Cl **168** *SC* **168.5.1** *P* **30** *L* **8** # 37

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *consistency_dj*

The title of 168.5.1 is "PMD block diagram", but the block diagram in Figure 168-2 is not of a PMD but of a transmit/receive path.

I am aware that the incorrect heading exists in many previous clauses, but an error should not be carried over to a new clause.
The suggested remedy is being used in similar subclauses in P802.3dj.

SuggestedRemedy

Change the subclause title from "PMD block diagram" to "Block diagram".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **168** *SC* **168.6** *P* **32** *L* **53** # 38

Ran, Adee Cisco Systems, Inc.

Comment Type **T** *Comment Status* **D** *consistency_CL140*

Footnote a says "The RS-FEC correction function may not be bypassed for any operating distance". This is not an option, so "may" is inappropriate. Also, this statement is out of place in 168.6, which is about optical specifications.

I am aware that the same text exists in many previous clauses, but an error should not be carried over to a new clause.

SuggestedRemedy

Delete footnote a from Table 168-5, and instead add a footnote for the "RS-FEC" row in Table 168-1, stating "The option to perform error detection without error correction (see 91.5.3.3) is not supported. FEC error correction shall not be bypassed".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Delete footnote a from Table 168-5.
Keep consistent with clause 140.

Cl **168** *SC* **168.6.1** *P* **33** *L* **11** # 39

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *new*

The signaling range for recent PMDs with 100 Gb/s per lane has been narrowed to +/- 50 ppm, to avoid possible performance degradatation.

The 100 Gb/s AUIs defined in Annex 120F and 120G support this narrower range.

See 800GBASE-VR8/SR8 PMDs in 802.3df, Table 167-7 and Table 167-8 (both amended from 802.3db) as an example of how this is implemented in new PMDs.

SuggestedRemedy

In Table 168-6 and Table 168-7, change the signaling rate range to 53.125 +/- 50 ppm.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Clause 140 uses 100ppm, df has mixed definitions, dj uses 50ppm.

Cl **168** *SC* **168.6.1** *P* **33** *L* **28** # 40

Ran, Adee Cisco Systems, Inc.

Comment Type **ER** *Comment Status* **D** *consistency_dj*

The row for OMA_outer (min) in Table 167-7 contains two sub-rows. This should be indicated by indentation, as done in the "Receiver sensitivity" row in Table 167-8, to clarify that these are two cases.

The phrase "for 1.4 dB <= max(TECQ, TDECQ) <= TDECQ(max)" is overly long and can be shortened to improve readabilty.

SuggestedRemedy

Indent the sub-rows starting with "for".
Change "for 1.4 dB <= max(TECQ, TDECQ) <= TDECQ(max)" to "for max(TECQ, TDECQ) >= 1.4"

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Following dj format (e.g., Table 183-6).

Cl **168** *SC* **168.6.1** *P* **34** *L* **1** # 42

Ran, Adee Cisco Systems, Inc.

Comment Type **T** *Comment Status* **D** *consistency_dj*

Equations 168-1 through 168-3 are not equations - they are expressions that don't mean anything without the context, which is Table 167-7.

It would be a better service to the reader if these expressions are placed directly in the table.

SuggestedRemedy

Move these expressions into Table 168-8, OMA_outer row, replacing the references to the equations.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Follow dj format, Table 183-6.

Cl **168** *SC* **168.6.1** *P* **33** *L* **36** # 43

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **X** *over/under-shoot*

"Transmitter over/under -shoot" is shorthand that should not be used in a standard.
The definitions in subclause 168.7.7 are actually to two different parameters, overshoot and undershoot, while "over/under-shoot" is not defined at all.
The label in the table has been changed to "overshoot/undershoot" in 802.3db.

Also, the definition subclause 168.7.7 should be aligned with the recent text in 802.3db (167.8.8) instead of older clauses.

SuggestedRemedy

Change the label to "Overshoot/undershoot (max)".
Change the text in 168.7.7 to align it with 167.8.8 in 802.3db-2022.
Change in Table 168–10 and elsewhere accordingly.

Proposed Response *Response Status* **W**

PROPOSED ACCEPTED IN PRINCIPLE.
See comment #95.

Cl **168** *SC* **168.7.1** *P* **36** *L* **1** # 44

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *consistency_dj*

The title of Table 168-10 is incorrect. It does not include or even refer to test pattern definitions; what it contains is the mapping of parameters to test patterns and related sublclause.

I am aware that the same title exists in many previous clauses, but an error should not be carried over to a new clause. It has been corrected in P802.3dj, and the suggested remedy is taken from Table 180-15.

SuggestedRemedy

Change the title of Table 168-10 to "Mapping of parameters to test patterns and related subclauses".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Keep consistent with 802.3 dj, Table 183-13.

Cl **168** *SC* **168.7.11** *P* **41** *L* **3** # 48

Ran, Adee Cisco Systems, Inc.

Comment Type **T** *Comment Status* **X** *consistency_dj*

The signaling rate is 53.125 GBd, so the number should be 53.125 GHz, not 53.2.

SuggestedRemedy

Change per comment.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Resolve using the response to comment #94.

Cl **168** *SC* **168.7.12** *P* **41** *L* **32** # 49

Ran, Adee Cisco Systems, Inc.

Comment Type **E** *Comment Status* **D** *ref_receiver*

Cross-reference to equation 168-4 is not active.
Similarly for equations 168-5 and 168-6 in the subsequent paragraphs.

SuggestedRemedy

Make the cross-references active.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license.

Cl **168** *SC* **168.7.12** *P* **41** *L* **40** # 50

Ran, Adee — Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *ref_receiver*

Equations 168-4 through 168-5 have equal signs and define receiver sensitivity - but the receiver sensitivity does not need to be equal to a value - it should be below some maximum, as shown in the figure.

SuggestedRemedy

Either change the equation to have a "lower than" value, or define the term as the maximum RS.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment #111.

Cl **168** *SC* **168.7.12** *P* **41** *L* **7** # 51

Ran, Adee — Cisco Systems, Inc.

Comment Type **ER** *Comment Status* **X** *ref_receiver*

Figure 168-6 is a bitmap with poor quality.

SuggestedRemedy

Replace the figure with an SVG one.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment #111.

Cl **168** *SC* **168.7.12** *P* **41** *L* **15** # 52

Ran, Adee — Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **X** *ref_receiver*

The label "Meets equation constraints" appears between curves. It suggests that the allowed range is between these lines, which is incorrect.

SuggestedRemedy

Move the label below the bottom line.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment #111.

Cl **168** *SC* **168.7.4** *P* **36** *L* **46** # 73

Johnson, John — Broadcom

Comment Type **TR** *Comment Status* **X** *consistency_dj*

Add text to clarify the reference receiver used to measure OMAouter, refering to the definitions in 168.7.5.

SuggestedRemedy

Add the following sentence to the end of the paragraph:

"OMAouter is measured using waveforms captured at the output of the reference receiver defined in 168.7.5, before the reference equalizer."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
See comment #90.

Cl **168** *SC* **168.7.5** *P* **37** *L* **21** # 74

Johnson, John Broadcom

Comment Type **TR** *Comment Status* **D** *consistency_dj*

The TDECQ test method in 168.7.5 needlessly reiterates the definitions in 121.8.5. The text of 168.7.5.1 lists test method exceptions that should be in 168.7.5.3. 168.7.5.3 has a single exception for the FFE (which is not needed because it is the same as 121.8.5.4). This clause should reference 121.8.5 and list a complete set of test method exceptions specific to Cl. 168.

SuggestedRemedy

Follow the specification method of 802.3dj D1.5, Cl.180.9.5, which includes improved descriptions of the reference receiver that are used in other test method sub-clauses.
Remove sub-clauses 168.7.5.1, 168.7.5.3 and 168.7.5.4. (168.7.5.2 becomes 168.7.5.1)
Replace the text in 168.7.5 with the following:

The TDECQ of each lane shall be within the limits given in Table 168-6 if measured using the methods
specified in 121.8.5.1, 121.8.5.3, 121.8.5.4 and 168.7.5.1, with the following exceptions:
— The signaling rate of the test pattern generator is as given in Table 168-6 and uses the test pattern
specified for TDECQ in Table 168-10.
— The reference receiver, composed of the combination of the O/E converter and the oscilloscope, has
a 3 dB bandwidth of approximately 26.5625 GHz with a fourth-order Bessel-Thomson response to at
least 1.3 × 53.125 GHz, and at frequencies above 1.3 × 53.125 GHz, the response should not exceed
–20 dB. Compensation may be made for any deviation from an ideal fourth-order Bessel-Thomson
response.
— The normalized noise power density spectrum N(f) is equivalent to white noise filtered by a fourth order
Bessel-Thomson response filter with a 3 dB bandwidth of 26.5625 GHz.
— The optical return loss is as given in Table 168-6.
— The lowest measured TDECQ values are achieved with the equalizer optimization method described
in 121.8.5. Alternative optimization methods such as minimum mean squared error (MMSE) may be
used to determine equalizer tap weights to reduce test time, and are expected to report equal or
higher values of TDECQ. These alternative methods should not be used for receiver sensitivity and
stressed receiver sensitivity calibration.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license.

Cl **168** *SC* **168.7.7** *P* **39** *L* **37** # 75

Johnson, John Broadcom

Comment Type **TR** *Comment Status* **X** *over/under-shoot*

Add text to clarify the reference receiver used to measure TX over/undershoot, refering to the definitions in 168.7.5.

SuggestedRemedy

Replace "but without the reference equalizer being applied in either case."
with "at the output of the reference receiver defined in 168.7.5, before the reference equalizer."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **168** *SC* **168.7.8** *P* **40** *L* **17** # 76

Johnson, John Broadcom

Comment Type **TR** *Comment Status* **X** *consistency_dj*

Add text to clarify the reference receiver used to measure TX power excursion, refering to the definitions in 168.7.5.

SuggestedRemedy

Replace "but without the reference equalizer being applied."
with "at the output of the reference receiver defined in 168.7.5, before the reference equalizer."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **168** *SC* **168.7.9** *P* **40** *L* **32** # 77

Johnson, John Broadcom

Comment Type **TR** *Comment Status* **X** *consistency_dj*

Add text to clarify the reference receiver used to measure extinction ratio, refering to the definitions in 168.7.5.

SuggestedRemedy

Add the following to the end of the paragraph:
"The extinction ratio is measured using waveforms captured at the output of the reference receiver defined in 168.7.5, before the reference equalizer."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **168** *SC* **168.7.10** *P* **40** *L* **41** # 78

Johnson, John Broadcom

Comment Type **TR** *Comment Status* **X** *consistency_dj*

The reference receiver is previously defined in 168.7.5, so it can be referenced rather than redefining it in this clause.

SuggestedRemedy

Delete the following text:
"as measured through an O/E converter and oscilloscope with a combined 3 dB bandwidth of approximately 26.5625 GHz with a fourth-order Bessel-Thomson response to at least 1.3 × 53.125 GHz and at frequencies above 1.3 × 53.125 GHz the response should not exceed –20 dB. Compensation may be made for any deviation from an ideal fourth-order Bessel-Thomson response."
Replace with the following text:
"The transmitter transition time is measured using waveforms captured at the output of the reference receiver defined in 168.7.5, before the reference equalizer."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **168** *SC* **168.7.13** *P* **42** *L* **1** # 79

Johnson, John Broadcom

Comment Type **TR** *Comment Status* **X** *consistency_dj*

The stressed receiver sensitivity test method in 168.7.13 needlessly reiterates the test method specified in 121.8.10.

SuggestedRemedy

Follow the specification method of 802.3dj D1.5, Cl.180.9.13, which points to 121.8.10 along with a short list of exceptions. Replace the entirety of 168.7.13 with the following text:

Stressed receiver sensitivity of each lane shall be within the limit given in Table 168-7 if measured using the
method defined in 121.8.10 with the following exceptions:
— The SECQ of the stressed receiver conformance test signal is measured according to 168.7.5, except
that the test fiber is not used. The transition time of the stressed receiver conformance test signal is
no greater than the value specified in Table 168-6.
— With the Gaussian noise generator on and the sinusoidal jitter and sinusoidal interferer turned off, the
RINxOMA of the SRS test source should be no greater than the value specified in Table 168-6.
— The signaling rate of the test pattern generator and the extinction ratio of the E/O converter are as
given in Table 168-6 using test patterns specified in Table 168-10.
— The required values of the “Stressed receiver sensitivity (OMAouter), each lane (max)”, “Stressed eye
closure for PAM4 (SECQ), lane under test” and “OMAouter of each aggressor lane” are as given in
Table 168-7.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **168** *SC* **168.7.12** *P* **41** *L* **32** # 84

Simms, William NVIDIA

Comment Type **E** *Comment Status* **D** *ref_receiver*

The Figure 168-6 has an x-axis of TECQ but the test below the figure references SECQ.
Line 32, 35, and 38

SuggestedRemedy

Not sure if this is an error

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment #111.

Cl **168** *SC* **168.7.4** *P* **36** *L* **41** # 90

Mi, Guangcan Huawei Technologies Co., Ltd

Comment Type **TR** *Comment Status* **X** *consistency_dj*

recent clauses has been pointing out the source of OMAout data. Recommend to add in CL168 as well.

SuggestedRemedy

add "OMAouter is measured using waveforms captured at the output of the reference receiver defined in 168.7.5, before the reference equalizer.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license.

Cl **168** *SC* **168.7.5** *P* **37** *L* **20** # 91

Mi, Guangcan Huawei Technologies Co., Ltd

Comment Type **ER** *Comment Status* **X** *consistency_dj*

looking back at CL 140.7 and other IMDD clauses in 100Gbps, the description of TDECQ and its measurement setup has been referencing as much as possible the existing content in CL 121.8.5 and writing only the changes and differences. An example in CL140 is:
"TDECQ, and for 100GBASE-DR only, TDECQ – 10log10(Ceq) shall be within the limits given in
Table 140–6 if measured using the test setup specified in 121.8.5.1, with an optical channel specified in 140.7.5.2, using the measurement method specified in 121.8.5.3, and using a reference equalizer as described in 140.7.5.1, with the following exceptions: ....."

also double checking the content of 168.7.5.1, there seems no technical difference than what was defined in CL 140.7.5 or CL 124.8.5, except need of updates to the table references. For the sake of clarity and consistence, also avoiding misleading message of new test setp, it is recommended to update the section with references to existing clauses while only listing out the exceptions.

SuggestedRemedy

delet sections 168.7.5.1, 168.7.5.3,168.7.5.4. make appropriate references to existing clauses, so that the overall standard of 802.3 is coherent. implement with editorial licenses.

some possible languages:
The TDECQ shall be within the limits given in
Table 168–6 if measured using the test setup specified in 121.8.5.1, with an optical channel specified in 168.7.5.2, using the measurement method specified in 121.8.5.3, and using a reference equalizer as described in 168.7.5.1, with the following exceptions:
The signaling rate of the test pattern generator is as given in Table 168–6 and uses a test pattern
specified for TDECQ in Table 168–10.
— The combination of the O/E converter and the oscilloscope has a 3 dB bandwidth of approximately 26.5625 GHz with a fourth-order Bessel-Thomson response to at least 1.3 × 53.125 GHz and at frequencies above 1.3 × 53.125 GHz the response should not exceed –20 dB. Compensation may be made for any deviation from an ideal fourth-order Bessel-Thomson response.
— The normalized noise power density spectrum, N(f) in Equation (121–9), is equivalent to white noise filtered by a fourth-order Bessel-Thomson response filter with a 3 dB bandwidth of 26.5625 GHz."

or

"The TDECQ shall be within the limits given in Table 168–6 if measured using the test setup specified in 121.8.5.1, with an optical channel specified in 168.7.5.2, using the measurement method specified in 140.7.5, and using a reference equalizer as described in 140.7.5.1."

or other format that fits.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Resolve using response to comment #74.

Cl **168** *SC* **168.7.7** *P* **39** *L* **31** # 93

Mi, Guangcan Huawei Technologies Co., Ltd

Comment Type **ER** *Comment Status* **X** *over/under-shoot*

There seems to be no change from the method defined in CL 140. reference to CL 140 regarding the calculation.

SuggestedRemedy

possible language from CL 151, and update the reference tables should serve the purpose :

"The over/under-shoot of each lane shall be within the limits given in Table 151–7 if measured using a test
pattern specified for over/under-shoot in Table 151–11.
Overshoot and undershoot are measured using the waveform captured for the TDECQ test (see 151.8.5) and the waveform captured for the TECQ test (see 151.8.6), but without the reference equalizer being applied in each case.
Overshoot and undershoot are calculated using the methods in 140.7.7."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Resolve using response to comment #75.

Cl **168** *SC* **168.7.11** *P* **40** *L* **51** # 94

Mi, Guangcan Huawei Technologies Co., Ltd

Comment Type **TR** *Comment Status* **X** *consistency_dj*

802.3 dj has extensively discussed the definition of RINxOMA. Consensus were made to update the definition of RINxOMA which better describes the actual behaviour and aligns with what is being used in the field. Related contribution from Ahmad and JJ, https://www.ieee802.org/3/dj/public/24_09/chayeb_3dj_01_2409.pdf

SuggestedRemedy

align to what is defined in dj.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The RINxOMA definition in dj D1.5 could be used as references.
Implement suggested remedy with editorial license.

Cl **168** *SC* **168.6.1** *P* **33** *L* **36** # 95

Stassar, Peter Huawei

Comment Type **ER** *Comment Status* **D** *over/under-shoot*

This draft still uses "over/undershoot", In P802.3dj it was recently agreed to use "transmitter over and undershoot". Also in 168.7,1 and 168.7.7

SuggestedRemedy

168.6.1 change "Transmitter over/under -shoot" to "Transmitter overshoot and undershoot". In 168.7.1, Table 168-10 change "Over/under-shoot" to "Transmitter overshoot and undershoot". Change heading of 168.7.7 from "Over/under-shoot" to "Transmitter overshoot and undershoot". In paragraphs 1 and 2 of 168.7.7 change "over/under-shoot" to "over and undershoot".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **168** *SC* **168.3.2** *P* **29** *L* **2** # 108

Zimmerman, George ADI,APLgp,Cisco,Marvell,OnSemi,Sony,SenTekse

Comment Type **TR** *Comment Status* **D** *consistency_CL140*

"is" is for statements of fact. The limitation on the skew seems to be a requirement. Further, the requirements in 83.5.3.4 go further and specify skew variation. Is that to be specified? While 83.5.3.4 was mentioned earlier defining skew, it isn't clear that those requirements apply. Here is where that should be stated.

SuggestedRemedy

Change "Skew at SP2 is limited to 43 ns as defined by 83.5.3.4" to "Skew and skew variation at SP2 shall comply with the requirements of 83.5.3.4"

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Keep consistent with Clause 140.

Cl **168** *SC* **168.12.3** *P* **49** *L* **28** # 109

Zimmerman, George ADI,APLgp,Cisco,Marvell,OnSemi,Sony,SenTekse

Comment Type **T** *Comment Status* **X** *consistency_cp*

Delay constaints is a section of the PICS, not a capability or option. These are requiremetns that need to be spelled out in their own table.

SuggestedRemedy

Delete row "DC" in 168.12.3, add new section 168.12.4.1 Delay and skew specifications and renumber subsequent PICS statements. Go through 168.3 and call out the delay constraint requirments one-by-one to populate (this is where having the "shalls" would have been useful).

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Keep consistent with 802.3cp.

Cl **168** *SC* **168.7.12** *P* **41** *L* **15** # 111

Zimmerman, George ADI,APLgp,Cisco,Marvell,OnSemi,Sony,SenTekse

Comment Type **T** *Comment Status* **X** *ref_receiver*

"Meets equation constraints" cannot possibly be right for all 3 PHYs. Also, the plot says it is receiver sensitivity but the axis says OMAouter(dBm). This needs further definition in the equations 168-4, 168-5, and 168-6 and the text to unravel. Is this saying that the RS should be sensitive to a signal with an OMA of the level of equations 168-4, 168-5, and 168-6 (depending on the PHY type) (but can be sensitive to a lower level signal)? If so, the label needs to be 3 different labels, each indicating which line they are for, and on the bottom side of the line... The equations need more words to describe the measurement. I'm sorry, but I don't know well enough what you meant to write a good solution.

SuggestedRemedy

See comment. Adjust location of "Meets equation constraints" so that it meets all 3 lines. Consider more explanatory words and converting the equations 168-4, 168-5 and 168-6 to inequalities.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Follow treatment in 802.3dj CL183.9.12.
Implement suggested remedy with editorial license.

Cl **168** *SC* **168.1** *P* **27** *L* **13** # 119

Zimmerman, George ADI,APLgp,Cisco,Marvell,OnSemi,Sony,SenTekse

Comment Type **T** *Comment Status* **X** *consistency_CL140*

Physical implementation of the CGMII is optional, but that is not what Figure 168-1 shows.

SuggestedRemedy

Add footnote 1 to CGMII at line 13. Add text of "NOTE - Physical implementation of CGMII is optional" at line 29 (below PCS).

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Keep consistent with Clause 140.
See footnote a in Table 140-1.

Cl **168** *SC* **168.5.9** *P* **32** *L* **21** # 129

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **D** *bucket_EZ(quick review)*

The first sentence of this clause is a comma splice.

SuggestedRemedy

Replace the comma with a semicolon, split into two separate sentences for the U and D PMDs, or write it as "The PMD_receive_fault function is mandatory in the 100GBASE-BRx-U PMD and optional in the 100GBASE-BRx-D PMD.".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change it to:
The 100GBASE-BRx-U PMD shall include the PMD_receive_fault function. In the 100GBASE-BRx-D PMD, the PMD_receive_fault function is optional.

Cl **168** *SC* **168.6** *P* **32** *L* **40** # 130

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **D** *interoperation*

The sentence concerning BR40 working with BR20 or BR10 as long as the shorter reach channel requirements are met is helpful, but it seems incomplete. Would is also not be true that the BR20 PMD operates with a BR10 PMD as long as the channel requirements of the BR10 PMD are met?

SuggestedRemedy

Make the sentence more generic: "A longer reach PMD interoperates with a shorter reach PMD as long as the channel requirments of the shorter reach PMD are met."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The interoperation between BR10 and BR40 doen't work.
Change it as:
"The 100GBASE-BR40 PMD interoperates with the 100GBASE-BR20 PMD provided that the channel meets the requirements in Table 168-15."

Cl **168** *SC* **168.1** *P* **27** *L* **9** # 171

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **D** *consistency_CL140*

In 157, this figure includes OAM (OPTIONAL)

SuggestedRemedy

Do the same here?

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Keep consistent with existing clauses 140 and 160.

Cl **168** *SC* **168.5.1** *P* **30** *L* **39** # 174

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **D** *bucket_EZ(quick review)*

This says "TP1 and TP4 ... (these test points are not typically be accessible in an implemented system)" but this is outdated. Clause 167 (100G/lane VR and SR says "might not be accessible". Linear optical modules are feasible at 100G/lane now, at least for DR.
Grammar: "are not typically be"

SuggestedRemedy

Change "are not typically be" to "might not be"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment #216.

Cl **168** *SC* **168.5.4** *P* **31** *L* **25** # 176

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **D** *consistency_CL140*

While the status variables have "global" in their names so that 1-lane PHYs can be managed the same as multilane PHYs, saying that SIGNAL_DETECT is a *global* indicator of the presence of the optical signal isn't really right.

SuggestedRemedy

Delete "global" here and in PICS F10

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Keep consistent with clause 140.

Cl **168** *SC* **168.6.1** *P* **33** *L* **46** # 180

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **D** *bucket_EZ(quick review)*

It's probably not worth testing some transmitters for TDECQ and RIN with 15 dB return loss and others with 15.6 dB. The cost in paperwork may outweigh any difference in yield.

SuggestedRemedy

Consider changing 15.6 to 15 here and in Table 168-11 (simplifying and being conservative).
Then RINxOMA can become RIN15OMA.
If it is thought worthwhile, the discrete reflectances for 100GBASE-BR10 in Table 168-14 and the channel optical return loss in Table 168-12 could be made slightly worse, to spend that 0.6 dB.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Small difference exists in other clauses, such as clause 140.

Cl **168** *SC* **168.6.3** *P* **35** *L* **14** # 183

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **D** *consistency_CL140*

6.3 dB doesn't seem right for the wavelengths concerned: see comment against 168.9

SuggestedRemedy

Change 6.3 to 6.0 (or 6.1); change 10.6 to 10.3 (or 10.4)

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Keep consistent with LR PMDs from previous clauses.

Cl **168** *SC* **168.7.5.1** *P* **38** *L* **5** # 186

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **X** *consistency_dj*

This long sentence with two clauses is hard to understand. In a few places such as 150.8.5, 150.8.7, 150.8.10 and 151.8.1 it has been divided into two sentences.

SuggestedRemedy

Change "GHz and at frequencies" to "GHz. At frequencies", here and in 168.7.10.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Resolve using response to comment #74.

Cl **168** *SC* **168.7.5.3** *P* **38** *L* **53** # 187

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **D** *consistency_dj*

More exceptions

SuggestedRemedy

The signaling rate of the test pattern generator is as given in Table 168-6 and uses a test pattern specified for TDECQ in Table 168–10.
There are no interfering optical lanes and therefore the delay requirement of at least 31 UI between test pattern on one lane and any other lane, as specified in 121.8.5.1, is redundant.
[Stated above — The combination of the O/E converter and the oscilloscope has a 3 dB bandwidth of approximately 26.5625 GHz with a fourth-order Bessel-Thomson response to at least 1.3 × 53.125 GHz. At frequencies above 1.3 × 53.125 GHz the response should not exceed –20 dB. Compensation may be made for any deviation from an ideal fourth-order Bessel-Thomson response.]
The normalized noise power density spectrum, N(f) in Equation (121–9), is equivalent to white noise filtered by a fourth-order Bessel-Thomson response filter with a 3 dB bandwidth of 26.5625 GHz.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Resolve using response to comment #74.

Cl **168** *SC* **168.7.5.4** *P* **39** *L* **19** # 188

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **D** *consistency_CL140*

A signal that needed a main tap at 0.8 would be unhealthily over-emphasised and troublesome for the receiver. The over/under-shoot spec may catch many such signals. If it catches them all, tightening this limit will make no difference. If it doesn't catch all of them, tightening this limit will be helpful.

SuggestedRemedy

Change 0.8 to 0.85

Proposed Response *Response Status* **W**

PROPOSED REJECT.
0.8 is following clause 140.
See comment #74.

Cl **168** *SC* **168.7.11** *P* **40** *L* **53** # 191

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **D** *consistency_dj*

In practice, RIN is not measured with the optical power meter method described in 52.9.6 these days, but with the scope method described in P802.3dj 180.9.11 (and T&M vendor's literature). This has the advantage that RIN can be calculated as a by-product of a TECQ measurement.

SuggestedRemedy

As this project is ahead of P802.3dj, replace the contents of 168.7.11 with a copy of 180.9.11, adjusting for the optical return loss(es) and reference Rx bandwidth of this clause.
In Table 168-10, change "Square wave" to "4 or 6".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment #94.

Cl **168** *SC* **168.7.12** *P* **41** *L* **8** # 192

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **D** *ref_receiver*

This figure is a bitmap; grey and unclear

SuggestedRemedy

Insert the figure the proper way so it appears as a "vector graphic" in the pdf;
Use black font;
Make the axes black.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment #111.

Cl **168** *SC* **168.7.12** *P* **41** *L* **9** # 193

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **D** *ref_receiver*

y axis can be optimised

SuggestedRemedy

Change the limits from (-18 to 0) to (-15 to -3)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment #111.

Cl **168** *SC* **168.7.12** *P* **41** *L* **37** # 194

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **D** *ref_receiver*

100GBASE-BR10

SuggestedRemedy

100GBASE-BR10

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment #111.

Cl **168** *SC* **168.7.12** *P* **41** *L* **40** # 195

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **D** *ref_receiver*

Units should be upright not italic

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment #111.

Cl **168** *SC* **168.7.13** *P* **42** *L* **38** # 196

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **D** *consistency_dj*

In this section we have: conformance test signal, signal being transmitted, received conformance signal, optical test signal, stressed receiver conformance test signal, test signal, input signal, signal, and stressed receiver conformance input signal. We are supposed to use the same name for a thing, every time (style guide 10.1.1 Homogeneity).

SuggestedRemedy

Try to clean this up, as much as is reasonable.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment #79.

Cl **168** *SC* **168.7.13** *P* **42** *L* **39** # 197

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **D** *consistency_dj*

"SRS" is not explained. It is used only three times.

SuggestedRemedy

Spell it out each time

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Follow treatment in 802.3dj.

Cl **168** *SC* **168.7.13** *P* **42** *L* **42** # 198

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **D** *new*

This says "The reflectance of the optical link should be at its maximum level" but there is no text to tell the reader what to do, and unlike the TDECQ setup, there is no optical reflector in Fig 168-7.

SuggestedRemedy

Explain this fully or delete the sentence.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Consider revising figure 168-7.

Cl **168** *SC* **168.7.13** *P* **42** *L* **44** # 199

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **D** *quick review*

While it should be obvious...

SuggestedRemedy

Add text saying that the PMD's transmitter and any other circuitry that could cause crosstalk should be operational when stressed sensitivity (and regular sensitivity) is measured. The same goes for transmitter measurements such as TECQ and TDECQ.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license.

See comment #79.

Cl **168** *SC* **168.7.13.3** *P* **43** *L* **33** # 201

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **D** *consistency_dj*

Now that we have a definition of TECQ, this can be done directly

SuggestedRemedy

Change "is measured according to 168.7.5, except that the test fiber is not used" to "is measured according to 168.7.6"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment #79.

Cl **168** *SC* **168.7.13.3** *P* **43** *L* **41** # 202

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **X** *consistency_dj*

From the style guide: The word may is used to indicate a course of action permissible within the limits of the standard (may equals is permitted to).

SuggestedRemedy

Change "under-stressed may result" to "under-stressed could result" or "under-stressed might result"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment #79.

Cl **168** *SC* **168.9** *P* **45** *L* **26** # 205

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **D** *consistency_CL140*

Originally, 10 km = 6 dB at 1310 nm. 10GBASE-BR10 can be at 1260 nm, so 6.2 dB. 25GBASE-BR10 and 50GBASE-BR10, also 1260 nm, are allowed 6.3 dB. 100GBASE-BR's shortest wavelength is 1303.6 nm so the same cable won't show so much loss. Calculating the channel insertion loss using the link model, it's 6.00 dB at 1310 nm 6.20 at 1260 or 6.02 dB at 1303.6 nm

SuggestedRemedy

Change 6.3 to 6 (or 6.1). Change the budget for 100GBASE-BR10 from 10.6 to 10.3 (or 10.4).

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Keep consistent with LR PMDs in previous clauses.

Cl **168** *SC* **168.9** *P* **45** *L* **36** # 206

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **D** *bucket(quick review)*

This gives the dispersion ranges for the upstream direction only

SuggestedRemedy

Add two more rows for the dispersion ranges for the downstream direction.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The dispersion covers both directions.
(This is simplification.)

Cl **168** *SC* **168.10** *P* **46** *L* **26** # 210

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **D** *bucket_EZ(quick review)*

may not support operation 10 km for 100GBASE-BR10, 20 km for 100GBASE-BR20 or 40 km for 100GBASE-BR40.

SuggestedRemedy

may not support operation *at* 10 km for 100GBASE-BR10, 20 km for 100GBASE-BR20 or 40 km for 100GBASE-BR40.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **168** *SC* **168.11** *P* **47** *L* **39** # 211

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **D** *interoperation*

"168.11 Requirements for interoperation between 100GBASE-BRx PMDs" other similar material e.g. in 151 doesn't say "Requirements for".

SuggestedRemedy

Delete "Requirements for" here and in the table title.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Change the subclause title of 168.11 into:
"Interoperation between 100GBASE-BRx PMDs".
Change the table title of Table 168–15 into:
"Channel characteristics for interoperation between 100GBASE-BR20 and 100GBASE-BR40".
Add additional row to specify the maximum distance in Table 168-15.

Cl **168** *SC* **168.11** *P* **47** *L* **39** # 212

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **D** *interoperation*

This needs some text to introduce the table, which should also address interoperability, or not, with 100GBASE-BR10. Presumably the mixed link has to stay within the chromatic dispersion limits of the shorter-reach PMD.

SuggestedRemedy

Something like:
168.11 Interoperation between 100GBASE-BRx PMDs
The 100GBASE-BR20 and 100GBASE-BR40 PMDs can interoperate with each other (over an engineered link) provided that the fiber optic cabling (channel) characteristics for 100GBASE-BR20 in Table 168-12 are met, with the exception of the maximum and minimum channel insertion loss values, which are given in Table 168-15 for the two link directions separately. Attenuators may be used to achieve the required losses. Interoperation between 100GBASE-BR10 and 100GBASE-BR20 or 100GBASE-BR40 is not recommended (or whatever the case is).

Proposed Response *Response Status* **W**

PROPOSED REJECT.
See comment #130.

Cl **168** *SC* **168.5.1** *P* **30** *L* **38** # 216

Dudek, Mike Marvell

Comment Type **E** *Comment Status* **X** *bucket_EZ(quick review)*

poor English.

SuggestedRemedy

Delete the "be" in "are not typically be accessible"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Maintenance required for Clause 160.

Cl **168** *SC* **168.6** *P* **32** *L* **40** # 217

Dudek, Mike Marvell

Comment Type **TR** *Comment Status* **D** *interoperation*

The statement is made that the 100GBASE-DR40 PMD will interoperate with the 100GBASE-BR10 and 100GBASE-BR20 provided the channel requirements for 100GBASE-BR10 and 100GBASE-BR20 are met, however section 168.11 includes additional requirements for interoperation between 100GBASE-BR40 and 100GBASE-20 including the addition of minimum losses. Section 168.11 doesn't include minimum losses for inter-operation between 100GBASE-BR40 and 100GBASE-10 and the minimum Tx output power for 100GBASE-BR40 in the off state is -15dBm which is greater than the signal detect "fail" level of -20dBm.

SuggestedRemedy

add "except that the channel losses are specified in section 168.11". Add an appropriate table for the inter-operation between 100GBASE-BR40 and 100GBASE-BR10 to section 168.11

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment #130.

Cl **168** *SC* **168.7.12** *P* **41** *L* # 218

Dudek, Mike Marvell

Comment Type **T** *Comment Status* **X** *ref_receiver*

In Figure 168-6 "meets equation constraints" needs to be below all the lines or it needs to be deleted.

SuggestedRemedy

Fix it

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
See comment #111.

Cl **168** *SC* **168.11** *P* **47** *L* **47** # 219

Dudek, Mike Marvell

Comment Type **TR** *Comment Status* **D** *interoperation*

There is only one fiber between the BR20 and BR40 PMD's so there can't be different loss specs for the two directions. To be compliant in both directions it appears that the loss between BR20 and BR40 would have to be min 8.3dB and max 10dB which is a very small range but could be specified.

SuggestedRemedy

Collapse the two rows in Table 168-15 into one row. With min loss of 8.3dB and max loss of 10dB

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment #130.

Cl **168** *SC* **168.9** *P* **45** *L* **30** # 271

Maniloff, Eric Ciena

Comment Type **T** *Comment Status* **D** *consistency_dj*

It appears that a statistical analysis is being used to arrive at the chromatic dispersion values, as documented in G.652 Appendix I. The document should clarify the approach used to arrive at the CD values. 802.3dj currently includes the following text: "The dispersion specifications are based on the statistical link design methodology documented in
ITU-T REC G.652, Appendix I."

SuggestedRemedy

Add a footnote to the CD values in Table168-12 indicating the method used to calculate the dispersion values.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Add to footnote b:
"The dispersion specifications are based on the statistical link design methodology documented in
ITU-T REC G.652, Appendix I.".