Cl **83E** *SC* **83E.3.1.2** *P* **174** *L* **42** # r02-1

RAN, ADEE — Intel Corporation

Comment Type **T** *Comment Status* **A**

The change from draft 3.1 highlights the following definition:

"The peak-to-peak differential voltage v_di is defined to be the difference between the single-ended output voltages, SLi<p> minus SLi<n>."

This definition implies that the SLi terms refer to scalar voltage values at the instant when the difference between the single-ended signals is at its peak. But the common-mode voltage specification includes an RMS value, which is calculated from the full common-mode signal, not just its value when the differential signal is at the peak; so the definitions of v_cmi and SLi must be the signals in general rather than their values at a specific instant.

The similar prior text in 93.8.1.3 defines v_di as the differential output, without "peak-to-peak". This is unambiguous: v_di and v_cmi are both defined as signals, and the signals' properties (peak-to-peak, AC RMS, DC value) have specified limits in table 83E-1.

If "peak-to-peak" really needs that clarification, the text should read "The peak-to-peak differential voltage v_di is defined to be the _maximum_ difference between the single-ended output voltages, SLi<p> minus SLi<n>". But this seems unnecessarily verbose; we can assume readers know how to calculate the peak-to-peak of a differential signal.

The term "peak-to-peak" was added to this definition following comment #106 against D1.0 and the term "output" was removed following comment #4 against D1.2. To satisfy these comments, we could delete the word "output" from all parameter names in Table 83E-1 (rows 2, 3, 4, 5, 6, 7, and 11), since the table's title states that it deals with output parameters. In addition, the parameter name in the 7th row should be changed from "Differential peak-to-peak output voltage (max)" to "Differential voltage (max, peak-to-peak)" (based on row 6). This would also require changing multiple PICS items in 83E.5.4.1 accordingly. However, in view of the project state I am reluctant to suggest this group of changes.

SuggestedRemedy

Change the first sentence in 83E.3.1.2 from
"The peak-to-peak differential voltage v_di is defined to be the difference between the single-ended output voltages, SLi<p> minus SLi<n>."
to
"The differential output voltage v_di is defined to be the difference between the single-ended output voltages, SLi<p> minus SLi<n>."

(based on 93.8.1.3, with the modification from D3.1)

Response *Response Status* **C**

ACCEPT.

Cl **00** *SC* **0** *P* **0** *L* **0** # r02-2

Turner, Michelle

Comment Type **E** *Comment Status* **A** *Bucket*

This draft meets all editorial requirements.

SuggestedRemedy

Response *Response Status* **C**

ACCEPT.
Thank you

Cl **83A** *SC* **83A.3.4.7** *P* **141** *L* **39** # r02-3

Anslow, Peter — Ciena Corporation

Comment Type **E** *Comment Status* **A** *Bucket*

The implementation of comments i-12 and i-64 against D3.0 changed the text in 83A.3.4.7, but this was shown as if it had changed the base text rather than being shown in underline and strikeout fonts.

SuggestedRemedy

Show the changes due to comments i-12 and i-64 against D3.0 in underline and strikeout fonts as changes to the base text.

Response *Response Status* **C**

ACCEPT.

Cl **83D** *SC* **83D.3.1** *P* **160** *L* **32** # r02-4

Anslow, Peter — Ciena Corporation

Comment Type **E** *Comment Status* **A** *Bucket*

Comments i-7 and i-88 against D3.0 corrected the jitter reference in Table 83D-1 from 92.8.3.9.2 (which was appropriate to an earlier version of P802.3bj, but does not exist in the published version) to 92.8.3.8.2. However one instance of 92.8.3.9.2 in footnote b was not corrected.

SuggestedRemedy

In Table 83D-1 footnote b), change the remaining instance of 92.8.3.9.2 to 92.8.3.8.2

Response *Response Status* **C**

ACCEPT.

This comment does not apply to the changes between IEEE P802.3bm/D3.2 and IEEE P802.3bm/D3.1 or the unsatisfied negative comments from the initial ballot. Hence it is not within the scope of the recirculation ballot. However, the changes suggested are an improvement to the draft that would otherwise need to be made in maintenance.
Make the changes as per the Suggested Remedy.

Cl **83E** *SC* **83E.3.3.2.1** *P* **183** *L* **48** # r02-5

Anslow, Peter — Ciena Corporation

Comment Type **E** *Comment Status* **A** *Bucket*

In Tables 83E-6 and 83E-9, footnote c) refers to 92.8.3.10.1 for the definition of even-odd jitter. However, while this was appropriate to an earlier version of P802.3bj, 92.8.3.10.1 does not exist in the published version. The definition of even-odd jitter is in 92.8.3.8.1

SuggestedRemedy

In Tables 83E-6 and 83E-9, footnote c) change 92.8.3.10.1 to 92.8.3.8.1

Response *Response Status* **C**

ACCEPT.

This comment does not apply to the changes between IEEE P802.3bm/D3.2 and IEEE P802.3bm/D3.1 or the unsatisfied negative comments from the initial ballot. Hence it is not within the scope of the recirculation ballot. However, the changes suggested are an improvement to the draft that would otherwise need to be made in maintenance.
Make the changes as per the Suggested Remedy.

Cl **01** *SC* **1.3** *P* **22** *L* **23** # r02-6

Dawe, Piers J G — Mellanox Technologie

Comment Type **E** *Comment Status* **A** *Bucket*

This isn't the published name of IEC 61754-7-1.

SuggestedRemedy

Change
Type MPO connector family-Single fibre row.
to
Type MPO connector family - One fibre row.

Response *Response Status* **C**

ACCEPT.

Cl **83E** *SC* **83E.3.3.2.1** *P* **184** *L* **7** # r02-7

Dawe, Piers J G — Mellanox Technologie

Comment Type **E** *Comment Status* **A** *Bucket*

Font too small.

SuggestedRemedy

Change 9 point to 10 point.

Response *Response Status* **C**

ACCEPT.
This comment does not apply to the changes between IEEE P802.3bm/D3.2 and IEEE P802.3bm/D3.1 or the unsatisfied negative comments from the initial ballot. Hence it is not within the scope of the recirculation ballot. However, the changes suggested are an improvement to the draft that would otherwise need to be made during publication.
Make the changes as per the Suggested Remedy.

Cl **83E** *SC* **83E.5.4.1** *P* **190** *L* **24** # r02-8

Dawe, Piers J G — Mellanox Technologie

Comment Type **E** *Comment Status* **A** *Bucket*

Font too big "25.78125 ... lane".

SuggestedRemedy

Change 10 point to 9 point. Also check 83D.6.4.1.

Response *Response Status* **C**

ACCEPT.
This comment does not apply to the changes between IEEE P802.3bm/D3.2 and IEEE P802.3bm/D3.1 or the unsatisfied negative comments from the initial ballot. Hence it is not within the scope of the recirculation ballot. However, the changes suggested are an improvement to the draft that would otherwise need to be made during publication.
Make the changes as per the Suggested Remedy.

Cl **83E** *SC* **83E.5.4.1** *P* **190** *L* **50** # r02-9

Dawe, Piers J G — Mellanox Technologie

Comment Type **E** *Comment Status* **A**

PICS TH12 and TH13 say 95 mV and 80 mV and reference 83E.3.1.6, but there is no mention of 95 mV or 80 mV there (the only "shall" there relates to counter-propagating signals).

SuggestedRemedy

This PICS and probably several others should refer to 83E.3.1, where the relevant shall and Table 83E-1 with the relevant limit are.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change TH11, TH12 and TH13 to reference subclause 83E.3.1

Cl **95** *SC* **95.7.1** *P* **114** *L* **34** # r02-10

Dawe, Piers J G
Mellanox Technologie

Comment Type **TR** *Comment Status* **A**

Consequential changes following adjustment of TDEC and SEC: OMA-TDEC min, OMA min, mean power min (Tx and Rx), budget, allocation for penalties, SRS OMA. Any more?

SuggestedRemedy

See presentation.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See response to comment r02-37

[Editor's note added after comment resolution completed.
The response to Comment r02-37 was:
ACCEPT IN PRINCIPLE.

In Table 95-6 change:
TDEC, each lane (max) from 4.9 dB to 4.3 dB
OMA, each lane (min) from -7 dBm to -6.4 dBm
Launch power in OMA minus TDEC (min) from -7.9 dBm to -7.3 dBm
Average launch power, each lane (min) from -9 dBm to -8.4

In Table 95-7 change:
Average receive power, each lane (min) from -10.9 dBm to -10.3
Stressed receiver sensitivity (OMA), each lane (max) from -5.6 dBm to -5.2
SEC, lane under test from 4.9 dB to 4.3 dB
Also change "Stressed eye J4 Jitter, lane under test" to "Stressed eye J4 Jitter, lane under test (max)" with editorial license.

Make the changes shown on page 3 of
http://www.ieee802.org/3/bm/public/nov14/dawe_01a_1114_optx.pdf
with editorial license.

See also comments 10, 11, 12, 13, 14, 18, 19, 36.]

Cl **95** *SC* **95.7.1** *P* **114** *L* **41** # r02-11

Dawe, Piers J G
Mellanox Technologie

Comment Type **TR** *Comment Status* **A**

TDEC of 4.9 is much more than any previous VECP or TDP (3.5 and 3.9) and near a "cliff" (uncontrolled jitter tails cause error floor approaching FEC's correction ability). Unless we can control MPN better than now, this is dangerous, and it's not necessary: the reference worst case transmitter delivers a TDEC of 4.4 dB and practical transmitters are better than that. D3.0 comment 46 and D3.1 comment 71 recommended 4.3 dB.

SuggestedRemedy

Change the TDEC limit in Table 95-6 (transmitter) from 4.9 dB to 4.3 dB or lower (see work of MMF ad hoc and/or presentation at this meeting). See other comments for SEC and for consequential changes.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See response to comment r02-37

[Editor's note added after comment resolution completed.
The response to Comment r02-37 was:
ACCEPT IN PRINCIPLE.

In Table 95-6 change:
TDEC, each lane (max) from 4.9 dB to 4.3 dB
OMA, each lane (min) from -7 dBm to -6.4 dBm
Launch power in OMA minus TDEC (min) from -7.9 dBm to -7.3 dBm
Average launch power, each lane (min) from -9 dBm to -8.4

In Table 95-7 change:
Average receive power, each lane (min) from -10.9 dBm to -10.3
Stressed receiver sensitivity (OMA), each lane (max) from -5.6 dBm to -5.2
SEC, lane under test from 4.9 dB to 4.3 dB
Also change "Stressed eye J4 Jitter, lane under test" to "Stressed eye J4 Jitter, lane under test (max)" with editorial license.

Make the changes shown on page 3 of
http://www.ieee802.org/3/bm/public/nov14/dawe_01a_1114_optx.pdf
with editorial license.

See also comments 10, 11, 12, 13, 14, 18, 19, 36.]

Cl **95** *SC* **95.7.2** *P* **115** *L* **24** # r02-12

Dawe, Piers J G
Mellanox Technologie

Comment Type **TR** *Comment Status* **A**

TDEC and the stressed eye now includes all transmitter and path penalties so the OMA for stressed receiver testing does not have to be set lower than the minimum received OMA at maximum OMA. It should be:
Launch power in OMA minus TDEC (min) + max TDEC - Channel insertion loss, or -7.9+4.9-1.9 = -4.9 dBm. It would remain at -4.9 for a different max TDEC.

SuggestedRemedy

Change stressed receiver sensitivity (OMA), each lane (max) from -5.6 dBm to -4.9 dBm.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See response to comment r02-37

[Editor's note added after comment resolution completed.
The response to Comment r02-37 was:
ACCEPT IN PRINCIPLE.

In Table 95-6 change:
TDEC, each lane (max) from 4.9 dB to 4.3 dB
OMA, each lane (min) from -7 dBm to -6.4 dBm
Launch power in OMA minus TDEC (min) from -7.9 dBm to -7.3 dBm
Average launch power, each lane (min) from -9 dBm to -8.4

In Table 95-7 change:
Average receive power, each lane (min) from -10.9 dBm to -10.3
Stressed receiver sensitivity (OMA), each lane (max) from -5.6 dBm to -5.2
SEC, lane under test from 4.9 dB to 4.3 dB
Also change "Stressed eye J4 Jitter, lane under test" to "Stressed eye J4 Jitter, lane under test (max)" with editorial license.

Make the changes shown on page 3 of
http://www.ieee802.org/3/bm/public/nov14/dawe_01a_1114_optx.pdf
with editorial license.

See also comments 10, 11, 12, 13, 14, 18, 19, 36.]

Cl **95** *SC* **95.7.2** *P* **115** *L* **28** # r02-13

Dawe, Piers J G
Mellanox Technologie

Comment Type **TR** *Comment Status* **A**

D3.1 had VECP=4.2 dB, D3.2 has SEC=4.9 dB. For stressed eyes, SEC is significantly less than VECP, so the stressed eye is much more stressful than it was. This will affect the transmitter TDEC limit also. D3.0 comment 46 and D3.1 comment 71 recommended 4.3 dB. Simulations show that the TDEC of the reference worst transmitter is 4.4 dB, but the SEC of the reference worst transmitter and channel, which is what matters here, is 3.9 dB.

SuggestedRemedy

Change the SEC condition in Table 95-7 (receiver) from 4.9 dB to around 3.9 dB (see work of MMF ad hoc and/or presentation at this meeting). See other comments for TDEC and for consequential changes.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See response to comment r02-37

[Editor's note added after comment resolution completed.
The response to Comment r02-37 was:
ACCEPT IN PRINCIPLE.

In Table 95-6 change:
TDEC, each lane (max) from 4.9 dB to 4.3 dB
OMA, each lane (min) from -7 dBm to -6.4 dBm
Launch power in OMA minus TDEC (min) from -7.9 dBm to -7.3 dBm
Average launch power, each lane (min) from -9 dBm to -8.4

In Table 95-7 change:
Average receive power, each lane (min) from -10.9 dBm to -10.3
Stressed receiver sensitivity (OMA), each lane (max) from -5.6 dBm to -5.2
SEC, lane under test from 4.9 dB to 4.3 dB
Also change "Stressed eye J4 Jitter, lane under test" to "Stressed eye J4 Jitter, lane under test (max)" with editorial license.

Make the changes shown on page 3 of
http://www.ieee802.org/3/bm/public/nov14/dawe_01a_1114_optx.pdf
with editorial license.

See also comments 10, 11, 12, 13, 14, 18, 19, 36.]

Cl **95** *SC* **95.7.2** *P* **115** *L* **31** # r02-14

Dawe, Piers J G — Mellanox Technologie

Comment Type **TR** *Comment Status* **A**

J4 is still a little higher than expected from the reference worst case transmitter and worst channel. Also, it is difficult to get an agreed reproducible measurement of a large J4, especially for the eye shape from a stressed eye generator.

SuggestedRemedy

Consider reducing J4 slightly, from 0.53 UI to 0.51 UI.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See response to comment r02-37

[Editor's note added after comment resolution completed.
The response to Comment r02-37 was:
ACCEPT IN PRINCIPLE.

In Table 95-6 change:
TDEC, each lane (max) from 4.9 dB to 4.3 dB
OMA, each lane (min) from -7 dBm to -6.4 dBm
Launch power in OMA minus TDEC (min) from -7.9 dBm to -7.3 dBm
Average launch power, each lane (min) from -9 dBm to -8.4

In Table 95-7 change:
Average receive power, each lane (min) from -10.9 dBm to -10.3
Stressed receiver sensitivity (OMA), each lane (max) from -5.6 dBm to -5.2
SEC, lane under test from 4.9 dB to 4.3 dB
Also change "Stressed eye J4 Jitter, lane under test" to "Stressed eye J4 Jitter, lane under test (max)" with editorial license.

Make the changes shown on page 3 of
http://www.ieee802.org/3/bm/public/nov14/dawe_01a_1114_optx.pdf
with editorial license.

See also comments 10, 11, 12, 13, 14, 18, 19, 36.]

Cl **95** *SC* **95.8.1.1** *P* **117** *L* **28** # r02-15

Dawe, Piers J G — Mellanox Technologie

Comment Type **E** *Comment Status* **A** *Bucket*

Justification

SuggestedRemedy

Paragraph should be fully justified like the others.

Response *Response Status* **C**

ACCEPT.

Cl **95** *SC* **95.8.5.2** *P* **118** *L* **53** # r02-16

Dawe, Piers J G — Mellanox Technologie

Comment Type **TR** *Comment Status* **R**

To guard better against unreasonably high jitter, it may be helpful to increase the histogram timing offsets.

SuggestedRemedy

Consider changing "centered at 0.4 UI and 0.6 UI" to "centered at 0.38 UI and 0.62 UI", with appropriate change to the TDEC limit and SEC condition. If desired, revise Figure 95-4 to match.

Response *Response Status* **C**

REJECT.
The commenter has not established that using histogram windows centered at 0.4 UI and 0.6 UI allows unreasonably high jitter or that the proposed change is an improvement.

Cl **95** *SC* **95.8.5.2** *P* **119** *L* **4** # r02-17

Dawe, Piers J G — Mellanox Technologie

Comment Type **E** *Comment Status* **A** *Bucket*

It looks like D3.1 comment 7 wasn't implemented: for consistency use the phrase 'histogram window".

SuggestedRemedy

Change "outer boundary of the histogram" to "outer boundary of the histogram window".

Response *Response Status* **C**

ACCEPT.

Cl **95** *SC* **95.8.5.2** *P* **120** *L* **19** # r02-18

Dawe, Piers J G — Mellanox Technologie

Comment Type **TR** *Comment Status* **A**

The calculation of TDEC predicts more difference between a good transmitter and a bad one than can be relied on in reality, meaning that the TDEC-OMA trade-off won't work correctly.

SuggestedRemedy

Change equations 95-3 and 95-4 and some associated text to:
R = (1-M1)sqrt(N^2+S^2-M2^2) where M1 and M2, defined in Equation (95-4) and Equation (95-5), account for mode partition noise and modal noise that could be added by the optical channel, and
...
M1 =0.15 (95-4)
M2 = 0.01 Pave (95-5)
In 95.8.8.2, change "the value of M in Equation (95-3) is set to zero" to "the values of M1 and M2 in Equation (95-3) are set to zero".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See response to comment r02-37

[Editor's note added after comment resolution completed.
The response to Comment r02-37 was:
ACCEPT IN PRINCIPLE.

In Table 95-6 change:
TDEC, each lane (max) from 4.9 dB to 4.3 dB
OMA, each lane (min) from -7 dBm to -6.4 dBm
Launch power in OMA minus TDEC (min) from -7.9 dBm to -7.3 dBm
Average launch power, each lane (min) from -9 dBm to -8.4

In Table 95-7 change:
Average receive power, each lane (min) from -10.9 dBm to -10.3
Stressed receiver sensitivity (OMA), each lane (max) from -5.6 dBm to -5.2
SEC, lane under test from 4.9 dB to 4.3 dB
Also change "Stressed eye J4 Jitter, lane under test" to "Stressed eye J4 Jitter, lane under test (max)" with editorial license.

Make the changes shown on page 3 of
http://www.ieee802.org/3/bm/public/nov14/dawe_01a_1114_optx.pdf
with editorial license.

See also comments 10, 11, 12, 13, 14, 18, 19, 36.]

Cl **95** *SC* **95.8.5.2** *P* **120** *L* **27** # r02-19

Dawe, Piers J G — Mellanox Technologie

Comment Type **TR** *Comment Status* **A**

It would be nice to have TDEC predicting the penalty after the worst channel, not consistently more or less, so that the TDEC and SEC specifications have the same number.

SuggestedRemedy

If so, they should both be between 3.9 and 4.3 dB (for the present histogram timing offsets), and another tweak to equations 95-3 and 95-4 may be needed.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See response to comment r02-37

[Editor's note added after comment resolution completed.
The response to Comment r02-37 was:
ACCEPT IN PRINCIPLE.

In Table 95-6 change:
TDEC, each lane (max) from 4.9 dB to 4.3 dB
OMA, each lane (min) from -7 dBm to -6.4 dBm
Launch power in OMA minus TDEC (min) from -7.9 dBm to -7.3 dBm
Average launch power, each lane (min) from -9 dBm to -8.4

In Table 95-7 change:
Average receive power, each lane (min) from -10.9 dBm to -10.3
Stressed receiver sensitivity (OMA), each lane (max) from -5.6 dBm to -5.2
SEC, lane under test from 4.9 dB to 4.3 dB
Also change "Stressed eye J4 Jitter, lane under test" to "Stressed eye J4 Jitter, lane under test (max)" with editorial license.

Make the changes shown on page 3 of
http://www.ieee802.org/3/bm/public/nov14/dawe_01a_1114_optx.pdf
with editorial license.

See also comments 10, 11, 12, 13, 14, 18, 19, 36.]

Cl **95** *SC* **95.8.8** *P* **121** *L* **18** # r02-20

Dawe, Piers J G — Mellanox Technologie

Comment Type **E** *Comment Status* **A** *Bucket*

We didn't complete D3.1 comment 82. We still use 10 names for the same thing, and we are supposed to use the same name every time:
conformance test signal 2
compliance signal 1
optical test signal 1
stressed receiver conformance signal 2
stressed receiver conformance test signal 4
stressed eye conformance signal 1
conformance signal 1
stressed receiver conformance input signal 1
test signal 1
input signal 1

SuggestedRemedy

Change them all to the same thing, e.g. "stressed receiver test signal" or "stressful signal". Scrub the SRS section for consistent terminology.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Editors note; as a guideline, 'stressed receiver conformance test' was used as consistently as possible for the test itself, and 'signal' for the test signal, with added descriptive text where it might be helpful to differentiate between e.g. a receiver input signal vs a receiver output signal.

In section 95.8.8.1, line 53, page 121 and in section 95.8.8.2, line 23, page 123 (D3p2 clean version), change 'stressed receiver conformance signal' to 'stressed receiver conformance test signal'.

In section 95.8.8.2, line 17, page 123 (D3p2 clean version), change:
"stressed eye conformance signal" to:
"stressed receiver conformance test signal"

In section 95.8.8.1, line 28, page 121 change "compliance" to "conformance".

Cl **95** *SC* **95.8.8.1** *P* **121** *L* **27** # r02-21

Dawe, Piers J G — Mellanox Technologie

Comment Type **E** *Comment Status* **R**

We didn't complete D3.1 comment 82 (scrub the SRS section for consistent terminology). The draft uses "stressed receiver conformance test" 4 times, "receiver conformance test" once, and (in Table 85-7) "stressed receiver sensitivity test" once.

SuggestedRemedy

Change all to "stressed receiver test". Scrub the SRS section for consistent terminology.

Response *Response Status* **C**

REJECT.
This comment does not apply to the changes between IEEE P802.3bm/D3.2 and IEEE P802.3bm/D3.1 or the unsatisfied negative comments from the initial ballot. Hence it is not within the scope of the recirculation ballot.

The text of clause 95 follows a similar descriptive format as clause 52 (which is referenced by clause 86).

Cl **95** *SC* **95.8.8.1** *P* **121** *L* **31** # r02-22

Dawe, Piers J G — Mellanox Technologie

Comment Type **T** *Comment Status* **R**

We inserted "The fourth-order Bessel-Thomson filter has a 3 dB bandwidth of approximately 19 GHz" in the hope that this would avoid worse-than-Gaussian jitter tails. It appeared that it did not, other changes were needed. This bandwidth is suitable but so are others, I believe. Also, this sentence follows immediately after one about "suitable test set" but it's talking about a different Bessel-Thomson filter, not the filter in the test set.

SuggestedRemedy

Insert a paragraph break.
Change "The fourth-order Bessel-Thomson filter has a 3 dB bandwidth of approximately 19 GHz." to "For stress conditioning, a 3 dB bandwidth for the fourth-order Bessel-Thomson filter of approximately 19 GHz is suitable."

Response *Response Status* **C**

REJECT.
The proposed change doesn't improve the draft.

Cl **95** *SC* **95.8.8.1** *P* **121** *L* **33** # r02-23

Dawe, Piers J G — Mellanox Technologie

Comment Type **T** *Comment Status* **A**

"the appropriate level" of stressed eye closure (SEC): means what?
Also, this says:
"The low-pass filter, when combined with the E/O converter, should have a frequency response that results in the appropriate level of stressed eye closure (SEC) before the sinusoidal terms are added."
while 95.8.8.2 says:
"With sinusoidal amplitude interferer 1, sinusoidal amplitude interferer 2, sinusoidal jitter, ***and the Gaussian noise generator*** turned off, at least 2.5 dB of SEC should be created by the selection of the appropriate bandwidth for the low-pass filter."

SuggestedRemedy

Change to "The low-pass filter, when combined with the E/O converter, should have a frequency response that results in at least the level of stressed eye closure (SEC) given in 95.8.8.2 before the sinusoidal terms (see below) and the Gaussian noise are added."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See response to comment r02-32

[Editor's note added after comment resolution completed.
The response to Comment r02-32 was:
ACCEPT IN PRINCIPLE.
Change:
"The low-pass filter, when combined with the E/O converter, should have a frequency response that results in the appropriate level of stressed eye closure (SEC) before the sinusoidal terms are added."
to:
"The low-pass filter, when combined with the E/O converter, should have a frequency response that results in the level of stressed eye closure (SEC) before the sinusoidal and Gaussian noise terms are added, as described in 95.8.8.2."]

Cl **95** *SC* **95.8.8.1** *P* **122** *L* **5** # r02-24

Dawe, Piers J G — Mellanox Technologie

Comment Type **T** *Comment Status* **A**

Other requirements for at least 31 UI delay are now (D3.1 comment 55) qualified e.g. "For the case where Pattern 3 is used with a common clock". This is the odd one out.

SuggestedRemedy

Change "If Pattern 3 is used for the transmit and receive lanes not under test, there is at least 31 UI delay between the PRBS31 patterns *generated* on one lane and any other lane."
to "If Pattern 3 is used *with a common clock* for the transmit *or* receive lanes not under test, there is at least 31 UI delay between the PRBS31 patterns on one lane and any other lane."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change:
"If Pattern 3 is used for the transmit and receive lanes not under test, there is at least 31 UI delay between the PRBS31 patterns generated on one lane and any other lane." to:
"If Pattern 3 is used with a common clock for the transmit or receive lanes not under test, there is at least 31 UI delay between the PRBS31 patterns on one lane and any other lane."

Cl **95** *SC* **95.8.8.2** *P* **123** *L* **3** # r02-25

Dawe, Piers J G — Mellanox Technologie

Comment Type **E** *Comment Status* **A** *Bucket*

the PMD receiver of the lane under test

SuggestedRemedy

the lane under test of the PMD receiver
or, in line with text at the bottom of the page,
each lane of the PMD receiver

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "the PMD receiver of the lane under test"
to "each lane of the PMD receiver"

Cl **95** *SC* **95.8.8.2** *P* **123** *L* **14** # r02-26

Dawe, Piers J G — Mellanox Technologie

Comment Type **TR** *Comment Status* **A**

There is interest in creating a conformance test signal without the limiter, and in using random jitter generation instead of random noise. The draft seems to say that any approach meets the SEC and jitter numbers is acceptable, but we don't yet know if these alternatives are equivalent or not, and we will probably never know that ANY alternative is equivalent.

SuggestedRemedy

Find out. If they are equivalent, explicitly allow them. If not, warn against them. If a stressed eye generator without a limiter is acceptable, state what filter profile is acceptable (BT4? lossy T line?). If we can, state more fully what is needed for equivalence (it may be to do with pulse shrinkage). Change "any approach ... is acceptable" to "other approaches ... are acceptable"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The commenter has not demonstrated a deficiency in the draft.
There was no support to change the stressed eye generator as described in http://www.ieee802.org/3/bm/public/nov14/dawe_05_1114_optx.pdf.

Change:
"... However any approach that modulates or creates the appropriate levels and frequencies of the SEC and jitter components is acceptable." to:
"... However alternative test setups that generate equivalent stress conditions may be used."

Cl **95** *SC* **95.8.8.2** *P* **123** *L* **26** # r02-27

Dawe, Piers J G — Mellanox Technologie

Comment Type **E** *Comment Status* **A** *Bucket*

This D3.1 comment 88 appears not to have been fully acted on:
"It would be easier to follow if these things were listed in the same order as they appear in Figure 95-5.
Change
sinusoidal interferers, sinusoidal jitter, and Gaussian noise generator
to
sinusoidal jitter, sinusoidal interferers, and Gaussian noise generator
Two instances."
Also the terminology could be more consistent, and the text can be simplified and made clearer by re-ordering.

SuggestedRemedy

In step 2, change
With the sinusoidal interferers, sinusoidal jitter, and Gaussian noise generator
to
With the sinusoidal jitter, sinusoidal interferers, and Gaussian noise generator turned off
In step 3, change
With sinusoidal amplitude interferer 1, sinusoidal amplitude interferer 2, sinusoidal jitter, and the Gaussian noise generator
to
With sinusoidal jitter, sinusoidal amplitude interferer 1, sinusoidal amplitude interferer 2, and the Gaussian noise generator
Or better, combine so that step 2 becomes:
With the sinusoidal jitter, sinusoidal amplitude interferer 1, sinusoidal amplitude interferer 2, and the Gaussian noise generator turned off, set the extinction ratio of the E/O to approximately the minimum specified in Table 95-6. At this stage, at least 2.5 dB of SEC should be created by the selection of the appropriate bandwidth for the low-pass filter.
Delete the sentence in step 3 beginning "With sinusoidal amplitude".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
In step 2, change
"With the sinusoidal interferers, sinusoidal jitter, and Gaussian noise generator"
to
"With the sinusoidal jitter, sinusoidal interferers, and Gaussian noise generator turned off"
In step 3, change
"With sinusoidal amplitude interferer 1, sinusoidal amplitude interferer 2, sinusoidal jitter, and the Gaussian noise generator"
to
"With sinusoidal jitter, sinusoidal amplitude interferer 1, sinusoidal amplitude interferer 2, and the Gaussian noise generator"

Cl **95** *SC* **95.8.8.2** *P* **123** *L* **32** # r02-28

Dawe, Piers J G — Mellanox Technologie

Comment Type **T** *Comment Status* **A**

This says "When calibrating the conformance signal, the sinusoidal jitter frequency should be within the 10 MHz to 10 times LB as defined in Table 95-11." If one is calibrating for SEC, J2 and J4, and the amplitude of the SJ is right, the results will vary (by about 0.05/sqrt(2) UI?) from 10 MHz to 10 x LB, so this isn't good advice.

SuggestedRemedy

Change "within the 10 MHz to 10 times LB as defined in Table 95-11." to "between 50 MHz and 10 times LB as defined in Table 95-11."

Response *Response Status* **C**

ACCEPT.

Cl **95** *SC* **95.8.8.2** *P* **123** *L* **37** # r02-29

Dawe, Piers J G — Mellanox Technologie

Comment Type **E** *Comment Status* **A**

Repetition: 95.8.8.1 has already said this sentence, and entry 3 in this list is longer than desirable. But, the recipe doesn't say to turn the sinusoidal interferers on.

SuggestedRemedy

Replace this duplicate sentence saying "The sinusoidal amplitude interferers may be set at any frequency between 100 MHz and 2 GHz, although care should be taken to avoid harmonic relationships between the sinusoidal interferers, the sinusoidal jitter, the signaling rate, and the pattern repetition rate.", with:
"Sinusoidal amplitude interferer 1, sinusoidal amplitude interferer 2, sinusoidal jitter, and the Gaussian noise are added."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Delete "The sinusoidal amplitude interferers may be set at any frequency between 100 MHz and 2 GHz, although care should be taken to avoid harmonic relationships between the sinusoidal interferers, the sinusoidal jitter, the signaling rate, and the pattern repetition rate."

Two paragraphs above, the recipe says that "Any remaining SEC must be created with a combination of sinusoidal jitter, sinusoidal interference, and Gaussian noise."

Cl **95** *SC* **95.8.8.2** *P* **123** *L* **40** # r02-30

Dawe, Piers J G — Mellanox Technologie

Comment Type **TR** *Comment Status* **A**

The draft says that the instantaneous bit shrinkage introduced by sinusoidal amplitude interferer 1 should be no more than 0.1 UI, but there is no such advice for instantaneous bit shrinkage introduced by sinusoidal amplitude interferer 2, or the combination, and it's not clear to me that one is more critical than the other.

SuggestedRemedy

Change to "The instantaneous bit shrinkage introduced by either sinusoidal amplitude interferer should be no more than 0.1 UI.". Check that 0.1 is compatible with the SEC and jitter numbers. If there is a problem, consider allowing more SJ.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See response to comment r02-35

[Editor's note added after comment resolution completed.
The response to Comment r02-35 was:
ACCEPT.
See also comment 30
with Suggested Remedy:
Delete the sentence, "The instantaneous bit shrinkage introduced by sinusoidal amplitude interferer 1 should be no more than 0.1 UI."]

Cl **95** *SC* **95.8.8.2** *P* **123** *L* **49** # r02-31

Dawe, Piers J G — Mellanox Technologie

Comment Type **E** *Comment Status* **A** *Bucket*

test sources for the other lanes is set

SuggestedRemedy

test sources for the other lanes are set

Response *Response Status* **C**

ACCEPT.

Cl **95** *SC* **95.8.8.1** *P* **121** *L* **33** # r02-32

Petrilla, John Avago Technologies

Comment Type **E** *Comment Status* **A**

The comment, "should have a frequency response that results in the appropriate level of stressed eye closure (SEC) before the sinusoidal terms are added." is not helpful and may very well be frustrating to the reader since the "appropriate level of stress..." has not yet been defined. The frustration can be removed by deleting the sentence or by adding a reference to the subclause that provides guidance to the "appropriate level of stress..."

SuggestedRemedy

Delete the sentence, "The low-pass filter, when combined with the E/O converter, should have a frequency response that results in the appropriate level of stressed eye closure (SEC) before the sinusoidal terms are added." or change it to "The low-pass filter, when combined with the E/O converter, should have a frequency response that results in the level of stressed eye closure (SEC) before the sinusoidal terms are added per the instructions in 95.8.8.2."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change:
"The low-pass filter, when combined with the E/O converter, should have a frequency response that results in the appropriate level of stressed eye closure (SEC) before the sinusoidal terms are added."
to:
"The low-pass filter, when combined with the E/O converter, should have a frequency response that results in the level of stressed eye closure (SEC) before the sinusoidal and Gaussian noise terms are added, as described in 95.8.8.2."

Cl **95** *SC* **95.8.8.2** *P* **123** *L* **7** # r02-33

Petrilla, John Avago Technologies

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

This sentence defines SEC with M set to zero resulting in a higher level of stress required to reach the SEC value. The constituents of M are noise due to partial mode coupling (Pmn) and mode partition noise (Pmpn). Since Pmn and Pmpn are captured in the stressed receiver sensitivity value (= Min OMA at max TDEC - (insertion loss + Pmpn + Pmn + Prin + Pcross/2)), including Pmn and Pmpn in the SEC stress is double counting these penalties.

SuggestedRemedy

Change, "... except that the combination of the O/E and the oscilloscope used to measure the waveform has a fourth-order Bessel-Thomson filter response with a bandwidth of 19.34 GHz, and the value of M in Equation (95-3) is set to zero."
to "... except that the combination of the O/E and the oscilloscope used to measure the waveform has a fourth-order Bessel-Thomson filter response with a bandwidth of 19.34 GHz."

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **95** *SC* **95.8.8.2** *P* **123** *L* **28** # r02-34

Petrilla, John Avago Technologies

Comment Type **T** *Comment Status* **A** *Bucket*

To be aligned with the last sentence of 95.8.8.1 and avoid confusion, the E/O converter should be included in the statement, "... at least 2.5 dB of SEC should be created by the selection of the appropriate bandwidth for the low-pass filter."

SuggestedRemedy

Change "...at least 2.5 dB of SEC should be created by the selection of the appropriate bandwidth for the low-pass filter." to "... at least 2.5 dB of SEC should be created by the selection of the appropriate bandwidth for the low-pass filter combined with the E/O converter."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "...at least 2.5 dB of SEC should be created by the selection of the appropriate bandwidth for the low-pass filter."
to
". at least 2.5 dB of SEC should be created by the selection of the appropriate bandwidth for the combination of the low-pass filter and E/O converter."

In 95.8.8.1, change
"The low-pass filter, when combined with
the E/O converter, " to "The combination of the low-pass filter and E/O converter"

Cl **95** *SC* **95.8.8.2** *P* **123** *L* **39** # r02-35

Petrilla, John Avago Technologies

Comment Type **TR** *Comment Status* **A**

Since the test patterns for stressed receiver sensitivity (3, 5 or valid 100GBASE-SR4 signal) are not expected to permit pattern lock, instantaneous bit shrinkage does not seem measurable.

SuggestedRemedy

Delete the sentence, "The instantaneous bit shrinkage introduced by sinusoidal amplitude interferer 1 should be no more than 0.1 UI."

Response *Response Status* **C**

ACCEPT.
See also comment 30

Cl **95** *SC* **95.7.2** *P* **115** *L* **26** # r02-36

Petrilla, John Avago Technologies

Comment Type **TR** *Comment Status* **A**

The stressed receiver setup instructions in 95.8.8.1 and 95.8.8.2 call for SEC, J2 & J4 values in Table 95-7 to be met "simultaneously while also passing the stressed receiver eye mask in Table 95-7". Unfortunately, results have not yet been presented to show that this is possible. Values for J2 and J4 appear most suspect

SuggestedRemedy

Change the values in Table 95-7 for J2, J9 and if, needed, SEC to align with the best information available at the time. See petrilla_01_1114_optx and other relevant contributions.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See response to comment r02-37

[Editor's note added after comment resolution completed.
The response to Comment r02-37 was:
ACCEPT IN PRINCIPLE.

In Table 95-6 change:
TDEC, each lane (max) from 4.9 dB to 4.3 dB
OMA, each lane (min) from -7 dBm to -6.4 dBm
Launch power in OMA minus TDEC (min) from -7.9 dBm to -7.3 dBm
Average launch power, each lane (min) from -9 dBm to -8.4

In Table 95-7 change:
Average receive power, each lane (min) from -10.9 dBm to -10.3
Stressed receiver sensitivity (OMA), each lane (max) from -5.6 dBm to -5.2
SEC, lane under test from 4.9 dB to 4.3 dB
Also change "Stressed eye J4 Jitter, lane under test" to "Stressed eye J4 Jitter, lane under test (max)" with editorial license.

Make the changes shown on page 3 of
http://www.ieee802.org/3/bm/public/nov14/dawe_01a_1114_optx.pdf
with editorial license.

See also comments 10, 11, 12, 13, 14, 18, 19, 36.]

Cl **95** *SC* **95.7.1** *P* **114** *L* **41** # r02-37

Petrilla, John — Avago Technologies

Comment Type **TR** *Comment Status* **A**

The max limit for TDEC and the tradeoff between TDEC, min OMA and operating margin would benefit from more data.

SuggestedRemedy

Reconsider values for max TDEC and min OMA based on best information at the time.
See petrilla_01_1114_optx and other relevant contributions.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In Table 95-6 change:
TDEC, each lane (max) from 4.9 dB to 4.3 dB
OMA, each lane (min) from -7 dBm to -6.4 dBm
Launch power in OMA minus TDEC (min) from -7.9 dBm to -7.3 dBm
Average launch power, each lane (min) from -9 dBm to -8.4

In Table 95-7 change:
Average receive power, each lane (min) from -10.9 dBm to -10.3
Stressed receiver sensitivity (OMA), each lane (max) from -5.6 dBm to -5.2
SEC, lane under test from 4.9 dB to 4.3 dB
Also change "Stressed eye J4 Jitter, lane under test" to "Stressed eye J4 Jitter, lane under test (max)" with editorial license.

Make the changes shown on page 3 of
http://www.ieee802.org/3/bm/public/nov14/dawe_01a_1114_optx.pdf
with editorial license.

See also comments 10, 11, 12, 13, 14, 18, 19, 36.

Cl **83E** *SC* **83E.3.4.1.1** *P* **186** *L* **31** # r02-38

Petrilla, John — Avago Technologies

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

A high loss module stressed input case is defined that adds an additional 3.55 dB of channel loss at 12.89 GHz to account for losses within the host transmitter package. The additional 3.55 dB is higher than needed. A more realistic combination of expected signal attributes of the pattern generator and package insertion loss should be used.

SuggestedRemedy

Change the value 13.8 dB in , "... frequency dependent attenuation is added such that the loss at 12.89 GHz from the output of the pattern generator to TP1a is 13.8 dB. The 13.8 dB loss represents ..." to 11.7 dB. See petrilla_02_1114_optx for details.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.