC 163.9.2 P 176 L 44 # 61

Ran, Adeo

Intel

Comment Type T Comment Status A vf/vpeak/erl

Table 163-5 has multiple TBDs.

Reference ERL, v_f and v_{peak} are calculated with an idealized package model. Real products deviate from this model, so the limit values may need adjustment.

v_f and v_{peak} may be degraded by a device or package, but that can be mitigated using higher than minimum launch voltage and some equalization. So for dv_f and dv_{peak}, a minimum of 0 V may be acceptable.

There is no straightforward method to improve ERL. So to allow a wide range of implementations, the minimum dERL should be less than 0 dB. A minimum of -3 dB may be acceptable.

SuggestedRemedy

Change value for dv_f in Table 163-5 from TBD to 0.

Change value for dv_{peak} in Table 163-5 from TBD to 0.

Change value for dERL in Table 163-5 from TBD to -3.

Response Response Status C

ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

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

The response to comment #13 replaces the specification of dv_{peak} to dR_{peak}.

Implement suggested remedy with editorial license, except change the name of dv_{peak} to dR_{peak} and use the value 0 with no units.

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

Cl 163 SC 163.9.2 P 176 L 44 # 29

Healey, Adam

Broadcom Inc.

Comment Type T Comment Status A TP0v method

The reference to 163A.3.2.2 is in danger of becoming circular. Annex 163A is mostly written to be generic and states that PHY/interface-specific parameters are "specified by the clause that invokes this method". However, no such specifications can be found in this clause, or in Annex 120F, that provides this information. This includes "test channel requirements", electrical characteristics used to compute S^(tp), values for Tr, fr, At, Tb, etc. One could assume that "test channel" requirements are given in the transmitter test fixture definition in 163.9.2.1, and the other values are the same as those used to compute COM from 163.10.1, but this should not be left to assumptions. It is unclear whether test 1 or test 2 (or test 1 AND test 2) characteristics for S^(tp) should be used and clarity on this point needs to be provided.

SuggestedRemedy

Add a new subclause to Clause 163 and change the reference for "dERL", "dvf", and "dvpeak" to this new subclause. The content of this subclause should be specifications for the PMD/interface-specific parameters that Annex 163A says are to be defined by the "clause that invokes this method". Similar changes would be necessary for Annex 120F.

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #62.

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

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CI 163 SC 163.9.2 P 176 L 48 # 62

Ran, Adeel Intel
 Comment Type T Comment Status A TP0v method

dv_f and dv_peak refer directly to 163A.3.2.1, but some parameters are missing for the calculations:

A_t - should be taken from table 163-11 (or specify as the value 0.4 V)
 z_p - should be the maximum value from table 163-11

SuggestedRemedy

Add a subclause under 162.9.2 (similar to 163.9.2.3 for dERL) to define the calculation of dv_f and dv_peak; in that subclause, point to 163A.3.2.1 and supply the required parameters as in the comment.

Response Response Status C

ACCEPT IN PRINCIPLE.

The response to comment #13 replaces dv_peak with dR_peak.

Implement suggested remedy under 163.9.2 with editorial license addressing dR_peak instead of dv_peak.

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

CI 163 SC 163.9.2 P 176 L 50 # 5

Mellitz, Richard Samtec
 Comment Type TR Comment Status A terminology

We need to specify V_peak/V_f not V_peak. I.e. pulse peak loss

SuggestedRemedy

Change
 Difference between measured and reference linear fit pulse peak
 To
 Difference between measured and reference linear fit pulse peak loss (min) d(V_peak/V_f)

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using response to comment #13.

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

CI 163 SC 163.9.2.1.1 P 177 L 47 # 227

Dawe, Piers Nvidia
 Comment Type T Comment Status A test fixture

Try to exclude unexplored / unnecessary areas of inaccuracy or poor reproducibility in measurement.

SuggestedRemedy

Set a minimum insertion loss for this test fixture as well as a maximum. It could be as low as 1.2 dB which we had before for TP0a, or it could be higher.

Response Response Status C

ACCEPT IN PRINCIPLE.

Add minimum IL 1.7 dB.

CI 163 SC 163.9.2.1.1 P 177 L 48 # 64

Ran, Adeel Intel
 Comment Type T Comment Status A test fixture

ILD definition in 93A.4 should be cross referenced.

This definition requires some parameters. Specifically the transition time Tt, which should correspond to the observable transition time at TP0 (larger than the internal value).

SuggestedRemedy

Append "Insertion loss deviation is calculated as specified in 93A.4, where T_t is 0.1 ns, and f_b and f_t values are taken from Table 163-11."

Response Response Status C

ACCEPT IN PRINCIPLE.

Implement suggested remedy except with T_t set to 0.01 ns.

CI 163 SC 163.9.2.1.2 P 178 L 5 # 161

Dudek, Mike Marvell
 Comment Type T Comment Status A test fixture

There is no specification for the ERL of the test fixture

SuggestedRemedy

Insert a Paragraph "The ERL of the test fixture shall be greater than TBD dB"

Response Response Status C

ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]
 Resolve using the response to comment #65.

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Cl 163 SC 163.9.2.1.2 P 178 L 21 # 65

Ran, Adeel Intel
 Comment Type T Comment Status A test fixture

Per resolution of comment 154 against D1.2 there should be a requirement on test fixture ERL:

"The ERL at TP0v shall be greater than or equal to TBD".

This part has not been implemented.

With N=20 the ERL of the test fixture is expected to be very good. The TBD may be changed to 15 dB (same as in clause 137) if there is consensus.

SuggestedRemedy

Add the following sentence after the table"

"The ERL at TP0v shall be greater than or equal to TBD dB".

Consider changing TBD to 15 dB.

Response Response Status C

ACCEPT IN PRINCIPLE.

[Editor's note: Addresses incomplete specification.]

Insert the following sentence after the table:

"The ERL at TP0v shall be greater than or equal to 15 dB".

Cl 163 SC 163.9.3 P 180 L 17 # 7

Mellitz, Richard Samtec
 Comment Type TR Comment Status A TP5v (bucket2)

TP5a is moot and replaced by TP5v

SuggestedRemedy

remove references to TP5a and replace with TP5v.

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #40.

Cl 163 SC 163.9.3.2 P 181 L 1 # 9

Mellitz, Richard Samtec
 Comment Type TR Comment Status A RX test fixture (bucket2)

There is no reason why the receive test fixture specification should be different from the transmitter one.

SuggestedRemedy

Point to the transmitter specification for test fixture

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #40.

Cl 163 SC 163.9.3.2 P 181 L 1 # 81

Brown, Matt Huawei
 Comment Type T Comment Status A RX test fixture (bucket2)

In Draft 1.3, the transmitter test fixture specification (TP0 to TP0a) was replaced with a new test fixture specification (TP0 to TP0v). The receiver test fixture should be rewritten to match the new transmitter test fixture specification.

SuggestedRemedy

Align the receiver test fixture specification with the new transmitter test fixture specification based upon slide 12 of the following presentation:
https://www.ieee802.org/3/ck/public/adhoc/sept16_20/brown_3ck_adhoc_01a_091620.pdf
 In 163 and 120F, replace all references to TP5a with TP5v.

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #40.

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Cl 163 SC 163.9.3.2 P 181 L 3 # 23

Ben-Artsi, Liav Marvell Semiconductor Ltd.
 Comment Type E Comment Status A TP5v (bucket2)

According to direction of the entire path, TP5a is the input to the test fixture and not the output

SuggestedRemedy

Change: "Unless otherwise noted, measurements of the receiver are made at the output of a test fixture (TP5a) as shown in Figure 163-5." to: "Unless otherwise noted, measurements of the receiver are made at the input of a test fixture (TP5a) as shown in Figure 163-5."

Response Response Status C

ACCEPT IN PRINCIPLE.

Closed comment #40 results in TP5a being updated to TP5v.

Implement the suggested remedy, except replace "TP5a" with "TP5v".

Cl 163 SC 163.9.3.2 P 181 L 3 # 68

Ran, Adeo Intel
 Comment Type T Comment Status A RX test fixture (bucket2)

Receiver test fixture defined here is not realistic (IL of 1.2-1.6 dB at 25.56 GHz). The test fixture specification should be similar to the transmitter's test fixture.

SuggestedRemedy

Change the receiver test fixture subclause (163.9.3.2) to match 163.9.2.1 or point to it.

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #40.

Cl 163 SC 163.9.3.2 P 181 L 19 # 24

Ben-Artsi, Liav Marvell Semiconductor Ltd.
 Comment Type T Comment Status A RX test fixture (bucket2)

The test fixture insertion loss of 1.2-1.6dB is not commonly feasible

SuggestedRemedy

Recommend adjusting TP5a-TP5 fixture characteristics to be the same as those defined for TP0-TP0a.
 Can either define less than 5dB of loss and ILD less than 0.2dB, or even in a simpler manner, just refer to 163.9.2.1.1 (insertion loss), 163.9.2.1.2 (ERL) and 163.9.2.1.3 (common mode RL)

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #40.

Cl 163 SC 163.9.3.2 P 181 L 19 # 230

Dawe, Piers Nvidia
 Comment Type T Comment Status A RX test fixture (bucket2)

We agreed that a test fixture test fixture between 1.2 dB and 1.6 dB is not practical.

SuggestedRemedy

Make the receiver test fixture like the transmitter test fixture.

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #40.

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Cl 163 SC 163.9.3.2 P 181 L 26 # 193

Wu, Mau-Lin MediaTek
 Comment Type T Comment Status A RX test fixture (bucket2)

The sentence here is to define the "differential return loss" of the test fixture (TP5a) and refer to Equation (163-2) & Figure 163-6. However, the referred equation and figure are not correct.
 The reason is that the original equation (Equation 163-2) & figure (Figure 163-4) in D1p2 had been removed from D1p3

SuggestedRemedy

Copy Equation 163-2 & Figure 163-4 in D1p2 & related description to D1p3. Put them in the appropriate location & correct the referred Equation ID & Figure ID.

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #40.

Cl 163 SC 163.9.3.2 P 181 L 26 # 165

Dudek, Mike Marvell.
 Comment Type TR Comment Status A RX test fixture (bucket2)

Equation 163-2 and figure 163-6 are nothing to do with return loss. Also it would be better to use ERL as the parameter.

SuggestedRemedy

Change to match the Tx test fixture Replace the sentence referring to return loss with "The Receiver test fixture shall meet the specification for ERL in 163.9.2.1.2"

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #40.

Cl 163 SC 163.9.3.2 P 181 L 26 # 25

Ben-Artzi, Liav Marvell Semiconductor Ltd.
 Comment Type T Comment Status A RX test fixture (bucket2)

The differential return loss of the test fixture is defined to meet Equation (163-2) and 163-3 which are an incorrect reference

SuggestedRemedy

Recommend replacing with a reference to 163.9.2.1.2 (Tx test fixture ERL)

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #40.

Cl 163 SC 163.9.3.3 P 181 L 34 # 70

Ran, Adeel Intel
 Comment Type T Comment Status A RITT

The exception that "transmitter equalization is configured by management..." is taken from the AUI-C2C (Annex 120D) which does not have a training protocol.

This clause is for the KR PMD that does have a training protocol defined, so this exception is out of place. The procedure in Annex 93C should be used as is.

SuggestedRemedy

Delete the sentence "with the exception that transmitter equalization is configured by management (see 120D.3.2.3) to the settings that provide the lowest FEC symbol error ratio".

Response Response Status C

ACCEPT.

Cl 163 SC 163.9.3.3 P 181 L 35 # 231

Dawe, Piers Nvidia
 Comment Type T Comment Status A RITT

This isn't right: "transmitter equalization is configured by management (see 120D.3.2.3) to the settings that provide the lowest FEC symbol error ratio". It's the receiver's responsibility to choose an adequate transmitter equalization setting. Further, the transmitter could be a test instrument that doesn't do 802.3 management. What has 120D.3.2.3 got to do with it? Was this text copied from a C2C clause?

SuggestedRemedy

Correct the text. The transmitter equalization is what the receiver asks for after it's had a chance to train, or a default if it doesn't ask for anything in particular.
 Same for 163.9.3.4 Receiver jitter tolerance.

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve the issue with 163.9.3.3 using the response to comment #70.

For the issue with 163.9.3.4, implement the changes highlighted in slide 5 of https://www.ieee802.org/3/ck/public/20_10/ran_3ck_03_1020.pdf.

Except also remove item d).

Implement with editorial license.

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

Cl 163 SC 163.9.3.3 P 181 L 42 # 194

Wu, Mau-Lin MediaTek

Comment Type T Comment Status A RITT

The reference equation, Equation (163-2), is not correct. It shall be the original equation (equation 163-2) in D1p2 and be removed from D1p3.

SuggestedRemedy

Copy Equation 163-2 in D1p2 & related description to D1p3. Put them in the appropriate location & correct the referred Equation ID.

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #71.

Cl 163 SC 163.9.3.3 P 181 L 42 # 71

Ran, Adeo Intel

Comment Type T Comment Status A RITT

In item b, Equation 163-2 is a calculation of A_DD, not related to return loss.

The transmitter's test fixture only has an ERL spec, and that is defined from TP0v towards the DUT. It is not an appropriate ERL for TP5 replica (e.g. has only N=20 UI).

The breakout from the package is typically controlled by the PMD's vendor and is practically part of the DUT. Therefore we should not add ERL specifications for the TP5 replica - they may be irrelevant and even incorrect for a specific implementation.

This is similar to the case of a transmitter's test fixture where ERL is specified toward the DUT, but not from the DUT toward TP0v.

Instead, the test channel's ERL should be specified to meet the ERL specifications in 163.10.3.

Also applies in 120F.3.2.3 item b which has "The return loss of the test setup in Figure 93C-4 measured at TP5 replica towards TPt meets the return loss specifications in 163.9.2.1" - but there are no return loss specifications in 163.9.2.1 anymore.

SuggestedRemedy

Replace item b with the following:

The return loss of the test channel measured at TP5a towards TPt meets the requirements in 163.10.3.

Apply similar change in 120F.3.2.3 with the reference to requirements in 120F.4.3 instead.

Response Response Status C

ACCEPT IN PRINCIPLE.

Replace item b with "The effective return loss of the test channel measured at TP5 replica towards TPt meets the requirements in 163.10.3."

Apply similar change in 120F.3.2.3 with the reference to requirements in 120F.4.3 instead.

Implement with editorial license.

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

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

CI 163 SC 163.9.3.3 P 181 L 42 # 166
 Dudek, Mike Marvell.
 Comment Type TR Comment Status A RITT
 Equation 163-2 is nothing to do with return loss. Also it would be better to use ERLas the parameter.
SuggestedRemedy
 Change to "The ERL of the test setup in Figure 93C-4 measured at TP5 replica towards TPt meets the requirements for ERL in 163.9.2.1.2 with the exception that the length of the reflection signal N is 3500 UI"
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 Resolve using the response to comment #71

CI 163 SC 163.9.3.3 P 182 L 3 # 279
 Li, Mike Intel
 Comment Type TR Comment Status A RITT
 Np TBD
SuggestedRemedy
 Np = 29, see li_3ck_01_0920
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 [Editor's note: Addresses incomplete specification.]
 The following presentation was reviewed by the task force:
https://www.ieee802.org/3/ck/public/20_10/li_3ck_01_1020.pdf
 Implement the suggested remedy.

CI 163 SC 163.9.3.4 P 183 L 41 # 200
 Wu, Mau-Lin MediaTek
 Comment Type T Comment Status A RJT
 The "Case E from Table 162-15" here is not correct. The original one in D1p2 is "Case E from Table Table 163-9", where Case E is the case with Jitter frequency 40 MHz. However, the "Case E from Table 162-15" in D1p3 is the case with Jitter frequency 12 MHz. There is one similar errors in step c) in 120F.3.2.4 at page 214.
SuggestedRemedy
 Change "Case E from Table 162-15" to "Case F from Table 162.15" both in step c) in 163.9.3.4 at page 183 & step c) in 120F.3.2.4 at page 214.
 Response Response Status C
 ACCEPT.
 [Editor's note: CC: 120F, 163]

CI 163 SC 163.10.2 P 186 L 28 # 232
 Dawe, Piers Nvidia
 Comment Type T Comment Status A channel IL
 A -60 dB response at 45 GHz, 32 dB below the response at Nyquist, can't matter, but a respectable channel could fail this limit.
SuggestedRemedy
 Replace the straight part of the limit with one that curves down.
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 Equation for IL mask is not provided.
 The suggested remedy does not provide sufficient details to implement.
 Resolve using the response to comment #255.

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

Cl 163 SC 163.10.5 P 186 L 48 # 138

Ghiasi, Ali Ghiasi Quantum/Inphi
 Comment Type TR Comment Status R AC coupling

802.3cd standards specified 50 kHz AC coupling but this standard is operating 2x the Baudrate

SuggestedRemedy

Replace 50 KHz with 100 kHz

Response Response Status C

REJECT.

Resolve using the response to comment #129.

Cl 163 SC 163.13.4.4 P 192 L 33 # 11

Mellitz, Richard Samtec
 Comment Type TR Comment Status A TP5v (bucket2)

TP5a is moot and replaced by TP5v

SuggestedRemedy

remove references to TP5a and replace with TP5v. Change RC2 to DERL at TP5v

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #40.

Cl 163 SC 163.A.3.1 P 281 L 25 # 139

Ghiasi, Ali Ghiasi Quantum/Inphi
 Comment Type TR Comment Status R TP0v method

Why is the cascaded reference package with test fixture called virtual reference channel, shouldn't this be the DUT reference channel? When testing a real device the package will be DUT package, using reference is confusing as it could imply IEEE COM reference package.

SuggestedRemedy

Repalce virtual with DUT, and replace reference package with DUT package

Response Response Status C

REJECT.

IEEE 802.3 specifies interfaces not devices.

Cl 163A SC 163A.1 P 280 L 47 # 205

Wu, Mau-Lin MediaTek
 Comment Type T Comment Status R TP0v method

By adopting "TP0v" test fixture methodology, not only ERL, vf, vpeak, but also AC common-mode RMS voltage shall be scaled by IL of TP0v test fixture.

SuggestedRemedy

If we take the V_ACCM as the notation for "AC common-mode RMS voltage", propose to change the blocks of "Measured ERL, V_f, V_peak" & "Reference ERL, V_f, V_peak" in Figure 163A-1 to "Measured ERL, V_f, V_peak, V_ACCM" & "Reference ERL, V_f, V_peak, V_ACCM".

The paragraphs in Annex 163 related to this change shall be modified accordingly. Some new paragraphs may need if necessary.

Plan to provide one contribution, wu_3ck_01_1120.pdf, for more details.

Response Response Status C

REJECT.

The following presentation was reviewed by the task force:
https://www.ieee802.org/3/ck/public/20_10/wu_3ck_01_1020.pdf

There is no consensus to implement the proposed changes.

Cl 163A SC 163A.2 P 281 L 3 # 128

Hidaka, Yasuo Credo Semiconductor
 Comment Type T Comment Status R TP0v method

TP0 is the interface between Transmitter package ball and PCB as shown in Figure 163-3. TP0 is not stable for measurement, because TP0 is highly non-TEM mode. A replica test fixture may have a test point corresponding to TP0, but this cannot be exactly same as TP0 due to the difficulty of measurement at TP0. In order to remind this difference, we should make the label of the test point for replica test fixture different from TP0.

We should not assume replica test fixture is same as actual test fixture.

Also for clarification, I suppose we should differentiate the label of TP0v between the test fixture attached to DUT and the replica test fixture.

SuggestedRemedy

Use TP0r and TP0vr as the labels for the test points where the replica test fixture may be used.

Response Response Status C

REJECT.

Defining different test point labels is not necessary or helpful. The suggested remedy does not add clarity to the specification.

There is no consensus to make the proposed changes.

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

Cl 163A SC 163A.2 P 281 L 4 # 30

Healey, Adam Broadcom Inc.
 Comment Type E Comment Status A TP0v method

The "test channel" requirements are not defined by the clause that invokes this method but "test fixture" requirements might be. It seems like this is the only place "transmitter test channel" or "test channel" are used. The same entity is referred to as the "TP0-TP0v channel" in 163A.3.1.

SuggestedRemedy

Change the title of 163A.2 to "Test fixture" and replace its contents with the following: "The test fixture is between test points TP0 and TP0v as shown in Figure 163A-2. Test fixture requirements are specified by the clause that invokes this method."

Response Response Status C

ACCEPT.

Cl 163A SC 163A.3.1 P 281 L 22 # 277

Dawe, Piers Nvidia
 Comment Type T Comment Status A TP0v method

I don't like the term "virtual reference channel". It's no more unreal than the other blocks in this figure. I didn't find any other "reference channel" in this draft.

SuggestedRemedy

Change its name to "reference channel" or "reference test channel" throughout.

Response Response Status C

ACCEPT IN PRINCIPLE.

Replace "virtual reference channel" with "reference channel".

Implement with editorial license.

Cl 163A SC 163A.3.1 P 281 L 25 # 35

Healey, Adam Broadcom Inc.
 Comment Type T Comment Status A TP0v method

In Figure 163A-2, termination resistance at TP0v should represent an instrument and not a device (i.e., it should be the reference resistance R_0 and not the device resistance R_d).

SuggestedRemedy

Replace "R_0" with "R_d".

Response Response Status C

ACCEPT IN PRINCIPLE.

Replace "R_d" at TP0v with "R_0".

Implement with editorial license.

Cl 163A SC 163A.3.1 P 281 L 31 # 278

Dawe, Piers Nvidia
 Comment Type T Comment Status A TP0v method

The material in the NOTE needs to be normative.

SuggestedRemedy

Move it to regular text at line 42

Response Response Status C

ACCEPT IN PRINCIPLE.

The response to comment #58 results in similar text being added.

Remove the note from figure 163A-2 and otherwise resolve using the response to comment #58.

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

CI 163A SC 163A.3.1 P 281 L 40 # 58

Ran, Adee Intel
 Comment Type T Comment Status A TP0v method

"The scattering parameters for the reference package, S(tp), are determined using the method in 93A.1.2, with electrical characteristics specified in the clause that invokes this method"

Typically there are two reference package for the Tx and two possibly other ones for the Rx. It is not stated which one should be used.

A DUT should be allowed to be as "bad" as the worst of the two reference packages for any of the parameters.

Editorially it seems that this should be stated separately in 163A.3.1.1 for v_peak and v_f and in 163A.3.1.2 for ERL (although the same rule applies in both cases).

SuggestedRemedy

Add a sentence in 163A.3.1.1 after the paragraph "The reference pulse response peak (...) is the peak value of h(t)"

such as the following:

"If the invoking clause lists more than one set of reference package parameters, the calculation is performed with each set, and the minimum value is used as the reference value."

Add a similar sentence at the end of 163A.3.1.1 (after the definition of v_f(ref)) and at the end of 163A.3.1.2 (for ERL reference).

Response Response Status C

ACCEPT IN PRINCIPLE.

Implement the suggested remedy.

Update to 163 and 120F to indicate the following:

For reference ERL use both package models and use the worst ERL of the two.

For reference R_peak and v_f, use only the package model with the longer package trace.

Implement with editorial license.

CI 163A SC 163A.3.1.1 P 281 L 48 # 36

Healey, Adam Broadcom Inc.
 Comment Type T Comment Status A TP0v method

Equation (93-17) defines GAMMA1 and GAMMA2 to be equal and furthermore a function of Rd. The termination at the TP0v should represent an instrument load and therefore would be better defined to be R0 independent of Rd.

SuggestedRemedy

Change the first paragraph of 163A.3.1.1 to the following: "Calculate the voltage transfer function, H_21(f) from the scattering parameters of the virtual reference channel, S^(0), using Equation (93A-18) where GAMMA1 is given by Equation (93A-17) and GAMMA2 is set to 0. In Equation (93A-17), the single-ended reference resistance R_0 is set to 50 [Ohms] and the single-ended termination resistance, R_d, specified by the clause that invokes this method."

Response Response Status C

ACCEPT IN PRINCIPLE.

The response to comment #277 changed "virtual reference channel" to "reference channel".

Implement the suggested remedy incorporating the response to comment #277.

CI 163A SC 163A.3.1.1 P 282 L 25 # 39

Healey, Adam Broadcom Inc.
 Comment Type T Comment Status A TP0v method

The annex is mostly written to be generic so citing the specific value for N_v defined in 162.9.3.1.2 seems out of place. Will the same value of N_v apply to future clauses that may employ this method?

SuggestedRemedy

Change the definition of N_v to the following: "represents the number of symbols to include in the steady state voltage calculation". Add a sentence that the value of N_v is defined by the clause that invokes this method.

Response Response Status C

ACCEPT IN PRINCIPLE.

Implement the suggsted remedy with editorial license.

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

Cl 163A SC 163A.3.1.2 P 282 L 30 # 37

Healey, Adam Broadcom Inc.

Comment Type T Comment Status A TP0v method

Equation (93A-58) and Equation (93A-59) do not calculate the PDTR response from $S^{(0)}$. There is an additional step required to obtain the reflection coefficient $s_{ii}(f)$ for the case where R_d is not equal to R_0 . Also, the value of T_{fx} should be 0.

SuggestedRemedy

Replace the contents of 163A.3.1.2 with the following: "The reference reflection coefficient at TP0v is given by Equation (93A-7) where $[s_{22}]^x$ is GAMMA1 as defined by Equation (93A-17) and $[s_{ij}]^y$ are the components of the scattering matrix of the virtual reference channel $S^{(0)}$. In Equation (93A-17), the single-ended reference resistance R_0 is set to 50 [Ohms] and the single-ended termination resistance, R_d , specified by the clause that invokes this method. The reference pulse time-domain reflection (PTDR) response is computed from the reference reflection coefficient at TP0v using Equation (93A-58) and Equation (93A-59). The reference ERL value is determined from the reference PTDR response using the method in 93A.5.2 with T_{fx} set to 0 and other parameters specified by the clause that invokes this method."

Response Response Status C

ACCEPT IN PRINCIPLE.

Implement the change shown on slide 19 of:
https://www.ieee802.org/3/ck/public/20_10/heck_3ck_01a_1020.pdf

Cl 163A SC 163A.3.2.2 P 283 L 12 # 59

Ran, Adeel Intel

Comment Type E Comment Status A TP0v method

Both ERL(ref) and ERL(meas) in equation 163A-6 are undefined terms.

SuggestedRemedy

Add below the equation

"Where
 ERL(ref) is the ERL reference value defined in 163A.3.1.2
 ERL(meas) is the measured Effective return loss"

Response Response Status C

ACCEPT IN PRINCIPLE.

Implement the suggested remedy with editorial license.