Cl **1**	*SC* **1.3**	*P* **32**	*L* **14**	# 153

Ghiasi, Ali   Ghiasi Quantum/Inphi

Comment Type **TR**   *Comment Status* **D**   *MDI labels (bucket3)*

Per unsatisfied comment from D2.2 need to add reference for SFP112

SuggestedRemedy

Replace SFP-DD with SFP-DD112 which supports 100 Gb/s operation.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Resolve using the response to comment #152.

Cl **1**	*SC* **1.3**	*P* **32**	*L* **14**	# 151

Ghiasi, Ali   Ghiasi Quantum/Inphi

Comment Type **TR**   *Comment Status* **D**   *MDI labels (bucket3)*

Per unsatisfied comment from D2.2 SFP-DD112 reference should be updated.

SuggestedRemedy

Replace SFP-DD with SFP-DD112 which supports 100 Gb/s operation.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Resolve using the response to comment #152.

Cl **1**	*SC* **1.3**	*P* **32**	*L* **53**	# 155

Ghiasi, Ali   Ghiasi Quantum/Inphi

Comment Type **TR**   *Comment Status* **D**   *MDI reference (bucket3)*

Per unsatisfied comment from D2.2 add reference for SFP112.

SuggestedRemedy

SFP-DD MSA SFP-DD/SFP-DD112/SFP112 Hardware Specification for SFP112 AND SFP DOUBLE DENSITY PLUGGABLE TRANSCEIVER, Rev 5.0, September 2021 (http://sfp-dd.com/).

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Resolve using the response to comment #152.

Cl **1**	*SC* **1.3**	*P* **32**	*L* **53**	# 154

Ghiasi, Ali   Ghiasi Quantum/Inphi

Comment Type **ER**   *Comment Status* **D**   *MDI reference (bucket3)*

Per unsatisfied comment from D2.2 SFP-DD112 reference should be updated.

SuggestedRemedy

SFP-DD MSA SFP-DD/SFP-DD112/SFP112 Hardware Specification for SFP112 AND SFP DOUBLE DENSITY PLUGGABLE TRANSCEIVER, Rev 5.0, September 2021 (http://sfp-dd.com/).

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Resolve using the response to comment #152.

Cl **1**	*SC* **1.3**	*P* **32**	*L* **53**	# 152

Ghiasi, Ali   Ghiasi Quantum/Inphi

Comment Type **TR**   *Comment Status* **D**   *MDI reference (bucket3)*

Per unsatisfied comment from D2.2 SFP-DD112 reference should be updated.

SuggestedRemedy

New reference: SFP-DD MSA SFP-DD/SFP-DD112/SFP112 Hardware Specification for SFP112 AND SFP DOUBLE DENSITY PLUGGABLE TRANSCEIVER, Rev 5.0, September 2021 (http://sfp-dd.com/).

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

In subclause 1.3 change:
"SFP-DD MSA SFP-DD Hardware Specification for SFP double density 2X pluggable transceiver, Rev 4.2, August 17, 2020."
To:
"SFP-DD/SFP-DD112/SFP112 Hardware Specification for SFP112 AND SFP DOUBLE DENSITY PLUGGABLE TRANSCEIVER, Revision 5.0, October 1, 2021"

Add the following footnote:
"SFP-DD, SFP-DD112, SFP112 specifications are available from SFP-DD MSA (www.sfp-dd.com)"

Given the reference change above, throughout the draft…
Change "SFP-DD" to "SFP-DD112".
Change "SFP+" to "SFP112".

Implement with editorial license.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **1**
SC **1.3**

Page 1 of 5
2021-10-07 11:51:15 A

Cl **93A**   *SC* **93A.1.2.3**   *P* **233**   *L* **13**   # 35

Ran, Adee   Cisco

Comment Type **E**   *Comment Status* **D**   *COM pkg (bucket3)*

The new equations 93A-12a through 93A-14a are identical to the existing ones (without the "a") except for parameter names z_p2 and Z_c2 instead of z_p and Z_c. Having essentially duplicate equations is not a good service to the reader.

SuggestedRemedy

Change the paragraph after the editorial instruction to the following:

"For clauses that use a second package transmission line segment described by parameters z_p2 and Z_c2, the scattering parameters for the second transmission line are defined by Equation (93A–12), Equation (93A–13), and Equation (93A–14), with z_p2 substituting z_p and Z_c2 substituting Z_c."

(with _ denoting subscript).

Delete equations 93A-12a through 93A-14a.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Resolve using the response to comment #27

Cl **120g**   *SC* **120g.3.3.5.2**   *P* **270**   *L* **21**   # 66

Mellitz, Richardd   Samtec

Comment Type **TR**   *Comment Status* **D**   *HI/MI SI PG EQ (bucket3)*

The statement following statement offers little constraint on what may be used for preemphasis. "The pattern generator pre-emphasis and reference receiver settings that minimize VEC are used." For example: Why couldn't the pattern generator use a discrete mutli-tone (DMT) equalizer? There may be other examples.

SuggestedRemedy

Add a line indicating that the pattern generator pre-emphasis may be approximately the capability specified in 163.9.2

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Resolve using the response to comment #56.

Cl **120G**   *SC* **120G.3.3.5.2**   *P* **270**   *L* **22**   # 132

Dawe, Piers   Nvidia

Comment Type **TR**   *Comment Status* **D**   *HI/MI SI PG EQ (bucket3)*

Remove ambiguity. The reader doesn't know if the writer had precursor emphasis in mind, or calls any output emphasis "pre-". Also, we can reduce the search space and variation among stressed signal setups a little.

SuggestedRemedy

Change "pattern generator pre-emphasis" to "pattern generator emphasis". Add "There is no more than one pattern generator post-emphasis tap, with a positive or zero value." Similarly in 120G.3.4.3.2.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The response to closed comment #56 provides guidance on how the pattern generator equalization is generated.

Resolve using the response to comment #56.

Cl **120G**   *SC* **120G.3.4.3.2**   *P* **274**   *L* **4**   # 109

Dawe, Piers   Nvidia

Comment Type **T**   *Comment Status* **D**   *(bucket3)*

I believe that when the complex numbers are boiled down to decibels, and noting that gamma0 is 0 and Zc is 100 ohm, the respones has the form Ildd = A.sqrt(f) + B.f exactly.

SuggestedRemedy

Please give the equation.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The equations provide the complex s-parameters necessary as a target for the frequency-dependent loss and the ILdd in decibles is provide in Figure 120G-11. However, providing a informative equation representing the insertion loss would be helpful.

See slide 41 in the following presentation:
https://www.ieee802.org/3/ck/public/21_09/brown_3ck_02a_0921.pdf

Add the following informational equation for the insertion loss with editorial license.
ILdd = 1.54*sqrt(f) +0.3865*f
ILdd is in dB, f is in GHz

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **120G**   Page 2 of 5
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn   *SC* **120G.3.4.3.2**   2021-10-07 11:51:15 A
SORT ORDER: Clause, Subclause, page, line

Cl **120g**　　　*SC* **120g.3.4.5.2**　　　*P* **274**　　　*L* **19**　　　*#* 67

Mellitz, Richardd　　　　　　　Samtec

Comment Type **TR**　　*Comment Status* **D**　　　*HI/MI SI PG EQ (bucket3)*

The statement following statement offers little constraint on what may be used for preemphasis. "The pattern generator pre-emphasis and reference receiver settings that minimize VEC are used." For example: Why couldn't the pattern generator use a discrete mutli-tone (DMT) equalizer? There may be other examples.

SuggestedRemedy

Add a line indicating that the pattern generator pre-emphasis may be approximately the capability specified in 163.9.2

Proposed Response　　　*Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Resolve using the response to comment #56.

Cl **162**　　　*SC* **162.9.3**　　　*P* **170**　　　*L* **12**　　　*#* 73

Dudek, Mike　　　　　　　Marvell

Comment Type **TR**　　*Comment Status* **D**　　　*TP0/TP5 (bucket3)*

In the context of 162 the "transmitter" includes the host PCB. The characteristis in 162A.2 do not include the host PCB and therefore should not be called just transmitter characteristics

SuggestedRemedy

Change to "Recommended transmitter characteristis at TP0 are provided in 162A.2"

Proposed Response　　　*Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change to "Change to "Recommended transmitter characteristics at TP0 are provided in 162A.2"

Cl **162**　　　*SC* **162.9.4**　　　*P* **177**　　　*L* **29**　　　*#* 74

Dudek, Mike　　　　　　　Marvell

Comment Type **TR**　　*Comment Status* **D**　　　*TP0/TP5 (bucket3)*

In the context of 162 the "receiver" includes the host PCB. The characteristis in 162A.3 do not include the host PCB and therefore should not be called just receiver characteristics

SuggestedRemedy

Change to "Recommended receiver characteristis at TP5 are provided in 162A.3"

Proposed Response　　　*Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change to: "Recommended receiver characteristics at TP5 are provided in 162A.3"

Cl **162**　　　*SC* **162.11.7.1**　　　*P* **192**　　　*L* **8**　　　*#* 27

Ran, Adee　　　　　　　Cisco

Comment Type **E**　　*Comment Status* **D**　　　*CA COM pkg (bucket3)*

The new equations 93A-13a and 93A-14a use a parameter z_{p2} (instead of z_p in the existing equations 93A-13 and 93A-14). The text here refers to z_p, so the existing equations should be referenced instead.

SuggestedRemedy

Change 93A-13a to 93A-13 and 93A-14a to 93A-14.

Consider merging equations 93A-12a, 93A-13a, 93A-14a with their existing counterparts.

Proposed Response　　　*Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Implement the suggested remedy with editorial license including merging the equations.

Also, fix grammar on page 192 line 9
change "has different" to "has a different".

Cl **162**　　　*SC* **162.11.7.2**　　　*P* **194**　　　*L* **18**　　　*#* 156

Ghiasi, Ali　　　　　　　Ghiasi Quantum/Inphi

Comment Type **ER**　　*Comment Status* **D**　　　*MDI labels (bucket3)*

Per unsatisfied comment from D2.2.
Modules in table 162-21 must be updated with ones actually supporitng 100 Gb/s operation

SuggestedRemedy

Update SFP+ with SFP112
SFP-DD with SFP-DD112
QSFP+ with QSFP112
changes appllies to clauses 162, 162C and 162D

Proposed Response　　　*Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
For SFP+ and SFP-DD resolve using the response to comment #152.
For QSFP, resolve using the response to comment #162.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general　　　　*Cl* **162**　　Page 3 of 5
COMMENT STATUS: D/dispatched A/accepted R/rejected　　RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn　　*SC* **162.11.7.2**　　2021-10-07 11:51:15 A
SORT ORDER: Clause, Subclause, page, line

Cl **162D**   *SC* **162D.1**   *P* **316**   *L* **14**   # 139

Dawe, Piers   Nvidia

Comment Type **E**   *Comment Status* **D**   *MDI pins (bucket3)*

A host can have other than six MDI connector receptacles. Aligning terminology with 162C.1, third sentence. The text mentions what's specified for hosts but doesn't discuss how many types there are for cables. This text can be simplified.

SuggestedRemedy

Change:
There are six MDI connector "receptacles" specified for hosts.
to
There are six MDI connector types.
or, change "There are six MDI connector "receptacles" specified for hosts. See Table 162D–1 references for receptacle and plug requirements." to "Table 162D-1 lists the six MDI connector types specified for hosts and cables."

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Merge the two paragraphs together and change text to the following:
"This annex describes cable assembly types specified in 162.11 for hosts with 100GBASE-CR1, 200GBASE-CR2, or 400GBASE-CR4 Physical Layers. The six MDI connector receptacles specified are given in Table 162D–1. This enables multiple cable assembly types with different combinations of the plug connectors at each end."

Cl **162D**   *SC* **162D.1**   *P* **316**   *L* **21**   # 158

Ghiasi, Ali   Ghiasi Quantum/Inphi

Comment Type **TR**   *Comment Status* **D**   *MDI labels (bucket3)*

Table 162D-1, 162D-2, 162D-3, and 162D-4 should be updated with MDI that actually operate at 53.1 GBd, currenlty what is specified are MDIs that either operate at 10.3 GBd or 25.78 GBd

SuggestedRemedy

Please replace SFP+ with SFP112
http://sfp-dd.com
SFP-DD with SFP-DD112
http://sfp-dd.com
QSFP+ with QSFP112 for reference see
http://www.qsfp-dd.com/wp-content/uploads/2021/05/QSFP-DD-Hardware-Rev6.01.pdf

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
For SFP+ and SFP-DD resolve using the response to comment #152.
For QSFP, resolve using the response to comment #162.

Cl **163**   *SC* **163.9.2.6**   *P* **210**   *L* **38**   # 71

Healey, Adam   Broadcom Inc.

Comment Type **T**   *Comment Status* **D**   *TX ISI_RES (bucket3)*

The ISI_RES metric does not discriminate between the ISI caused by the test fixture and the ISI intrinsic to the transmitter under test. We are only interested in the latter and the impact of the test fixture should be considered. The test fixture impact is considered in ERL measurements by calculating the difference between the expected ERL and the measured ERL where the expected ERL is computed using a reference transmitter model and a measurement of the test fixture. It seems a similar process could be used to compute the difference between an expected ISI_RES and measured ISI_RES. However, effectiveness of such a process, or other processes, has not yet been demonstrated. At a minimum, it seems that a note like the one in 120D.3.1.7 (which defines a similar measurement for a similar purpose) should be included to advise users of the impact of the test fixture and encourage users to mitigate the impact.

SuggestedRemedy

Add the following note to the end of 163.9.2.6:
"NOTE- The observed ISI_RES can be significantly influenced by the measurement setup, e.g., reflections in cables and connectors. Careful calibration of the measurement setup is recommended."

Also change the title of 163.9.2.6 to "Residual intersymbol interference" (remove the hyphen per <https://www.ieee802.org/3/WG_tools/editorial/requirements/words.html>).

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

[Editor's note: Changed page from 211 to 210.]

Cl **163**   *SC* **163.13.4.3**   *P* **226**   *L* **7**   # 33

Ran, Adee   Cisco

Comment Type **T**   *Comment Status* **D**   *(bucket3)*

In item TC14 value/comment has the nominal value. But the mandatory requirement is a range specified in Table 163-5.

For consistency, item TC12 should also refer to the table.

SuggestedRemedy

Change value/comment to "Per Table 163-5" in both items.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **163**   Page 4 of 5
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn   *SC* **163.13.4.3**   2021-10-07 11:51:15 A
SORT ORDER: Clause, Subclause, page, line

| *Cl* **163A** | *SC* **163A.3.1.1** | *P* **321** | *L* **15** | # | 143 |

Dawe, Piers   Nvidia

Comment Type **E**   *Comment Status* **D**   *COM pkg (bucket3)*

Duplication

SuggestedRemedy

Move this sentence to p 320 line 53: "If the invoking clause lists more than one set of reference package parameters, the calculation is performed with the longer package trace length." At line 35, delete "If the invoking clause lists more than one set of reference package parameters, the calculation in Equation (163A–3) is performed with the longer package trace length."

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Implement the suggested remedy with editorial license, maintaining consistency with the resolution to comment #52 and #53.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **163A**
SC **163A.3.1.1**

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2021-10-07 11:51:15 A