Cl **156** *SC* **156.1** *P* **63** *L* **12** # 1

Maniloff, Eric Ciena

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

PHY shows 400GBASE-R PCS instead of 400GBASE-ZR PCS

SuggestedRemedy

Replace 400GBASE-E with 400GBASE-ZR

Proposed Response *Response Status* **O**

Cl **156** *SC* **156.1.1** *P* **64** *L* **39** # 2

Maniloff, Eric Ciena

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

Comment on FLR references being processed by Clause 119 PCS, but should actually only reference the clause 155 PCS.

SuggestedRemedy

Change "additionally processed by the FEC
(Clause 155) and PCS (Clause 119)." to "processed by the Clause 155 400GBASE-ZR PCS".

Proposed Response *Response Status* **O**

Cl **156** *SC* **156.7.2** *P* **73** *L* **21** # 3

Maniloff, Eric Ciena

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

Receiver Sensitivity for an unamplified link should not be part of the same PMD as receiver sensitivity for an amplified link. This is a distinct application, and a receiver should not be burdened with a requirement to support both applications. Although the sensitivity spec in Table 156-7 is informative, other aspects of this application are normative. If this is a required application it should be defined as a separate PMD.

SuggestedRemedy

Remove sensitivity spec from Table 156-7, or modify to define a separate PMD supporting this.

Proposed Response *Response Status* **O**

Cl **156** *SC* **156.8** *P* **74** *L* **27** # 4

Maniloff, Eric Ciena

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

Optical path power penalty for OSNR at TP3 ≥ 34dB is a separate application, and should be removed or applied to a separate PMD.

SuggestedRemedy

Remove power penalty from Table 156-8, or modify to indicate that this is applied to a separate PMD.

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4** *P* **19** *L* **6** # 5

Huber, Tom Nokia

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

Multiple definitions are being added, so the editing instruction should use plural forms.

SuggestedRemedy

Change "definition" to "definitions"

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.5** *P* **19** *L* **19** # 6

Huber, Tom Nokia

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

Multiple definitions are being added, so the editing instruction should use plural forms.

SuggestedRemedy

Change "abbreviation" to "abbreviations"

Proposed Response *Response Status* **O**

Cl **155** *SC* **155.2.1** *P* **37** *L* **19** # 7

Huber, Tom Nokia

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

The phrase 'GMP mapped' is often used colloquially, but it would be more clear in the text to say 'mapped using GMP'

SuggestedRemedy

Change "The transcoded blocks are then GMP mapped into a 400GBASE-ZR Frame"
to
"The transcoded blocks are then mapped into a 400GBASE-ZR frame using GMP"

Proposed Response *Response Status* **O**

Cl **155** *SC* **155.2.1** *P* **37** *L* **22** # 8

Huber, Tom Nokia

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

FEC is being used as both a noun and an adjective in the sentence describing CFEC. While the usage throughout 802.3 is not entirely consistent, within a single sentence we probably should be consistent.

SuggestedRemedy

Change
"The transmit data is encoded with a concatenated forward error correction (CFEC) consisting of an inner SC-FEC code and an outer Hamming code SD-FEC."
to
"The transmit data is encoded with a concatenated forward error correction (CFEC) code consisting of an inner SC-FEC code and an outer Hamming SD-FEC code."

Proposed Response *Response Status* **O**

Cl **155** *SC* **155.2.1** *P* **37** *L* **29** # 9

Huber, Tom Nokia

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

The description of the test pattern is grammatically awkward. The first sentence of the paragraph has already established that a test pattern is transmitted when the transmit channel is in test pattern mode. The second sentence is intended to indicate what the test pattern is.

SuggestedRemedy

Change the second sentence: "The PCS shall provide transmit test-pattern mode for the scrambled idle pattern (see 119.2.4.9)."
to
"The transmitted test pattern shall be the scrambled idle pattern (see 119.2.4.9)."

Proposed Response *Response Status* **O**

Cl **155** *SC* **155.2.1** *P* **37** *L* **39** # 10

Huber, Tom Nokia

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

Multiplication should be indicated with a multiplication symbol rather than an x.

SuggestedRemedy

Replace 510 x 512 with 510 × 512

Proposed Response *Response Status* **O**

Cl **155** *SC* **155.2.2** *P* **37** *L* **50** # 11

Huber, Tom Nokia

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

It would be more clear to describe demapping the MII explicitly rather than using vice versa.

SuggestedRemedy

Change "The PCS maps the 400GMII signal into 66 bit blocks, and vice versa using a 64B/66B coding scheme."
to
"The PCS maps the 400GMII signal in 66b blocks, and demaps the 400GMII signal from 66b blocks, using a 64B/66B coding scheme.

Proposed Response *Response Status* **O**

Cl **155** *SC* **155.2.3** *P* **38** *L* **4** # 12

Huber, Tom Nokia

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

It would be more clear to say "mapped into a 400GBASE-ZR frame using GMP" than "GMP mapped"

SuggestedRemedy

Change:
The 64B/66B codestream is then transcoded into a 256B/257B stream, GMP mapped and FEC bits added in this PCS before transmission
to
The 64B/66B codestream is then transcoded into a 256B/257B stream, mapped to a 400GBASE-ZR frame using GMP, and FEC bits are added in this PCS before transmission.

Proposed Response *Response Status* **O**

Cl **155** *SC* **155.2.4.3** *P* **39** *L* **4** # 13

Huber, Tom Nokia

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

It would be more clear to say "mapped into a 400GBASE-ZR frame using GMP" than "GMP mapped", the word 'payload' is missing from the description of the area of the frame into which the 257b blocks are mapped, and the multiplcation symbol should be used rather than x to indicate multiplication.

SuggestedRemedy

Change item 5 from:
The 400GBASE-ZR PCS payload is GMP mapped into the area of the 400GBASE-ZR frame starting at column 5141 of row 0 and ending at column 10 280 of row 255. The payload size is 10 220 x 257B.
to
The 400GBASE-ZR PCS payload is mapped into the payload area of the 400GBASE-ZR frame,
starting at column 5141 of row 0 and ending at column 10 280 of row 255, using GMP. The payload size is 10 220 × 257B.

Proposed Response *Response Status* **O**

Cl **155** *SC* **155.2.4.4.1** *P* **40** *L* **6** # 14

Huber, Tom Nokia

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

The AMs are used to locate the row that is the start of the frame, not the row number. There is also a stray comma before the parenthetical phrase.

SuggestedRemedy

Change:
AM alignment is processed post-FEC decode, after descrambling, to locate the row number corresponding to the start of the 400GBASE-ZR frame, (SC-FEC being already 10 970 bit row
aligned).
to
AM alignment is processed post-EC decode, after descrambling, to locate the row correspondeing to the start of the 400GBASE ZR frame (SC-FEC being already 10 970 bit row aligned).

Proposed Response *Response Status* **O**

Cl **155** *SC* **155.2.4.4.3** *P* **40** *L* **21** # 15

Huber, Tom Nokia

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

The reference to G.709.1 at the end of the paragraph should be preceded by ITU-T

SuggestedRemedy

Insert "ITU-T" before "G.709.1".

Proposed Response *Response Status* **O**

Cl **155** *SC* **155.2.4.5** *P* **41** *L* **26** # 16

Huber, Tom Nokia

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

The generator polynomial G(x) is not defined anywhere in the text, which makes the detailed description of how to compute the CRC that was copied from the referenced OIF document not useful.

SuggestedRemedy

The computation is fully specified in the referenced OIF document. Delete the second sentence of the second paragraph and the entire third paragraph and bullet list, so the text reads:
A 32-bit cyclic redundancy code is calculated over 244 664 input bits as described in the OIF-400ZR-01.0, March 10, 2020, subclause 9.2.
The 32 bits of the CRC value are.....

Proposed Response *Response Status* **O**

Cl **155** *SC* **155.2.4.5** *P* **41** *L* **31** # 17

Huber, Tom Nokia

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

Missing a 'd' in 'placed' in the description of where the CRC goes.

SuggestedRemedy

Change "The 32 bits of the CRC value are place with..." to "The 32 bits of the CRC value are placed with…"

Proposed Response *Response Status* **O**

Cl **155** *SC* **155.2.4.5** *P* **41** *L* **40** # 18

Huber, Tom Nokia

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

The last two paragraphs would be better combined, with the clause in the first sentence of the final paragraph concerning the location of the MBAS field removed (that information is already provied in the first sentence of the next-to-last paragraph).

SuggestedRemedy

Replace the last two paragraphs with:
Following the CRC-32 a 6-bit MBAS is added. The MBAS is used by the SC-FEC encoder and decoder to synchronize the state of the error de-correlator controllers between the receiver and the transmitter. The staircase FEC implementation uses a 7-bit MBAS which provides a 128-block sequence. The six most significant bits of the 7-bit MBAS are transferred between source and sink in the 6-bit MBAS overhead. The numerical value represented in the six MBAS overhead bits is incremented every two SC-FEC blocks and provides a 128-block multi-block.

Proposed Response *Response Status* **O**

Cl **155** *SC* **155.2.4.6** *P* **41** *L* **48** # 19

Huber, Tom Nokia

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

Multiplication should be indicated with a multiplication symbol rather than an italicized x.

SuggestedRemedy

Replace the italicized x's in the formula with multiplication symbols.

Proposed Response *Response Status* **O**

Cl **155** *SC* **155.2.4.6** *P* **42** *L* **1** # 20

Huber, Tom Nokia

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

Missing a 'd' in 'illustrated'

SuggestedRemedy

Change: "… which are added to the 400GBASE-ZR SC-FEC frame as illustrate in Figure 155–5." to "which are added to the 400GBASE-ZR SC-FEC frame as illustrated in Figure 155–5."

Proposed Response *Response Status* **O**

Cl **155** *SC* **155.2.4.7** *P* **44** *L* **3** # 21

Huber, Tom Nokia

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

Capital B is used as the abbreviation for 'bit' in the rest of the document..

SuggestedRemedy

Change 119b/128b to 119B/128B

Proposed Response *Response Status* **O**

Cl **155** *SC* **155.2.4.7** *P* **44** *L* **3** # 22

Huber, Tom Nokia

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

Multiplication should be indicated with a multiplication symbol rather than an x.

SuggestedRemedy

Replace the x here and in the first paragraph of 155.2.4.8 with multiplication symbols

Proposed Response *Response Status* **O**

Cl **155** *SC* **155.2.4.8** *P* **44** *L* **15** # 23

Huber, Tom Nokia

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

"5 x SC-FEC blocks" is awkward

SuggestedRemedy

Change to "five SC-FEC blocks"

Proposed Response *Response Status* **O**

Cl **155** *SC* **155.2.4.9** *P* **44** *L* **20** # 24

Huber, Tom Nokia

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

Bits should be spelled out, and no need to describre the size of the padding again here since it is already clearly described in 155.2.4.7

SuggestedRemedy

Change the first sentence from:
"The scrambled output from the SC-encoder plus 6x119b padding is organized as 10 976 rows of 119b,…"
to
"The scrambled output from the SC-encoder plus padding is organized as 10 976 rows of 119 bits, …"

Proposed Response *Response Status* **O**

Cl **155** *SC* **155.2.5.2** *P* **47** *L* **20** # 25

Huber, Tom Nokia

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

Multiplication should be indicated with a multiplication symbol rather than an x.

SuggestedRemedy

Replace the x's here and elsewhere on the page, including the end of 155.2.5.6 on the next page, with multiplication symbols.

Proposed Response *Response Status* **O**

Cl **155** *SC* **155.2.5.7** *P* **48** *L* **7** # 26

Huber, Tom Nokia

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

Multiplication should be indicated with a multiplication symbol rather than an x.

SuggestedRemedy

Replace the x's in the first two paragraphs with multiplication symbols

Proposed Response *Response Status* **O**

Cl **155** *SC* **155.2.5.7** *P* **48** *L* **10** # 27

Huber, Tom Nokia

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

The first sentence of the second paragraph is grammatically awkward

SuggestedRemedy

Change "The beginning of each 400GBASE-ZR frame will have the AM and OH fields within the first 20 x 257B, and are repeated every 10 240 x 257B."
to
The beginning of each 400GBASE-ZR frame will have the AM and OH fields within the first 20 x 257B, and these fields are repeated every 10 240 x 257B.

Proposed Response *Response Status* **O**

Cl **155** *SC* **155.3.2** *P* **50** *L* **41** # 28

Huber, Tom Nokia

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

Multiplication should be indicated with a multiplication symbol rather than an x.

SuggestedRemedy

Replace the x's in both formulas in the paragraph with multiplication symbols.

Proposed Response *Response Status* **O**

Cl **156** *SC* **156.2** *P* **65** *L* **23** # 29

Huber, Tom Nokia

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

Since the value of SIGNAL_DETECT is fixed to OK, and therefore not dependent on the amount of light being received, the NOTE needs to be revised.

SuggestedRemedy

Change
NOTE—SIGNAL_DETECT = OK does not guarantee that the rx_symbol parameters are known to be good. It is possible for a poor quality link to provide sufficient light for a SIGNAL_DETECT = OK indication and still not meet the BER defined in 156.1.1.
to
NOTE - SIGNAL_DETECT = OK does not guarantee that the rx_symbol parameters are known to be good or that the BER defined in 156.1.1 will be met.

Proposed Response *Response Status* **O**

Cl **156** *SC* **156.7.2** *P* **73** *L* **13** # 30

D'Ambrosia, John Futurewei, US Subsidiary of Huawei

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

Agreed upon language from 802.3ct, which is a ratified standard should be used in approproiate situations.

SuggestedRemedy

Under Value in Table 156-7, change:
The frequency in Table 156–4 corresponding to the variable Rx_optical_channel_index
to
The frequency in Table 156–4 where the channel index number equals the variable Rx_optical_channel_index

Proposed Response *Response Status* **O**

Cl **156A** *SC* **156A.2** *P* **89** *L* **37** # 31

D'Ambrosia, John Futurewei, US Subsidiary of Huawei

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

The stated average receive power (min) is incorrectly stated as -16 dBm, when it should be -12 dBm -

The operating ranges in Figure 156A–3 can be roughly divided into 2 areas, one where the OSNR is between TBD dB (12.5 GHz) and TBD dB (12.5 GHz) together with an average optical power at
TP3 between 0 dBm and –16 dBm

SuggestedRemedy

Change the -16 dBm in the noted sentence to -12, and modify the TBD in Fig 156A-3 to reflect this change in value.

Proposed Response *Response Status* **O**

Cl **156A** *SC* **156A.3** *P* **91** *L* **5** # 32

D'Ambrosia, John — Futurewei, US Subsidiary of Huawei

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

Stated channel output power range is incorrect
"should be amplified to a channel output range of –16 dBm to 0 dBm."
As nnoted in Table 156A-1, the range is -12 dBM to 0 dBM

SuggestedRemedy

modify noted -16 dBM to -12 dBm
also modify -16 dBM to -12 dBM throughout the rest of the subclause as appropriate

Proposed Response *Response Status* **O**

Cl **00** *SC* **00** *P* *L* # 33

D'Ambrosia, John — Futurewei, US Subsidiary of Huawei

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

Given the potential different stack configurations, this annex should be used to illustrate different examples with the different PCS / PMA

SuggestedRemedy

Presentation illustrating different concepts will be provided

Proposed Response *Response Status* **O**

Cl **116** *SC* **116.1.4** *P* **29** *L* **38** # 34

D'Ambrosia, John — Futurewei, US Subsidiary of Huawei

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

Clause 119 and 120 are not mandatory for 400GBASE-ZR

SuggestedRemedy

For 400GBASE-ZR - change Clause 119 and 120 from "M" to "O"

Proposed Response *Response Status* **O**

Cl **156** *SC* **156.1** *P* **63** *L* **21** # 35

D'Ambrosia, John — Futurewei, US Subsidiary of Huawei

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

400GBASE-R PCS (119) and 400GBASE-R PMA (120) are not noted

SuggestedRemedy

update table to include clauses 119 and 120 as optional

Proposed Response *Response Status* **O**

Cl **156** *SC* **156.1** *P* **63** *L* **25** # 36

Issenhuth, Tom — Huawei

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

Clause 155 should not be an external cross references for PCS for 400GBASE-ZR and PMA for 400GBASE-ZR

SuggestedRemedy

Correct the clause 155 cross references

Proposed Response *Response Status* **O**

Cl **156** *SC* **156.9.4** *P* **77** *L* **15** # 37

Issenhuth, Tom — Huawei

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

Figure 156-4 is an imported pdf and appears fuzzy.

SuggestedRemedy

Update figure in native FrameMaker format to improve quality

Proposed Response *Response Status* **O**

Cl **156** *SC* **156.9.6** *P* **78** *L* **42** # 38

Issenhuth, Tom Huawei

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

Figure 156-5 is incomplete.

SuggestedRemedy

Complete figure 156-5 to be consistent with the figure in the published OIF 400ZR IA 13.1.210

Proposed Response *Response Status* **O**

Cl **156** *SC* **156.9.10** *P* **79** *L* **18** # 39

Issenhuth, Tom Huawei

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

EVM definition in incomplete.

SuggestedRemedy

Update EVM definition based on output from EVM ad hoc

Proposed Response *Response Status* **O**

Cl **156** *SC* **156.7.1** *P* **71** *L* **48** # 40

Issenhuth, Tom Huawei

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

Sentence does not contain location of definitions.

SuggestedRemedy

Add location of definitions.

Proposed Response *Response Status* **O**

Cl **156** *SC* **156.7.2** *P* **73** *L* **3** # 41

Issenhuth, Tom Huawei

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

Sentence does not contain location of definitions.

SuggestedRemedy

Add location of definitions.

Proposed Response *Response Status* **O**

Cl **156** *SC* **156.8** *P* **73** *L* **38** # 42

Issenhuth, Tom Huawei

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

Sentence does not contain location of definitions.

SuggestedRemedy

Add location of definitions.

Proposed Response *Response Status* **O**