*Cl* **155** *SC* **155.1.2** *P* **34** *L* **26** # 12

Huber, Tom Nokia

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

Text says the 400GMII extender sublayers are shown in the figure, but the figure does not include them.

*SuggestedRemedy*

Delete the second sentence of the first paragraph of 155.1.2, beginning with "The sublayers of a 400GMII Extended Sublayer."

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Referenced example is addressed in new 120A-6 which does show how extender sublayer is used with 400GBASE-ZR.

Change existing text "The sublayers of a 400GMII Extender Sublayer (400GXS) from Clause 118 are shown because the 00GBASE-ZR PHY is able to propagate FEC degrade signaling across the PCS and XS sublayers as described in 118.2."
to
"The sublayers of a 400GMII Extender Sublayer (400GXS) are shown in 120A-6. The 400GBASE-ZR PHY is able to propagate FEC degrade signaling across the PCS and XS sublayers as described in 118.2."

*Cl* **155** *SC* **155.2.4.1** *P* **39** *L* **14** # 13

Huber, Tom Nokia

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

The sentence about rate matching not being necessary could be more clear. Rate matching as described in 119.2.4.1 has two purposes: making room for alignment markers, and aligning the two clock domains. It is not needed in 400GBASE-ZR both because the AMs are not inserted into the stream of transcoded blocks (they are instead part of the 400GBASE-ZR frame) and because GMP handles the clock domain transition.

*SuggestedRemedy*

Modify the second sentence of the first paragraph to read: "The rate matching described in 119.2.4.1 is not required for the 400GBASE-ZR PCS because the transcoded block stream is mapped into a 400GBASE-ZR frame structure that includes space for alignment markers, and clock compensation between the two clock domains is provided by this mapping."

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **155** *SC* **155.2.4.3** *P* **39** *L* **38** # 14

Huber, Tom Nokia

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

The right-hand curly brace, two horizontal lines, and word 'Frame' on the right hand side of the figure don't seem to add any clarity. The figure title is 400GBASE-ZR frame structure, and the text describes the structure clearly.

*SuggestedRemedy*

Delete the right-hand curly brace, horizontal lines and 'Frame', leaving only the frame itself in the figure.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **155** *SC* **155.2.4.4.1** *P* **40** *L* **53** # 15

Huber, Tom Nokia

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

The description of the alignment markers repeats some details from clause 119 that create ambiguity regarding the transmission order, and also doesn't mention that the 3-bit status described in clause 119 is not included.

*SuggestedRemedy*

Rewrite the clause as follows:
Alignment markers are used to provide frame delineation for the 400GBASE-ZR frame. They are inserted before FEC encoding and removed after FEC decoding (see Figure 155-2). The variable am_mapped<1919:0> is constructed in a manner that yields the same result as the process described in 119.2.4.4.2. The 133-bit pad and 3-bit status fields are not added. The resulting 1920-bit value is inserted in the AM field of each 400GBASE-ZR frame.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **155** *SC* **155.2.4.4.3** *P* **41** *L* **18** # 16

Huber, Tom Nokia

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

The overhead in G.709.1 does not include the 'LDI' field described in 155.2.4.4.5; that is only in the 400ZR IA. As such the statement that the contents of the overhead are are described in G.709.1 clauses 8.1 and 9.2 is not accurate.

*SuggestedRemedy*

Since G.709.1 and the 400ZR IA have different descriptive techniques, and neither one uses the same bit numbering convention of 802.3, it may be more expedient to create a figure in P802.3cw that shows the structure of the first set of 320 bits rather than to try and reference either document. Revise the text to say: The overhead is organized into four sets of 320 bits that are interleaved in groups of 10 bits to form the 1280 bit field. The contents of the first 320 bits are as shown in Figure 155-X and described below. The contents of the second through fourth sets of 320 bits are all zeros.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

There are two options for consideration by the task force. Option 1: Use the format of the top instance of Figure 9-7b of G.709.1 with the unused fields such as GID, IID, MAP, CRC and AVAIL labeled as RES (reserved). Option 2: A more detailed version of Figure 155-8.

Add the 3 LDI bits to the STAT breakout in bits 6,7,8.
Add the JC1-6 bytes into the 2nd, 3rd and 4th frames of a 4-frame multi-frame.
Renumber bits to match IEEE convention.

*Cl* **155** *SC* **155.2.4.4.4** *P* **41** *L* **23** # 17

Huber, Tom Nokia

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

155.2.4.4.4, 155.2.4.4.5, and 155.2.4.4.6 are all descibing specific aspects of the 400GBASE-ZR overhead field. As such, it would probably be better if they were renumbered to be subclauses of 155.2.4.4.3.

*SuggestedRemedy*

Change the numbering to 155.2.4.4.3.1 through 155.2.4.4.3.3.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The 2020 IEEE SA Standards Style Manual states subclauses can have a maximum of 5 numbers seperated by decimal points.

Change 155.2.4.4 "Alignment Marker (AM) and Overhead (OH) insertion" to "Alignment Marker (AM) and Pad insertion"

Change 155.2.4.4.3 400GBASE-ZR OH to 155.2.4.5 Overhead (OH) insertion.

*Cl* **155** *SC* **155.2.4.4.5** *P* **41** *L* **41** # 18

Huber, Tom Nokia

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

More detail about the LDI field is needed. Whlie it is generally better to cross-reference, and the intent is clearly to match the behavior in the 400ZR IA, the IA treats these bits as part of the STAT byte rather than a separate field, and it also refers back to am_sf<2:0> in its definition, so it would be better to describe how LDI<2:0> relates to tx_am_sf<2:0> directly. The text in the IA appears to align with the definitions of tx_am_sf<2:0> for PHY XS FEC Degrade signaling in 118.2.2 of 802.3 (the 'extra processing' in the IA seems to be described in this clause). The order of the bits in the Status byte is diffrent than in tx_am_sf<2:0>.

*SuggestedRemedy*

Add the following text to paragraph 4:
The contents of LDI<2:0> are as follows:
LDI<2> corresponds to tx_am_sf<0> in 118.2.2. LDI<1> corresponds to tx_am_sf<2> in 118.2.2. LDI<0> corresponds to tx_am_sf<1> in 118.2.2.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **155** *SC* **155.2.4.9** *P* **46** *L* **3** # 19

Huber, Tom Nokia

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

The figure contains a mix of lighter and heavier horizontal lines. The heavier lines don't appear to mean anything.

*SuggestedRemedy*

Revise the figure to remove the heavy lines, or make clear what they mean if there is an intended meaning to them.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The figure is intended to show the ordering of 10976 codewords at the input to the CI, at the CI output / Hamming encoder input, and then the addition of 9 bits to each 119b codeword at the output of the Hamming encoder. Agree with the commenter that the lighter/heavier lines should be revised to a common width.

*Cl* **155** *SC* **155.2.4.9** *P* **46** *L* **25** # 20

Huber, Tom Nokia

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

The last 6 rows in the first column are shaded, presumably because they are the 6 blocks of padding, but the shading is not maintained in the other columns.

*SuggestedRemedy*

Remove the shading of the pad blocks and relabel the left-most column to just show 10976 blocks of 119b, as the details of which blocks are pad blocks are not really important to this figure.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **155** *SC* **155.2.4.10** *P* **46** *L* **38** # 21

Huber, Tom Nokia

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

No need for a hyphen in "It adds 9-bits of parity."

*SuggestedRemedy*

To maximize clarity, reword as "It adds 9 parity bits."

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **155** *SC* **155.2.5.6** *P* **48** *L* **50** # 22

Huber, Tom Nokia

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

The title of the clause is "CRC-32 check", but the text is mostly about error marking

*SuggestedRemedy*

Revise the title to be "CRC-32 check and error marking"

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **155** *SC* **155.2.5.7** *P* **49** *L* **6** # 23

Huber, Tom Nokia

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

There should be a hyphen in CRC32

*SuggestedRemedy*

Change to CRC-32

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **155** *SC* **155.2.5.7.2** *P* **49** *L* **48** # 24

Huber, Tom Nokia

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

Additional detail about the LDI field and how it relates to tx_am_sf<2:0> in clause 118 is needed.

*SuggestedRemedy*

Add a cross-reference to the description of the LDI bits in the Transmit clause (this is currently 155.2.4.4.5, but may be changed to 155.2.4.4.3.2 based on another comment)

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **155** *SC* **155.4** *P* **61** *L* **10** # 8

Lewis, David Lumentum

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

Detailed functions and state diagrams for 400GBASE-ZR PCS and PMA are needed.

*SuggestedRemedy*

Contribution with proposed baseline text and figures will be made at a task force meeting. If the baseline is accepted, the editor's note can be removed. The task force could also decide that the detailed functions and state diagrams are not needed, in which case subclause 155.4 can be removed.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Contribution to be considered at a task force meeting.

*Cl* **155** *SC* **155.5** *P* **61** *L* **17** # 9

Lewis, David — Lumentum

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

Management information for 400GBASE-ZR PCS and PMA is needed.

*SuggestedRemedy*

Contribution with proposed baseline text and figures will be made at a task force meeting. If the baseline is accepted, the editor's note can be removed. The task force could also decide that management details are not needed, in which case subclause 155.5 can be removed.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Contribution to be considered at a task force meeting.

*Cl* **155** *SC* **155.6** *P* **61** *L* **23** # 10

Lewis, David — Lumentum

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

Loopback information is needed.

*SuggestedRemedy*

Contribution with proposed baseline text and figures will be made at a task force meeting. If the baseline is accepted, the editor's note can be removed. The task force could also decide that looback details are not needed, in which case subclause 155.6 can be removed.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Contribution to be considered at a task force meeting.

*Cl* **155** *SC* **155.8** *P* **63** *L* **1** # 11

Lewis, David — Lumentum

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

PICS tables are needed.

*SuggestedRemedy*

Contribution with proposed tables will be made at a task force meeting.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Contribution to be considered at a task force meeting.

*Cl* **156** *SC* **156.7.1** *P* **73** *L* **25** # 5

Jackson, Kenneth — Sumitomo Electric

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

Table 156-6, Laser frequency noise mask. Eliminate TBDs?

*SuggestedRemedy*

Make reference to 156.9.6 Laser frequency noise mask.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Remove TBD and replace with "See 156.9.16"

*Cl* **156** *SC* **156.7.2** *P* **74** *L* **23** # 27

Maniloff, Eric — Ciena

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

Receiver OSNR is only defined for average receive power = -12 dBm

*SuggestedRemedy*

Remove text "For average receive power < -12 dBm"

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

In table 156-7 change
"Receiver OSNR (min):
For average receive power < –12 dBm
For average receive power >= –12 dBm"

to
"Receiver OSNR (min):"

*Cl* **156** *SC* **156.7.2** *P* **74** *L* **26** # 28

Maniloff, Eric — Ciena

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

Receiver OSNR tolerance is only defined for average receive power = -12 dBm

*SuggestedRemedy*

Remove text "For average receive power = -12 dBm" from receiver OSNR tolerance

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

In table 156-7 change
"Receiver OSNR tolerance
For average receive power >= –12 dBm"
to
"Receiver OSNR tolerance"

*Cl* **156** *SC* **156.7.2** *P* **74** *L* **30** # 30

Issenhuth, Tom — Huawei

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

Table 156-7 has a blank line at the end of the table

*SuggestedRemedy*

Remove the blank line

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **156** *SC* **156.8** *P* **75** *L* **41** # 26

Maniloff, Eric — Ciena

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

Interferometric crosstalk is not required to be specified for point-to-point applications.

*SuggestedRemedy*

Remove Interferometric crosstalk from Table 156-8

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Remove Interferometric crosstalk at TP3 (max) from Table 156-8 and Interferometric crosstalk at TP3 from Table 156-11. Delete 156.9.24.

*Cl* **156** *SC* **156.9.4** *P* **78** *L* **41** # 7

Jackson, Kenneth — Sumitomo Electric

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

Figure 156-4-Transmit spectral mask (max and min)
The text says, "...lower mask is set at -9 dB up to half the baud rate....", yet the Figure shows (30.8,-9). Isn't half the baud rate 29.9?

*SuggestedRemedy*

If my understanding is correct, the figure should be changed to reflect half the baud-rate.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The value of 30.8 is correct. Change sentence before the figure from "The lower mask is set at –9 dB up to half the baud rate, and then follows the RRC with ß of 0.05." to "The lower mask is set at –9 dB up to the -9dB point of an RRC with ß of 0.05".

*Cl* **156** *SC* **156.9.6** *P* **79** *L* **51** # 6

Jackson, Kenneth — Sumitomo Electric

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

Labeling on plot (Figure 156-5-Frequency vs spectral power density) needs to reflect the table values.

*SuggestedRemedy*

change 1.0^6 to 10^6 (remove decimal) or 1.0e6

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change the labels in the figure to 1.0e6 as an example to match the values in Table 156-12.

*Cl* **156** *SC* **156.9.17** *P* **81** *L* **18** # 29

Maniloff, Eric Ciena

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

Add table reference for Receiver OSNR tolerance

*SuggestedRemedy*

Change "Receiver OSNR tolerance" to "The Receiver OSNR tolerance is specified in Table 156-7. Receiver OSNR tolerance is defined."

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change
"Receiver OSNR tolerance is defined in TBD"
to
"Receiver OSNR tolerance is specified in Table 156-7. Receiver OSNR tolerance is defined as TBD"

*Cl* **156** *SC* **156.9.20** *P* **81** *L* **32** # 25

Maniloff, Eric Ciena

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

Optical Path Power penalty is not required for the defined application.

*SuggestedRemedy*

Remove 156.9.20

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Delete 156.9.20 and remove Optical path OSNR penalty (max), for OSNR at TP3 (12.5 GHz) from Table 156-8 and Optical path power penalty from Table 156-11.

*Cl* **156** *SC* **156.10.1.1** *P* **83** *L* **6** # 1

Pittala, Fabio Huawei

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

The first box of Figure 156-7 consists of a coherent receiver and the second box consists of the frontend correction. Both boxes make a calibrated coherent receiver.

*SuggestedRemedy*

Rename the first box of Figure 156-7 as "Coherent Receiver" instead of "Calibrated Coherent Receiver"

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **156** *SC* **156.10.1.2.** *P* **84** *L* **8** # 2

Pittala, Fabio Huawei

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

Requirements on the clock recovery unit should be included.

*SuggestedRemedy*

Modify Figure 156-8 changing the second block as "Clock and Frequency Offset Recovery". Include at the beginning of subclause 156.10.1.2.2 the following text "A clock recovery with a corner frequency of TBD MHz and a slope of TBD dB/decade is applied on a fixed block length of TBD symbols."
Otherwise modify Figure 156-8 adding a block named "Clock Recovery" after the "Polarization Demux" block and add a new sublcause (156.10.1.2.2) containing the following text "A clock recovery with a corner frequency of TBD MHz and a slope of TBD dB/decade is applied on a fixed block length of TBD symbols."

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change second block of figure 156-7 from "Frequency Offset Recovery" to "Clock and Frequency Offset Recovery". Change title of 156.10.1.2.2 from "Frequency Offset Recovery" to "Clock and Frequency Offset Recovery" and add a new sentence at the beginning of 156.10.1.2.2 "A clock recovery with a corner frequency of TBD MHz and a slope of TBD dB/decade is applied on a fixed block length of TBD symbols."

*Cl* **156** *SC* **156.10.1.2.1** *P* **84** *L* **1** # 3

Pittala, Fabio Huawei

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

There is a mismatch between the title of subclause 156.10.1.2.1 and the corresponding block in Figure 156-8.

*SuggestedRemedy*

Rename subclause 156.10.1.2.1 as "Polarization Demux"

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **156** *SC* **156.10.1.2.1** *P* **84** *L* **5** # 31

Issenhuth, Tom Huawei

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

Number of block samples is TBD

*SuggestedRemedy*

Replace TBD with "1000"

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **156** *SC* **156.10.1.2.2** *P* **84** *L* **11** # 32

Issenhuth, Tom Huawei

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

Number of symbols is TBD

*SuggestedRemedy*

Replace TBD with "1000"

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **156** *SC* **156.10.1.2.3** *P* **84** *L* **13** # 4

Pittala, Fabio Huawei

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

In Figure 156-8 there is a box "Carrier Phase Recovery" but no subclause is included to describe the functionality of this DSP block.

*SuggestedRemedy*

Add a new subclause 156.10.1.2.3 titled "Carrier Phase Recovery". Description text is TBD.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **156** *SC* **156.10.1.2.4** *P* **84** *L* **19** # 33

Issenhuth, Tom Huawei

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

Number of symbols is TBD

*SuggestedRemedy*

Replace TBD with "1000"

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **156** *SC* **156.13.4.4** *P* **91** *L* **25** # 34

Issenhuth, Tom Huawei

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

PICS table needs to be updated as "I-Q offset" was changed to "I-Q (max instantaneous)" and "I-Q (mean)"

*SuggestedRemedy*

Change "I-Q offset" to "I-Q (max instantaneous)" and add entry for "I-Q (mean)" for subclause 156.9.12

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **156A** *SC* **156A** *P* **95** *L* **1** # 35

Issenhuth, Tom Huawei

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

Majority and possibly all of the annex no longer needed with the removal of the unamplified specification

*SuggestedRemedy*

Delete 156A.2 onward retaining 156A.1 which contains DWDM black link examples or remove the entire annex from the draft including references in clause 156.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

For task force discussion.