Cl **83E** *SC* **83E** *P* **167** *L* **45** # 19

Dawe, Piers Mellanox

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

RLdc is too close to the mixed-mode reflection limit for the mated compliance boards (25 - 5f/14 above 14 GHz) such that the requirement on an IC behind the connector becomes increasingly stringent at higher frequencies, the opposite of reasonable. We should align with CEI-28G-VSR.

SuggestedRemedy

Change from 15 dB to 18-6f/25.78 dB.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Draft is technically complete. The commenter suggests improvements to the draft which can be considered after D2.0 is generated.

Cl **83E** *SC* **83E.3.1** *P* **166** *L* **33** # 20

Dawe, Piers Mellanox

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

Host must provide the recommended CTLE peaking values, in case the module needs it. The recommended value must be not too far from the truth or the eye opening will collapse rapidly with CTLE tuning.

SuggestedRemedy

Add text:
The host shall determine a recommended CTLE peaking value selected from Table 13-8 that is within 1 dB of the optimum CTLE peaking value. This value is reported to station management via register X of the MDIO, or otherwise.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Incomplete suggested remedy. Commenter is encouraged to resubmit with a complete proposal after D2.0 is generated

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Cl **83E** *SC* **83E.3.1.2** *P* **166** *L* **41** # 4

Dawe, Piers Mellanox

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

This section is used for input voltage (voltage tolerance) as well as output voltage

SuggestedRemedy

Delete "output", here and in Figure 83E-6.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change:
"The peak-to-peak differential output voltage…" to:
"The peak-to-peak differential voltage…"
Change:
"The common-mode output voltage…" to:
"The common-mode voltage…"
Change:
"Figure 83E-6-Output voltage definitions" to:
"Figure 83E-6-Voltage definitions"

Cl **83E** *SC* **83E.3.1.3** *P* **167** *L* **17** # 2

Dudek, Mike QLogic

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

There is a missing word that is needed to complete the specification

SuggestedRemedy

Change "is than" to "is less than"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Change:
"The peak-to-peak differential output voltage is than or equal to 35 mV when the transmitter is disabled."
to
"The peak-to-peak differential output voltage is less than or equal to 35 mV when the transmitter is disabled."

Cl **83E** *SC* **83E.3.1.4** *P* **168** *L* **51** # 3

Dawe, Piers — Mellanox

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

This subclause is used for outputs as well as inputs.

SuggestedRemedy

Change "of the output" to "of input or output". Or better, because each limit is given in the relevant table, the sentence is unnecessary, so delete it. It is better not to mix up definitions and limits.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The definition applies to both outputs and inputs. The following sentence applies to output which corresponds to the flow of the document

Cl **83E** *SC* **83E.3.1.5** *P* **169** *L* **3** # 10

Dawe, Piers — Mellanox

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

This subclause is used for transition time where the minimum is 9.5 ps not 10 ps.

SuggestedRemedy

Change "10 ps" to "10 ps or 9.5 ps as given in the appropriate table" or "the minimum given in the appropriate table". Or better, as the sentence is unnecessary, delete it. It is better not to mix up definitions and limits.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Delete the sentence "The transition time is greater than or equal to 10 ps"

Cl **83E** *SC* **83E.3.1.6** *P* **169** *L* **6** # 5

Dawe, Piers — Mellanox

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

In this clause we don't specify jitter, we specify eye width. The two are not quite complementary (one would not usually measure TJ with PRBS9) and if they were, we have to use the same name for the same thing, every time.

SuggestedRemedy

Change "host output jitter" to "host eye width" 5 times.
Change "output jitter" to "eye width" once in 83E.3.1.6.1.
Change "module output jitter" to "module eye width" 5 times in 83E.3.2.1.
Change "output jitter" to "eye width" once in 83E.3.2.1.1.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
We are specifying jitter in a number of places (post limiting jitter characteristics, Random jitter and variable gain are adjusted to result in the eye height and eye width given in Table .). Host output jitter is being specified in terms of eye width.

Cl **83E** *SC* **83E.3.1.6.1** *P* **170** *L* **4** # 11

Dawe, Piers — Mellanox

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

Equation is not correct - missing brackets. Not dB. Also 2pi clutter makes it harder to understand than it need be.

SuggestedRemedy

H(f) = G*P1*P2*(jf+Z1) / (Z1 * (jf+P1) * (Jf+P2))
Delete "(dB)"
In Table 83E-2,s delete "/2pi", 3 times.
Change "in Grad/s" to "in GHz", twice.
Similarly in 83D.3.2.2.1.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Delete "(dB)"
Reinstate brackets in lower right of the equation:
(j2pif + P1)(j2pif + P2)
See comment 212 from D1.0, in relation to 2pi

Cl **83E** *SC* **83E.3.3** *P* **173** *L* **1** # 21

Dawe, Piers Mellanox

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

This says "specifications defined in Table 83E-4 when measured at TP4a." Yet differential pk-pk input voltage is measured at TP4.

SuggestedRemedy

The thorough solution is to add a column "Test point" with entries TP4a and TP4 as appropriate. Delete "Reference" (should be "reference") after "Subclause", or delete "Subclause".
Delete "at TP4" twice.
Similarly for module input.
Signaling rate is common to everything in this annex and is stated in 83E.3.1.4: once is enough, can be deleted from 4 tables. "Unit interval (UI) nominal" is not something to be conformed to independent of signaling rate, and isn't in the PICS, and is in text at 83E.3.1.1, so should not be in these tables at all.
As an interim measure, one could footnote Differential pk-pk input voltage tolerance (min) in tables 83E-4 and 83E-7, and single-ended and common mode voltage tolerances in Table 83E-7.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The input voltage is applied at TP4a

Cl **83E** *SC* **83E.3.3.2** *P* **173** *L* **46** # 7

Dawe, Piers Mellanox

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

This specification is used for module input return loss too.

SuggestedRemedy

Delete "host".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **83E** *SC* **83E.3.3.2** *P* **174** *L* **24** # 8

Dawe, Piers Mellanox

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

Completing implementation of D1.1 comment 136.

SuggestedRemedy

Change
Receiver input return loss
to
Differential input return loss
Figure 83E-13, change
Receiver differential to common mode conversion input return loss
to
Differential to common mode conversion input return loss
Table 83E-5, change
Host stressed receiver parameters
to
Host stressed input parameters
Also, to avoid confusion and for consistency with figures 83E-9, 11 and 14, in Figure 83E-15, delete the inner box "Module Tx Module Rx", but show that it's AC coupled by indicating capacitors as in Figure 83E-11.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Draft is technically complete. The commenter suggests improvements to the draft which can be considered after D2.0 is generated

Cl **83E** *SC* **83E.3.3.3.1** *P* **175** *L* **18** # 13

Dawe, Piers Mellanox

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

This test setup takes effort to set up so, to contain costs, it should be consistent with CEI-28G-VSR.
CEI-28G-VSR doesn't have the low pass filter or limiter but has a UBHPJ source.

SuggestedRemedy

Consider if UBHPJ is a lower cost and acceptable substitute for the low pass filter and limiter.
We may need a low pass filter after any limiter to adjust VEC anyway.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Incomplete suggested remedy

Cl **83E** *SC* **83E.3.3.3.1** *P* **175** *L* **51** # 12

Dawe, Piers — Mellanox

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

CRU definition needs to define the order and be consistent with current CEI-28G-VSR, other 25G/lane 802.3 clauses and the jitter mask of Table 88-13.

SuggestedRemedy

Change "with bandwidth of 10 MHz and peaking of less than 0.1 dB" to "with a first order transfer function with a 3 dB tracking bandwidth of 10 MHz".
Similarly in 83E.3.4.2.1 and 83E.4.2.
Also 83D.3.1.5.1.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Draft is technically complete. The commenter suggests improvements to the draft which can be considered after D2.0 is generated. For future consideration, below wording is used elsewhere in bm:
...and a slope of -20 dB/decade is used to characterize.

Cl **83E** *SC* **83E.3.3.3.1** *P* **175** *L* **52** # 17

Dawe, Piers — Mellanox

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

This says "Pattern 4 (PRBS9) as defined in Table 86-11" yet Table 86-11 doesn't define it: it says "Pattern defined in 83.5.10", and 83.5.10 says "a PRBS9 pattern (as defined in Table 68-6)".
Likewise in 83E.3.1.6, "Patterns 3 and 5 are defined in Table 86-11.", but Table 86-11 says they are defined in 83.5.10 and 82.2.10 (and that's not right for RS-FEC encoded Pattern 5 anyway): 83.5.10 says PRBS31 is defined in 49.2.8.
Don't waste the reader's time.

SuggestedRemedy

Change
Pattern 4 (PRBS9) as defined in Table 86-11
to
Pattern 4 (PRBS9) as defined in Table 68-6 (see Table 86-11)
8 times.
Change
Patterns 3 and 5 are defined in Table 86-11.
to
Patterns 3 is defined in 49.2.8, Pattern 5 is defined in 82.2.10, and RS-FEC encoded Pattern 5 is defined in 91.5.2 (see Table 86-11).
6 times.
It would be better to put an improved version of Table 86-11-Test patterns in Clause 80 and refer to it from bj and bm clauses.
Table 95-9 could be improved similarly.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Draft is technically complete. The commenter suggests improvements to the draft which can be considered after D2.0 is generated.
See comment #56 from D1.1

Cl **83E** *SC* **83E.3.3.3.1** *P* **176** *L* **32** # 6

Dawe, Piers — Mellanox

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

There is no "minimum eye height" in Table 83E-5.

SuggestedRemedy

Delete "minimum". (83E.3.4.2.1 doesn't need fixing.)

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Draft is technically complete. The commenter suggests improvements to the draft which can be considered after D2.0 is generated.

Cl **83E** *SC* **83E.3.3.3.1** *P* **176** *L* **38** # 25

Dawe, Piers Mellanox

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

Should allow Pattern 5 (with or without FEC) as usual for BER testing.
Editorial; use pattern numbers, as for PRBS9.

SuggestedRemedy

Change:
The pattern is then changed to PRBS31
to
The pattern is then changed to Pattern 3 (PRBS31) or Pattern 5 (scrambled idle, RS-FEC encoded if appropriate)
Same for 83E.3.4.2.1.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment 1

Cl **83E** *SC* **83E.3.3.3.1** *P* **176** *L* **38** # 1

Dudek, Mike QLogic

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

The test pattern is allowed to be scrambled idle or other valid signals earlier in the text as well as the PRBS31 required here. This is an inconsistency. The same problem exists for the module input stressed test.

SuggestedRemedy

Change "PRBS31 for the input test" to "Pattern 5 (with or without FEC encoding), Pattern 3 or a valid 100GBASE-R signal for the
input test"

Also on page 179 line 4

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

[Editor's note: Type set to T]

Cl **83E** *SC* **83E.3.4** *P* **177** *L* **51** # 23

Dawe, Piers Mellanox

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

Table 83E-1 constrains the host DC common-mode output voltage as well as single-ended output voltage. Any test of module input must be within these constraints.

SuggestedRemedy

Add rows for DC common-mode output voltage.
Rename "Single-ended voltage tolerance" to "Single-ended voltage" twice.
Add footnote saying these are set by the host not the module; the operating region is where all four conditions are met.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Draft is technically complete. The commenter suggests improvements to the draft which can be considered after D2.0 is generated.

Cl **83E** *SC* **83E.3.4** *P* **177** *L* **51** # 22

Dawe, Piers Mellanox

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

Single-ended voltage tolerance (min), -0.8 V, is not consistent with Table 83E-1, single-ended output voltage (min) -0.4 V.

SuggestedRemedy

Change -0.8 to -0.4.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **83E** *SC* **83E.3.4.2.1** *P* **177** *L* **14** # 18

Dawe, Piers Mellanox

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

This test setup takes effort to set up so, to contain costs, it should be consistent with CEI-28G-VSR.
CEI-28G-VSR doesn't have the low pass filter or limiter but has a UBHPJ source.

SuggestedRemedy

Consider if UBHPJ is a lower cost and acceptable substitute for the low pass filter and limiter.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Draft is technically complete. The commenter suggests improvements to the draft which can be considered after D2.0 is generated.
Also see comment #13

Cl **83E** *SC* **83E.3.4.2.1** *P* **178** *L* **43** # 14

Dawe, Piers Mellanox

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

10 ps

SuggestedRemedy

9.5 ps

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Change: ...transition time of 10 ps as measured at TP1a

to:
..transition time of 9.5 ps as measured
at TP4

Cl **83E** *SC* **83E.3.4.2.1** *P* **178** *L* **44** # 15

Dawe, Piers Mellanox

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

TP1a

SuggestedRemedy

TP4

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
See comment #14

Cl **83E** *SC* **83E.3.4.2.1** *P* **178** *L* **51** # 16

Dawe, Piers Mellanox

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

Need to explain the frequency dependent attenuator more; a clean Bessel-Thomson filter would not be suitable.

SuggestedRemedy

Add:
The frequency-dependent attenuator is intended to represent the host channel, and may be implemented with PCB traces.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Draft is technically complete. The commenter suggests improvements to the draft which can be considered after D2.0 is generated.

Cl **83E** *SC* **83E.3.4.2.1** *P* **179** *L* **6** # 24

Dawe, Piers Mellanox

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

Say that the module is provided with the ideal recommended CTLE peaking value and one or two neighbours (whichever exist in the range 1 to 9) for the module stressed input test signal, via MDIO or otherwise. Module has to pass with each of the two or three recommendations. Module is expected to work with other signals if given appropriate recommendations.

SuggestedRemedy

The optimal recommended CTLE peaking value for the module stressed input test signal is determined. The optimal value is the setting, as an integral number of dB, that results in the maximum value of EW15*EH15. This value is communicated to the module via MDIO or otherwise. The module is tested, and the process is repeated once or twice with the next higher and next lower values if they exist in the range 1 to 9 dB.
The BER at the Tx side output of the module (PMA) under test (typically an optical output) shall comply with the BER specification in Table 83E-7 when the module is provided with each of the two or three recommended CTLE peaking values. These are: a) the optimal value, b) the value 1 dB higher if present in Table 83E-2 and c) the value 1 dB lower if present in Table 83E-2.
Modules are also expected to operate within the BER specified in Table 83E-7 when presented with signals that require different CTLE settings as long as the signal complies with the specifications in Table 83E-1 and the recommended CTLE peaking value supplied by the host is within 1 dB of the optimal value for the signal.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Draft is technically complete. The commenter suggests improvements to the draft which can be considered after D2.0 is generated.

Cl **83E** *SC* **83E.4.2** *P* **179** *L* **33** # 26

Dawe, Piers Mellanox

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

"Any single CTLE setting" needs qualification.

SuggestedRemedy

For host, it's recommended CTLE peaking value, 1 dB more if <=9, or 1 dB less if >=1.
Also, recommended CTLE peaking value must not be too inaccurate.
For module, either 1 or 2 dB.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Draft is technically complete. The commenter suggests improvements to the draft which can be considered after D2.0 is generated.
First sentence provides qualification (Apply respective reference receiver CTLE to captured signal)

Cl **83E** *SC* **83E.4.2** *P* **180** *L* **1** # 9

Dawe, Piers
Mellanox

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

We don't want to make histograms of the signal's amplitude (its swing). We want histograms of the signal (its voltage). Aligning with CEI-28G-VSR.

SuggestedRemedy

Change amplitude to voltage, 3 times.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Draft is technically complete. The commenter suggests improvements to the draft which can be considered after D2.0 is generated.