Cl **FM** *SC* **FM** *P* **1** *L* **3** # 1

Grow, Robert RMG Consulting

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

Both 802.3bu and 802.3bv have approval years.

SuggestedRemedy

IEEE Std 802.3bu-2016, IEEE Std 802.3bv-2017

This proposed change should be considered non-substantve and therefore not requiring recirculation if accepted.

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **13** *L* **21** # 2

Grow, Robert RMG Consulting

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

802.3bv has an approval year.

SuggestedRemedy

IEEE Std 802.3bv-2017

This proposed change should be considered non-substantve and therefore not requiring recirculation if accepted.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45** *P* **6** *L* **27** # 3

Grow, Robert RMG Consulting

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

Publication order of 802.3bv is no longer in question.

SuggestedRemedy

Update note to delete reference to 802.3bv.

This proposed change should be considered non-substantve and therefore not requiring recirculation if accepted.

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* *L* # 4

Anslow, Pete Ciena

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

The "clean" version of the draft has been generated with red strikethrough and green underlined text showing changes. This is different from previous P802.3cb drafts and other IEEE 802.3 drafts and makes it very difficult to understand what the exact content of the draft is. For example, in 45.2.1.89.6, it is not clear whether the text "The PMD signal detect function is optional see 70.6.4" is underlined because it has been inserted in this version or whether it is underlined as a change to the paragraph. In other words, it is unclear as to whether it will still be underlined in the next draft.

SuggestedRemedy

In the clean version of the draft do not show changes from the previous version using underline and strikethrough font.
For the compare version of the draft show insertions in blue underline font (as some insertions are) not a mixture of blue and green as in D2.3 since the green colour is easily confused with the "External" character tag.

Proposed Response *Response Status* **O**

Cl **69A** *SC* **69A.2.1** *P* **162** *L* **40** # 5

Ran, Adee Intel

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

Wrong cross reference: 130.7.1.1 does not describe any requirements for a two-tap transversal filter. It describes a test fixture which is a different thing.

The filter is described in 130.7.1.10, but it seems that its requirements are only specified in Table 130–4.

SuggestedRemedy

Change "130.7.1.1" to "Table 130–4".

Proposed Response *Response Status* **O**

Cl **69A** *SC* **69A.3** *P* **163** *L* **18** # 6

Ran, Adee Intel

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

Wrong cross reference: 130.6.2 does not define any test pattern. It describes the behavior of the transmit function which is irrelevant for this test.

The test pattern is mentioned in 130.7.2.1 which points to "test patterns 2 or 3 as defined in 52.9.1.1".

SuggestedRemedy

Change "130.6.2" to "130.7.2.1"

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.89.6** *P* **36** *L* **15** # 7

Ran, Adee Intel

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

"The PMD signal detect function is optional see 70.6.4" is not stanards language.

Also, looking at 70.6.4, this function is described as mandatory if EEE is implemented, which is what's writing in the original text. The amendment breaks this text.

I suspect that the required text is included in the response to comment #11 against draft 2.1 but was not implemented correctly.

SuggestedRemedy

Replace the current text with the text in the resolution of comment #11 against D2.1:

"The PMD signal detect function for both 1000BASE-X PCS (see 70.6.4) and 2.5GBASE-X PCS (see 128.6.4) is mandatory if EEE is implemented, and optional otherwise."

Proposed Response *Response Status* **O**

Cl **128A** *SC* **128A** *P* **167** *L* **14** # 8

Ran, Adee Intel

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

Change marks (red/green) left in the clean version. This is new text so should not have change marks.

Also in P172 L28 and several other places.

SuggestedRemedy

Delete the change marks across the clean version.

Proposed Response *Response Status* **O**

Cl **128A** *SC* **128A** *P* **167** *L* **14** # 9

Ran, Adee Intel

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

The text effectively reads
"The compliance point definitions provide a unique partitioning of the channel defined in Annex 128A, such that the test points TP0D-H and TP0HD defined in this Annex are equivalent to TP1 defined in Annex 128A, and TP5D-H and TP5HD defined in this Annex are equivalent to TP4 defined in Annex 128A"

After the change from 128C to 128A the text refers to "this annex" and to "Annex 128A" (which are one and the same) twice in the same sentence. Also, TP1 and TP4 (unqualified) are not defined in this annex - they are defined in 128B.

SuggestedRemedy

Change "128A" to "128B" (three times).

Proposed Response *Response Status* **O**

Cl **128A** *SC* **128A.3.4.2** *P* **181** *L* **14** # 10

Ran, Adee Intel

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

SNDR of 5.6 dB resulting from noise generated from a Gaussian noise source, if the transmitter and test channel do not create such low SNDR due to equalizable ISI, would make it impossible for a receiver to achieve BER<1e-12. It is well known that for an AWGN channel the required SNR for that performance is >17 dB.

I assume the intent is to allow ISI from the transmitter (as specified in 128A.3.1.7), since linear fitting is done with NP=3; but this is a bad way to allow that. It would be better not to require SNDR measurement from the test equipment and instead specify the additive Gaussian noise directly, as done in Annex 69B. Or use SNDR is it should be used, without equalizable ISI, to calculate how much noise should be added.

The transmitter SNDR should also be limited to prevent very noisy transmitters from being compliant.

SuggestedRemedy

In the SNDR measurement in 128A.3.1.7 and 128A.3.3.3, change NP=3 to NP=100, or instead define a reference equalizer and apply it in the measurement.

In both places, set required SNDR to a reasonable value for BER<1e-12, such as >25 dB, as defined for the host test, Table 128A–3.

Alternatively, delete the SNDR subclause and specify the additive noise RMS directly; a suggested value is 8.1 mV as used in 10GBASE-KX4 (same Baud rate and similar channel budget).

Implement similarly in annex 130A.

Proposed Response *Response Status* **O**

Cl **128A** *SC* **128A.3.4.2** *P* **180** *L* **34** # 11

Ran, Adee Intel

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

Wrong cross reference to Table 128C–1 - it does not define f1.

Also in P175 L37.

SuggestedRemedy

Change to Table 128B–1 in both places.

Proposed Response *Response Status* **O**

Cl **130A** *SC* **130A.1** *P* **205** *L* **14** # 12

Ran, Adee Intel

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

The text refers to Annex 128C for channel partition and definitions of TP1 and TP4, but 128C is the text fixture annex. TP1 and TP4 are not defined in 128C - they are defined in 128B.

SuggestedRemedy

Change "128C" to "128B" (three times)

Proposed Response *Response Status* **O**

Cl **130A** *SC* **130A.6.2** *P* **220** *L* **14** # 13

Ran, Adee Intel

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

As stated in another comment on 128A, SNDR of 16 dB is still too low to enable BER<1e-12. The value should be aligned with the host input and drive output values, 28 dB in this annex.

SuggestedRemedy

In measurement, change Np from 8 to 100 or define a reference equalizer.

Set required SNDR to >28 dB.

Proposed Response *Response Status* **O**

Cl **128A** *SC* **128A.3.3.1** *P* **179** *L* **32** # 14

Mellitz, Richard Samtec

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

It is not clear that a receiver is expected to employ a CTLE. The measurements are made without one.

SuggestedRemedy

Add a note suggesting the reference receiver is a CTLE defined in eq (93A–22) but measurements are made without one. Add table for fz,fp1,fp2 and Gdc.

Proposed Response *Response Status* **O**

Cl **130A** *SC* **130A.3.3.1** *P* **212** *L* **48** # 15

Mellitz, Richard Samtec

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

It is not clear that a receiver is expected to employ a CTLE and DFE5.
The measuments are made without this.

SuggestedRemedy

Add a note suggesting the reference receiver is a CTLE defined in eq (93A–22) and a DFE5 but measurements are made with that. Add table for fz,fp1,fp2 and Gdc

Proposed Response *Response Status* **O**

Cl **130A** *SC* **130A.5.1** *P* **218** *L* **40** # 16

Mellitz, Richard Samtec

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

It is not clear that a receiver is expected to employ a CTLE and DFE5.
The measuments are made without this.

SuggestedRemedy

Add a note suggesting the reference receiver is a CTLE defined in eq (93A–22) and a DFE5 but measurements are made with that. Add table for fz,fp1,fp2 and Gdc

Proposed Response *Response Status* **O**

Cl **128B** *SC* **128B.4.2** *P* **189** *L* **20** # 17

Mellitz, Richard Samtec

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

Equation 120B-6 does not meet objective loss.
Eq 128B-6 at 1.56425GHz is 9.1761dB; it should be 11dB
Eq 128B-6 at 2.5781GHz is 13.4128dB; it should be 16dB

SuggestedRemedy

Scale equation to meet loss in objective.

Proposed Response *Response Status* **O**

Cl **128A** *SC* **128A.3.1.4.1** *P* **174** *L* **38** # 18

Mellitz, Richard Samtec

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

It is not clear that a receiver is expected to employ a CTLE. The measurements are made without one.

SuggestedRemedy

Add a note suggesting the reference receiver is a CTLE defined in eq (93A–22) but measurements are made without one. Add table for fz,fp1,fp2 and Gdc.

Proposed Response *Response Status* **O**

Cl **128A** *SC* **128A.3.1** *P* **172** *L* **33** # 19

Dudek, Mike Cavium

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

This is a follow on comment to the unsatisfied comment #7 on draft 2.2

A Signal to Noise and Distortion ratio of 5.6dB from the Tx cannot be received by the Rx with a BER of 1e-12 unless the Noise and Distortion is mainly ISI which is equalized by the Rx. There are no restrictions on the type of Noise and Distortion that the Tx can produce and therefore fully compliant Tx's produced with little ISI but with large other distortions and noise won't work in the system.

A similar problem exists for the 5G system with the SNDR value of 16dB in clause 130A and the Remedy should be applied to both.

SuggestedRemedy

As this is a single connector specification it would be best to change the specification methodology to use eyes with a reference equalizer. Annex 83E is a good example of this methodology.

As a minimum the SNDR needs to be measured after the Tx signal under test has been equalized with a reference equalizer similar to what is expected in the receiver. The interference tolerance test should be calibrated with the same reference equalizer. The SNDR measured this way should be >25dB. (Same as for Host in Table 128A-3)

Proposed Response *Response Status* **O**