Cl **153** *SC* **153.2.3.3.1** *P* **88** *L* **42** # 1

Brown, Matt — Huawei Technologies Canada

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

The acronym FAS for frame alignment signal is defined in 1.5 then again in 153.2.3.2.4. Predominantly FAS is used thereafter but there are around 19 instances in Clause 153 of "frame alignment signal".

SuggestedRemedy

Change all instances of "frame alignment signal" to "FAS" after the acronym is defined on page 84 line 40.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement the suggested remedy with editorial license.

Cl **1** *SC* **1.5** *P* **22** *L* **32** # 2

Brown, Matt — Huawei Technologies Canada

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

A new acronym SC-FEC is introduced in Clause 153 and the acronym has been added to many clauses and annexes including 45, 80, 154, and 83C.

SuggestedRemedy

Add the acronym SC-FEC "staircase FEC" to the acronym list in 1.5.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT

Cl **153** *SC* **153.2.3.1** *P* **83** *L* **25** # 3

Brown, Matt — Huawei Technologies Canada

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

A new acronym SC-FEC is introduced and defined near the beginning Clause 153. Predominantly SC-FEC is used thereafter but in many places throughout Clause 153. Only SC-FEC is used in other clauses including 45, 80, 154, and 83C.However, there are several instances where "staircase FEC" is reused.

SuggestedRemedy

Change all instances of "staircase FEC" to SC-FEC after the acronym is defined on page 81 line 9, with some exceptions such as the definition list in Figure 153-1 and similar.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement the proposed remedy with editorial license.

Cl **152** *SC* **152.2** *P* **59** *L* **40** # 4

Brown, Matt — Huawei Technologies Canada

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

Subclause 152.2 defines the inverse FEC SI as defined in 80.3 which is used by the inverse RS-FEC sublayer. When referring to the sublayer it should be "inverse RS-FEC sublayer" rather than "inverse FEC" sublayer.

SuggestedRemedy

Change "inverse FEC sublayer" to "inverse RS-FEC sublayer at Page 59 line 41,

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Make the indicated correction in both the title of 152.2 and the first sentence of the sub-clause.

Cl **152** *SC* **152.5.1** *P* **61** *L* **24** # 5

Brown, Matt — Huawei Technologies Canada

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

It is not immediately obvious which path is transmit function and which is receive function.

SuggestedRemedy

A label "Transmit function" to downward path and a label "Receive function" to the upward path.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
No other clause has this labeling. See, for example, Figure 91-2 from which this is derived. An unwritten convention is that the Tx direction is down and the Rx direction is up in these kinds of figures.

Cl **153** *SC* **153.2.3.1** *P* **83** *L* **24** # 6

Brown, Matt — Huawei Technologies Canada

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

It is not immediately obvious which path is transmit function and which is receive function.

SuggestedRemedy

A label "Transmit function" to downward path and a label "Receive function" to the upward path.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
See response to comment #5

Cl **154** *SC* **154.1** *P* **100** *L* **8** # 7

Brown, Matt — Huawei Technologies Canada

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

It is not clear why "black link" deserves quotes and other terms like "DWDM channel" don't. The term "black link" is used throughout this clause so no quotes are required.

SuggestedRemedy

Remove quotes from "black link".
Two instances:
page 100, line 8
page 106, line 46

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **154** *SC* **154.1** *P* **100** *L* **8** # 8

Brown, Matt — Huawei Technologies Canada

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

The term "black link" is an important element throughout this clause and will be in other clauses (e.g., 400GBASE-ZR PMD) and therefore a definition should be added to 1.4. Note that the term "black link" is never succinctly defined in this Clause.

SuggestedRemedy

Add definition for "black link" to 1.4.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

A definition for "black link" needs to be added to 1.4.
The exact definition is TBD.
Proposal: A black link is a link where only the characteristics at the input and output of the link and the transfer characteristics are specified, without specifying how the link is designed.
For Task Force discussion.

Cl **154** *SC* **154.1** *P* **100** *L* **8** # 9

Brown, Matt — Huawei Technologies Canada

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

Typically we use the term "(see xxx)" for cases where you have "(defined in 154.6)". Also, since both references in this sentence point to the same subclause only one reference is necessary. I would argue that the references are not necessary at all since this is an introductory sentence and its implicit that everything is going to be specified later in the clause.

SuggestedRemedy

Do one of the following:
1. Remove both references. (preferred)
2. Change "defined in" and "also defined in" to "see".
3. Remove the first reference and in the second change "also defined in" to "see".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement remedy option 3.

Cl **154** *SC* **154.1** *P* **101** *L* **26** # 10

Brown, Matt — Huawei Technologies Canada

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

Note that this might be considered technical.
The medium for ZR is not SMF but rather a more complex "black link".

SuggestedRemedy

In Figure 154-1.
Change "ZR = PMD FOR SINGLE MODE FIBER"
To "ZR = PMD FOR BLACK LINK" or similar

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change "ZR = PMD FOR SINGLE MODE FIBER"
To "ZR = PMD FOR DWDM CHANNEL OVER A BLACK LINK"

Cl **154** *SC* **154.1** *P* **101** *L* **23** # 11

Brown, Matt — Huawei Technologies Canada

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

At the bottom of Figure 154-1, the order of definitions should be alphanumeric. Also, SC-FEC is missing from definition list.

SuggestedRemedy

Move RS-FEC to after PMD.
Add SC-FEC after RS-FEC.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See resolution to comment #41.

Cl **154** *SC* **154.5.3** *P* **104** *L* **46** # 12

Brown, Matt — Huawei Technologies Canada

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

Presumably, the "two DQPSK symbol streams" are extracted from each of two "orthogonal polarizations" as modulated by the transmit function (see 154.5.2). Text in 154.2 supports this.

SuggestedRemedy

Change:
The PMD Receive function shall convert the composite optical signal received from the MDI into two DQPSK symbol streams for delivery."
To:
The PMD Receive function shall convert the composite optical signal received from the MDI into two DQPSK symbol streams, each from one of two orthogonal polarizations, for delivery." or similar

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The polarization of the incoming optical composite signal probably has rotated from the original 2 polarizations transmitted and therefore it is the task of the receiver (with the special task of the receiver DSP) has to retrieve the original transmitted symbol streams.

Cl **154** *SC* **154.7.3** *P* **111** *L* **13** # 13

Brown, Matt — Huawei Technologies Canada

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

In Table 154-10, footnote a, there is a disconnect between the parameter DGD_max and the table. Previously PMDs, a similar table (e.g., Table 124-11 in 802.3-2018) included DGD_max as a description, whereas here the description is spelled out in words. For consistency and clarity, include the DGD_max term in the description cell.

SuggestedRemedy

In the first column of row 2 change the description to:
"Maximum differential group delay, DGD_max"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **83C** *SC* **83C.4.2** *P* **120** *L* **11** # 14

Brown, Matt — Huawei Technologies Canada

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

Figure 83C-9 and Figure 83C-10 should include both 100GAUI-4 and 100GAUI-2.

SuggestedRemedy

Add 100GAUI-4 in addition to 100GAUI-2.
See Figure 135A-8 in 802.3cd-2018 as an example.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Annex 83C is currently written to provide some specific (not generic or exhaustive) examples about how sub-layers can be assembled into complete PHYs. There are no "n"s in Annex 83C - it is always specific, e.g., "PMA(20:4)". Annex 135A appears to have taken a different approach, including some more generic figures that allow you to fill in different values of "n" to represent different configurations. A designer doesn't need to be shown an example of every possible variant to be able to figure out how to build it.

Cl **83C** *SC* **83C.4.2** *P* **120** *L* **11** # 15

Brown, Matt — Huawei Technologies Canada

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

Figure 83C-9 and Figure 83C-10 should be in Annex 135A not 83C, as they are primarily examples of Clause 135 PMA not Clause 83 PMA>

SuggestedRemedy

Add Annex 135A to 802.3ct and amend by moving Figure 83C-9 and Figure 83C-10 to Annex 135A.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
For Task Force discussion.
There could be merit to moving these figures, as most 100GAUI examples are currently in Annex 135A. In the event that Annex 135A is incorporated and the figures are moved, see also comment #14, where the proposed change is proposed to reject due to not following the style of other figures in Annex 83C. This answer would have been different if following the style of Annex 135A.

Cl **152** *SC* **152.1** *P* **58** *L* **13** # 16

Brown, Matt — Huawei Technologies Canada

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

When the inverse FEC was adopted as a baseline is was meant not only to enable conversion to the 100GBASE-ZR but rather as reusable sublayer for either (a) converting to a FEC other than the Clause 91 RS(544,514) FEC or (b) permit correction between the MAC device and the PMD device. The inverse FEC is analogous to the 400GXS and 200GXS specified by 802.3bs for 400GE and 200GE (see Clause 118 in 802.3-2018). However, as the introductory subclause is written it is targetting specifically the 100GBASE-ZR PHY. To encourage general reuse of this sublayer and to avoid reworking this clause for new PHY types it should be defined generically.

SuggestedRemedy

In 152.1, change the second sentence to: "This sublayer is used in cases where the RS-FEC specified in Clause 91 is used across a chip-to-chip or chip-to-module interface and a different FEC is used for the PMD."
In Figure 152-1 change "100GBASE-ZR" to "FEC" and "100GBASE-ZR PMA" to "PMA and update the definition list.
Change the title of 83C.4 to "Partitioning examples with Inverse RS-FEC"
In Figure 83C-9 and Figure 83C-10...
change "SC-FEC" to "FEC" (two places)
change "100GBASE-ZR PMA" to "PMA"
change "100GBASE-ZR" to "100GBASE-Z/P" or add "100GBASE-P"
If any examples specific to the 100GBASE-ZR PHY are required they should go in one of the clauses specific to 100GBASE-ZR (153 or 154).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
At the time this clause was created, SC-FEC was the only known case where it would be used. Now that P802.3ck has adopted the optional interleaved 100G FEC, there is a second case where clause 152 could be used.
Implement the proposed remedy with editorial license.

Cl **1** *SC* **1.5** *P* **22** *L* **48** # 17

Brown, Matt — Huawei Technologies Canada

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

"generic mapping procedure" should not be capitalized; see G.709. In 802.3 standards, only defined proper nouns are capitalized, except as required, e.g., first character in sentence or title.

SuggestedRemedy

change to "generic mapping protocol"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE

Change to "generic mapping procedure"

Cl **1** *SC* **1.5** *P* **22** *L* **45** # 18

Brown, Matt — Huawei Technologies Canada

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

DQPSK is used separately from DP-DQPSK to define a coding method, rather than modulation format

SuggestedRemedy

add separate acronym for DQPSK

Proposed Response *Response Status* **W**

PROPOSED ACCEPT

Cl **80** *SC* **80.1** *P* **48** *L* **7** # 19

Brown, Matt — Huawei Technologies Canada

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

802.3cu updates this paragraph, adding 100GBASE-FR1 and 100GBASE-LR1

SuggestedRemedy

update this paragraph based on changes in 802.3cu

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE

Modify the existing language "The MDIs as specified in Clause 89 for 40GBASE-FR, and Clause 140 for 100GBASE-DR, and
Clause 154 for 100GBASE-ZR use a single lane data path" to read "The MDIs as specified in Clause 89 for 40GBASE-FR, and Clause 140 for 100GBASE-DR, 100GBASE-FR1 and 100GBASE-LR1 and Clause 154 for 100GBASE-ZR use a single lane data path"

Cl **80** *SC* **80.3.2** *P* **50** *L* **30** # 20

Brown, Matt — Huawei Technologies Canada

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

For 100GBASE-ZR a new class of PHY, 100GBASE-Z, was defined so it should be added to the list of PHY typs after 100GBASE-P. Also, " Figure 80-4a," must be underlined.

SuggestedRemedy

add "100GBASE-Z" after "100GBASE-P" with appropriate grammar and markup
mark up all new and delete text

Proposed Response *Response Status* **W**

PROPOSED ACCEPT

Cl **80** *SC* **80.2.4** *P* **50** *L* **5** # 21

Brown, Matt — Huawei Technologies Canada

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

100GBASE-ZR PMA (specified in 153)) is not a 100GBASE-R PMA (specified in 83).

SuggestedRemedy

Remove ", with the exception of
100GBASE-ZR which is specified in Clause153."
Add new sentence at the end of the paragraph:
"The PMA specific to the 100GBASE-ZR PHY is specified in Clause 153."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT

Cl **152** *SC* **152.1.1** *P* **58** *L* **12** # 22

Brown, Matt — Huawei Technologies Canada

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

The RS-FEC acronym is introduced in the first sentence.

SuggestedRemedy

In second sentence change "Reed-Solomon FEC" to "RS-FEC".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Editor's Note: Page 48 in comment changed to page 58.

Cl **152** *SC* **152.1** *P* **59** *L* **35** # 23

Brown, Matt — Huawei Technologies Canada

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

For Figure 152-1. The PMA above the Inverse RS-FEC is defined in Clause 135 not Clause 83.

SuggestedRemedy

In note 1, change "CLAUSE 83" to "CLAUSE 135"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **152** *SC* **152.2** *P* **60** *L* **4** # 24

Brown, Matt — Huawei Technologies Canada

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

The SIGNAL_OK parameter is sent upward and thus is affected by the 64B/66B block lock and alignment process rather than FEC codeword alignment process.

SuggestedRemedy

Change the last sentence of 152.2 to the following (based on test in 82.2):
"The value is set to OK when align_status (see 152.6.13) is true. The value is set to FALSE when align_status is false."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change the last two sentences of 152.2 to the indicated replacement.

[Editor's Note: Line number changed to 4]

Cl **152** *SC* **152.6.13** *P* **76** *L* **14** # 25

Brown, Matt — Huawei Technologies Canada

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

tx_align_status does not appear in Figure 82-14.

SuggestedRemedy

Change "tx_align_status" to "rx_align_status".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **152** *SC* **152.3** *P* **60** *L* **11** # 26

Brown, Matt — Huawei Technologies Canada

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

The sentence refers to "The restriction that all PMA service interfaces between the RS-FEC sublayer and the PMD sublayer consist of four or fewer lanes is removed below the Inverse RS-FEC sublayer." It is not clear where this restriction is coming from.

SuggestedRemedy

Provide information indicating the source of this restriction, perhaps a subclause number.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change:
"The restriction that all PMA service interfaces between the RS-FEC sublayer and the PMD sublayer consist of four or fewer lanes is removed below the Inverse RS-FEC sublayer."
to
"The restriction that all PMA service interfaces between the RS-FEC sublayer and the PMD sublayer consist of four or fewer lanes (see 91.3) is removed below the Inverse RS-FEC sublayer."

The indicated restriction is described in the final paragraph of 91.3. But once you terminate the FEC and go back to the 20 PCS lane format, you are no longer locked at 4 or fewer lanes.

Cl **152** *SC* **152.5** *P* **60** *L* **28** # 27

Brown, Matt — Huawei Technologies Canada

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

There is a reference to "The FEC optional states in Clause 91". This is a bit vague.

SuggestedRemedy

Change to "The optional states in Figure 91-8..."

Proposed Response *Response Status* **W**

PROPOSED REJECT.
There doesn't seem to be a lot of consistency across various clauses about how these states are described. However, Clause 45 has created a specific variable "FEC optional states supported", so calling these the "FEC optional states" seems a safe way to refer to them.
The intro paragraph of 152.5 is simply a high-level intro of what is or is not supported in the clause. In the detail in 152.5.2.1 you get to the specific description that we are talking about the states within the dotted line in Figure 91-8 and Transition A.

Cl **152** *SC* **152.5** *P* **60** *L* **27** # 28

Brown, Matt — Huawei Technologies Canada

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

It is not necessary to give a reason for a specification and the reason given may not be perpetually valid. It is sufficient to say simply that the EEE deep sleep is not supported. Note that for KR (backplane) and CR (twinax) PHYs being specified by 802.3ck there is no objective to support EEE.

SuggestedRemedy

Delete "since all PHY types using this sublayer are optical".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **152** *SC* **152.5.4.2.3** *P* **73** *L* **5** # 29

Brown, Matt — Huawei Technologies Canada

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

Since FEC optional states are mandatory for Inverse RS-FEC amp_bad_count is not conditional.

SuggestedRemedy

Delete "if the optional states are supported in the FEC synchronization process"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
[Editor's note - page changed to 73]
Implement the proposed remedy. Delete the same words also under restart_lock on line 33, page 72.

Cl **152** *SC* **152.6.6** *P* **75** *L* **18** # 30

Brown, Matt — Huawei Technologies Canada

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

Since FEC optional states are mandatory an associated ability bit is not required. In 152.5.4.2.1 the variable that controls the state machince, fec_optional_states, is unconditionally forced to true.

SuggestedRemedy

Delete 152.6.6.
Delete "fec_optional_states"row in Table 152-2.
Delete row for 1.2201.7 in Table 45-150ab.
Delete 45.2.1.186ab.7.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **152** *SC* **152.5.1** *P* **61** *L* **24** # 31

Brown, Matt — Huawei Technologies Canada

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

In Figure 152-2, it is not immediately clear which path is transmit function and which is is receive function.

SuggestedRemedy

Add label "Transmit Function" to the left (downward) path and "Receive Function" to the right (upward) path.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Duplicate of Comment #5

Cl **152** *SC* **152.5.1** *P* **61** *L* **40** # 32

Brown, Matt — Huawei Technologies Canada

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

In Figure 152-2, the layer below might be either a FEC or a PMA sublayer. For the case where the below layer can be more than one, the variable inst (italicized) is used (see Figure 120-5).

SuggestedRemedy

In Figure 152-2.
For the signals below the Inverse RS-FEC change "FEC:IS" to "inst:IS" with inst italicized.
Similar to Figure 120-5, add legend text:
"inst -- PMA or FEC, depending on which sublayer is below this PMA"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **152** *SC* **152.5.2.1** *P* **62** *L* **2** # 33

Brown, Matt — Huawei Technologies Canada

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

The sentence below is unecessarily wordy. The reference figure clearly indicates the optional state. This should be more than a note.
"Note that the FEC optional states within the dotted line of Figure 91-8, and transition A, are mandatory in the context of the Inverse RS-FEC sublayer."

SuggestedRemedy

Change the sentence to: "The FEC optional states and transition A in Figure 91-8 are mandatory for the Inverse RS-FEC."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **152** *SC* **152.5.2.6** *P* **63** *L* **44** # 34

Brown, Matt — Huawei Technologies Canada

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

For the phrase "distributed to multiple PCS lanes", I think for the Inverse RS-FEC "multiple" is 20. The wording above likely came from Clause 82 where both a 40G four-lane and 100G 20-lane PCS were defined.

SuggestedRemedy

Change "multiple PCS lanes" to "20 PCS lanes".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Following the practice in clause 82, change "multiple PCS lanes" to "twenty PCS lanes"

Cl **153** *SC* **153.2.1** *P* **82** *L* **16** # 35

Brown, Matt — Huawei Technologies Canada

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

It is more likely the SC-FEC will connect to the PCS through a Clause 135 PMA using 100GAUI-4 or 100GAUI-2 in which case RS-FEC would be in use and Inverse FEC would be required. It is also possible the interface could be C2C or C2M.

SuggestedRemedy

Change the paragraph to:
"The PCS may be connected to the SC-FEC using an optional instantiation of the PMA service interface (see Annex 83A, Annex 83B, Annex 83D, Annex 83E, and Annex 135D through Annex 135G) in which case a PMA (see Annex 83) or Inverse FEC (see Clause 152) is a client of the FEC service interface."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
While a 100GAUI interface may exist above an Inverse RS-FEC sublayer, it is never immediately adjacent to a SC-FEC sublayer and hence is irrelevant for this clause since it can never be a physical instantion of any Clause 153 interface.
The current text references the C2M Annex83x which is most probable for an implementation, but C2C should not be excluded.
Change the paragraph to:
"The PCS or Inverse RS-FEC may be connected to the SC-FEC using an optional instantiation of the PMA service interface (see Annex 83A, Annex 83B, Annex 83D, and Annex 83E) in which case a PMA (see Annex 83) or Inverse FEC (see Clause 152) is a client of the FEC service interface."

Cl **153** *SC* **153.2.3.2.4** *P* **84** *L* **22** # 36

Brown, Matt — Huawei Technologies Canada

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

Need to spell out first instance of each acronym within each Clause.

SuggestedRemedy

Change start of sentece to:
"The generic mapping procedure (GMP) mapper inserts."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **153** *SC* **153.3.2.1** *P* **95** *L* **20** # 37

Brown, Matt — Huawei Technologies Canada

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

Figure 153-9 is the 100GBASE-ZR PMA.

SuggestedRemedy

Change "100GBASE-R" to "100GBASE-ZR".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **153** *SC* **153.3.2.2.2** *P* **95** *L* **44** # 38

Brown, Matt — Huawei Technologies Canada

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

Need to spell out first instance of each acronym within each Clause.

SuggestedRemedy

Change start of sentence to:
"The differential quadrature phase shift keying (DQPSK) encode ."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **153** *SC* **153.3.2.3.1** *P* **96** *L* **25** # 39

Brown, Matt — Huawei Technologies Canada

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

The sentence should end with a period not a comma, since it is followed by sentences rather than phrases. However, since this is defining a procedure with 3 steps a lettered list would be appropriate.

SuggestedRemedy

Convert the procedure sentences to a lettered list.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
It isn't 3 steps, but two, with a 3rd sentence clarifying how the second step is carried out.
Implement the suggested remedy with editorial license.

Cl **154** *SC* **154.1** *P* **100** *L* **10** # 40

Brown, Matt — Huawei Technologies Canada

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

In the spelled out wording of DP-DQPSK the hyphen is in the wrong place (see 1.5). Also, at first use in clause the spelled out version should occur first followed by the acronym in brackets.

SuggestedRemedy

Change:
DP-DQPSK (dual polarization - differential quadrature phase shift keying) format
to:
"dual-polarization differential quadrature phase shift keying (DP-DQPSK)"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. TBD.
Change to "dual polarization differential quadrature phase shift keying (DP-DQPSK)"

Cl **154** *SC* **154.1** *P* **101** *L* **23** # 41

Brown, Matt — Huawei Technologies Canada

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

In Figure 154-1, the legend list should be in alphanumeric order. Also, SC-FEC is missing from legend.

SuggestedRemedy

Move RS-FEC to after PMD.
Add SC-FEC after RS-FEC.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The current order is similar to in-force clauses, for instance 140.

Replace
"RS-FEC = REED-SOLOMON FORWARD ERROR CORRECTION"
by
"SC-FEC = STAIRCASE FORWARD ERROR CORRECTION"

Cl **154** *SC* **154.1** *P* **101** *L* **26** # 42

Brown, Matt — Huawei Technologies Canada

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

In Figure 154-1, the legend list note says ZR is a PMD for 80 km SMF. The introduction says 100GBASE-ZR is for transmission across a black link.

SuggestedRemedy

Change "PMD FOR SINGLE MODE FIBER 80 km"
to
"PMD for BLACK LINK"
or
"PMD for DWDM BLACK LINK"
or similar

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See response to comment #10

Cl **154** *SC* **154.2.** *P* **102** *L* **25** # 43

Brown, Matt — Huawei Technologies Canada

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

The parameter "rx_symbol" is never defined in this Clause.

SuggestedRemedy

Define "rx_symbol".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
In 154.5.3 change the two instances of
"DQPSK symbol streams"
to'
"DQPSK rx_symbol streams"

Additionally in 154.5.2 change the two instances of
"DQPSK symbol streams"
to
"DQPSK tx_symbol streams"

Cl **154** *SC* **154.3.2** *P* **102** *L* **50** # 44

Brown, Matt — Huawei Technologies Canada

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

Editor's note should be in prescribed format (not red italic text).

SuggestedRemedy

Create editor's notes using proper format.
Single-cell table in "Editor's note" table format.
Several places in Clause 154.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Execute modification in proposed remedy with editorial license.

Cl **154** *SC* **154.5.3** *P* **104** *L* **51** # 45

Brown, Matt — Huawei Technologies Canada

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

Each DQPSK stream carries 50 Gb/s not 100 Gb/s. Since this is referring to a phase change, it must be referring to the DQPSK signal on one of the polarization states.

SuggestedRemedy

Change "DQPSK 100 Gb/s signal" to "DQPSK 50 Gb/s signal".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Delete "100 Gb/s"

Cl **45** *SC* **45.2.1.186al** *P* **44** *L* **42** # 46

Bruckman, Leon — Huawei

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

The language in this paragraph is different from the one used in similar paragraphs in this document, see for example 45.2.1.186ad

SuggestedRemedy

Change: " Registers 1.2276 1.2277 are used to read the value of a 32-bit counter. When registers 1.2276 and 1.2277 are used to read the 32-bit counter value, the register 1.2276 is read first,",

With: "Registers 1.2276 and 1.2277 are used to read the value of a 32-bit counter. When registers 1.2276 and 1.2277 are used to read the 32-bit counter value, register 1.2276 is read first, "

Proposed Response *Response Status* **W**

PROPOSED ACCEPT

Cl **45** *SC* **45.2.1.186am** *P* **45** *L* **10** # 47

Bruckman, Leon — Huawei

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

The language in this paragraph is different from the one used in similar paragraphs in this document, see for example 45.2.1.186ad

SuggestedRemedy

Change: "When registers 1.2278 and 1.2279 are used to read the 32-bit counter value, the register 1.2278 is read first,"

With: "When registers 1.2278 and 1.2279 are used to read the 32-bit counter value, register 1.2278 is read first,"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE

Accept suggested remedy and will also modify the preceding sentence from "Registers 1.2278, 1.2279 are used to read the value of a 32-bit counter." to read "Registers 1.2278 and 1.2279 are used to read the value of a 32-bit counter."

Cl **45** *SC* **45.2.1.186an** *P* **45** *L* **29** # 48

Bruckman, Leon Huawei

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

The language in this paragraph is different from the one used in similar paragraphs in this document, see for example 45.2.1.186ad

SuggestedRemedy

Change: "Registers 1.2280, 1.2281, 1.2282, and 1.2283 are used to read the 64-bit counter value, the register 1.2280 is read first, "

With: "Registers 1.2280, 1.2281, 1.2282, and 1.2283 are used to read the value of a 64-bit counter. When registers 1.2280, 1.2281, 1.2282, and 1.2283 are used to read the 64-bit counter value, register 1.2280 is read first,"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT

Cl **45** *SC* **45.2.1.186ao** *P* **46** *L* **2** # 49

Bruckman, Leon Huawei

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

The language in this paragraph is different from the one used in similar paragraphs in this document, see for example 45.2.1.186ad

SuggestedRemedy

Change: "When registers 1.2284, 1.2285, 1.2286, and 1.2287 are used to read the 64-bit counter value, the register 1.2284 is read first,"

With: "When registers 1.2284, 1.2285, 1.2286, and 1.2287 are used to read the 64-bit counter value, register 1.2284 is read first,"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE

Modify the existing wording "Registers 1.2284, 1.2285, 1.2286, 1.2287 are used to read the value of a 64-bit counter. When registers 1.2284, 1.2285, 1.2286,
and 1.2287 are used to read the 64-bit counter value, the register 1.2284 is read first," to read "Registers 1.2284, 1.2285, 1.2286, and 1.2287 are used to read the value of a 64-bit counter. When registers 1.2284, 1.2285, 1.2286, and 1.2287 are used to read the 64-bit counter value, register 1.2284 is read first,"

Cl **80** *SC* **80.1.5** *P* **49** *L* **6** # 50

Bruckman, Leon Huawei

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

Missing the "R"

SuggestedRemedy

Change "100GBASE-Z" to "100GBASE-ZR"

Proposed Response *Response Status* **W**

WITHDRAWN

Cl **153** *SC* **153.2.3.2.4** *P* **84** *L* **43** # 51

Bruckman, Leon Huawei

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

The last 3 bytes of the FAS are 0x24, while ITU-T G.709 defines them as 0x28

SuggestedRemedy

Change the last 3 bytes of the FAS to 0x28 to make them consistent with the OTU4 defined in ITU-T G.709

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change
"1111 0110 1111 0110 1111 0110 0010 0100 0010 0100 0010 0100"
to
"1111 0110 1111 0110 1111 0110 0010 1000 0010 1000 0010 1000"

Cl **153** *SC* **153.2.3.2.7** *P* **88** *L* **5** # 52

Bruckman, Leon Huawei

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

From G.709 Annex C: " LLM = 0 position shall be aligned with MFAS = 0 position every 3840 (the least common multiple of 240 and 256) frame periods." The LLM is the 240-counter. If this is a OTL4.4 interface as noted in section 153.3.2.2.1, then we shall have a similar requirement. Note that this means the LLM shall be forced to a value of nx16 (n=0 to 15) when MFAS=0x00, otherwise the requirement will never be met.
We may not be able to reuse the OTN HW, or have interoperability issues with such HW.

SuggestedRemedy

There are 2 options:
1- Add the following text: " This counter 0 position shall be aligned with MFAS = 0 position every 3840 (the least common multiple of 240 and 256) frame periods."
2 - Just add a note saying: "ITU-T G.709 Annex C requires that this counter 0 position be aligned with MFAS = 0 position every 3840 (the least common multiple of 240 and 256) frame periods to be able to TBD" and send a liaision to ITU-T SG15/Q11 asking clarifications regarding the need of this synchronization and what will happen if we do not require it

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Add a new penultmate sentence in the 1st paragraph of 153.2.3.2.7:
"The lane counter 0 position shall be aligned with MFAS = 0 position every 3840 (the least common multiple of 240 and 256) frame periods.

Cl **153** *SC* **153.2.3.3.2** *P* **88** *L* **53** # 53

Bruckman, Leon Huawei

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

The last byte of the FAS is indicated as carrying the value 0x24, while ITU-T G.709 defines it as 0x28.

SuggestedRemedy

Change "0010 0100" with "0010 1000" to make it consistent with the OTU4 defined in ITU-T G.709

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **153** *SC* **153.2.4.1.1** *P* **90** *L* **18** # 54

Bruckman, Leon Huawei

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

ITU-T G.709 does not require to verify the 240 counter for FAS alignment/alignment loss. Note that if the OTU4-like signal does not include a 240 counter it will probably include the sixth FAS byte value that passes this test, so it does not help in detecting a misconnection to a non 100GBASE-ZR signal.

SuggestedRemedy

Remove requirement to verify the 240 counter from the fas_valid variable.
Add a definition for lane ID alignment/alignment loss similar to the one found in ITU-T G.798 section 8.2.6.2: "A new value of the logical lane marker is accepted when in five consecutive 16320-byte periods the same value is present after modulo 20 operation of the LLM byte value, and the recovery process will enter the in-recovery (IR) state. In the IR state, recovery will be lost and the out-of-recovery (OOR) state be entered, when in each of five consecutive 16320 byte periods a value is received that is not the same as the accepted logical lane marker value. During an OOR period, the last accepted LLM value has to be maintained as lane marker value."

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The G.798 process is an "add on" to a base process that acquires frame alignment on a single-lane interface, adding a secondary process that acquires the lane number.
In the context of Ethernet, the lane lock is only used for this particular multi-lane interface, and hence it is described more like an AM lock process which requires you see markers for the same lane in multiple occurrences to achieve lock.

Cl **153** *SC* **153.2.5.1** *P* **93** *L* **34** # 55

Bruckman, Leon Huawei

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

Spare line

SuggestedRemedy

Remove the spare line

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **153** *SC* **153.3.2.2.1** *P* **95** *L* **38** # 56

Bruckman, Leon Huawei

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

All through section 153 the rates are defined using the exact values, e.g. (255/227) × 24.8832 GBd. Then in section 154 we start using the approximate value 27.9525 GBd. Refer also to section 153.3.1 (page 94 line 48) to see an example of linking the exact and approximate values.

SuggestedRemedy

Add the approximate rate to the text as follows: "...a signaling rate of (255/227) × 24.8832 Gb/s ±20 ppm (~27.9525 GBd)."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **154** *SC* **154.5.2** *P* **104** *L* **41** # 57

Bruckman, Leon Huawei

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

In this section the text is: "Table 154-4 contains the mapping." but in the following section (same page line 51) similar text reads: "Table 154-4 shows the mapping."

SuggestedRemedy

Make the two sentences consistent by using either "contains" or "shows" in both sentences.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement proposed remedy with editorial license.

Cl **154** *SC* **154.5.4** *P* **105** *L* **16** # 58

Bruckman, Leon Huawei

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

"SIGNAL_DETECT shall be a global indicator of the presence of optical signals on both lanes. The value of the SIGNAL_DETECT parameter shall be generated according to the conditions defined in Table 154-5. The PMD receiver is not required to verify whether a compliant 100GBASE-R signal is being received."

The requirement is to verify that there is an optical signal on both lanes, but Table 154-4 points to Table 154-9 that defines the average input power for the whole signal, not per lane (per polarization).

SuggestedRemedy

If the optical signal power is required to be monitored per lane (per polarization), then define it that way in Table 154-9.

If not, then change the SIGNAL_DETECT definition to: "SIGNAL_DETECT shall be a global indicator of the presence of optical signals." and remove "on both lines"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement second option in remedy.
Remove in 154.5.4 the suggestion that each incoming polarization is monitored separately.
With editorial license.

Cl **154** *SC* **154.5.4** *P* **105** *L* **35** # 59

Bruckman, Leon Huawei

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

Unnecessary word "for"

SuggestedRemedy

Remove the unnecesary "for"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **153** *SC* **153.2.4.4** *P* **93** *L* **3** # 60

Bruckman, Leon Huawei

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

Undefined variable in Figure 153-8: "fas_status"

SuggestedRemedy

Define "fas_status"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change "fas_status" to "fas_align_status"

Cl **153** *SC* **153.2.4.4** *P* **93** *L* **6** # 61

Bruckman, Leon Huawei

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

Undefined variable in Figure 153-8: "all_fas_valid"

SuggestedRemedy

Define "all_fas_valid".

My suggestion: Boolean variable that is set to true if all FEC lanes are aligned. FEC lanes are considered to be aligned when fas_lock<x> is true for all x, frame alignment has been acquired on each FEC lane, and each FEC lane has a unique lane number. Otherwise, this variable is set to false.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The variable "fas_align_status" already has this meaning.

Cl **153** *SC* **153.2.3.3.1** *P* **88** *L* **43** # 62

Bruckman, Leon Huawei

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

The frame start position and the FEC lane number shall be maintained during alignment loss to avoid problems when loss of alignment happens due to bit errors.

SuggestedRemedy

Add sentence: "The frame start position and the FEC lane number shall be maintained during loss of alignment"

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Not sure what this means in the context of an IEEE document, as we have no variables such as "frame start position" described. During the indicated condition, FEC:IS_SIGNAL.indication=FALSE, so information sent upwards is undefined.

Cl **153** *SC* **153.2.4.2** *P* **91** *L* **17** # 63

Bruckman, Leon Huawei

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

Why is fas_match dependent on first_fecl and current_fecl ? It is enough to compare to the FAS known sequence.
Also, according to ITU-T G.798 similar interfaces, it is enough to test a fixed subset of FAS bytes (3rd, 4th, 5th)

SuggestedRemedy

Replace: "fas_match is true if fas_valid is true for first_fecl and current_fecl,"

With: "fas_match is true if the third, fourth and fifth octets match the known bits of the pattern described in 153.2.3.2.4,"

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Since G.798 is an "add on" to a base frame alignment process originally designed for single-lane interfaces, G.798 uses a secondary process to identify the lane number that is independent of acquiring frame alignment in the first place.
As this process is only used for this particular multi-lane interface, it is described more in the manner of AM lock, where the lock to a particular lane occurs in one step.

Cl **153** *SC* **153.2.4.1.1** *P* **90** *L* **32** # 64

Bruckman, Leon Huawei

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

Where is the fec_alignment_valid variable set ? It does not show up in the state machines.

SuggestedRemedy

Add setting of fec_alignment_valid to Figure 153-8, FALSE in LOSS_OF_ALIGNMENT state and TRUE in ALIGN_ACQUIRED state

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The state diagram is a per-lane process. This variable is set by nature of its definition: "Boolean variable that is set to true if all FEC lanes are aligned".
So after all twenty FEC lanes are aligned, this variable becomes true. This is the same approach as other clauses (e.g., 82, 91)

Cl **153** *SC* **153.2.4.1.1** *P* **90** *L* **34** # 65

Bruckman, Leon Huawei

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

What is the difference between: "fas_lock<x> is true for all x" and "frame alignment has been acquired on each FEC lane" ?

SuggestedRemedy

Remove: "frame alignment has been acquired on each FEC lane"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **153** *SC* **153.2.1** *P* **82** *L* **10** # 66

Bruckman, Leon Huawei

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

The SIGNAL_OK parameter of the FEC:IS_SIGNAL.indication primitive is driven by fec_align_status.
fec_align_status is false if any lane looses alignment, but this happens frequently due to pre-FEC high BER. According to the text in this case receiver may be impaired frequently.

SuggestedRemedy

Add persistency check of fec_align_status before changing SIGNAL_OK to not OK.
I suggest a 3msec persistency check to be in line with ITU-T G.798

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The behavior is consistent with other elements of the Ethernet standard. This is driven by the SC-FEC synchronization state diagram in Figure 153-7, which loses lock when fas_bad_count = 5, not when 3ms have transpired.
The commenter may be thinking delays between defects and alarms, which are not a concept captured in IEEE Std 802.3.

Cl **153** *SC* **153.2.4.1.1** *P* **90** *L* **15** # 67

Bruckman, Leon Huawei

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

The alignment scheme can be simplified. Also the scheme is not consistent with similar ITU-T G.798 alignment schemes for similar signals

SuggestedRemedy

Replace: "Boolean variable that is set to true if the received 6-octet sequence is a valid frame alignment signal. The frame alignment signal consists of 40 known bits and 8 variable bits. The sequence is considered to be valid if four of the first five octets match the known bits of the pattern described in 153.2.3.2.4, and the 6th octet represents a numerical value in the range 0 to 239 with the most-significant bit transmitted first.

With: "Boolean variable that is set to true if the received 5-octet sequence is a valid frame alignment signal. The frame alignment signal consists of 40 known bits. The sequence is considered to be valid if a subset of 4 octets match the known bits of the pattern described in 153.2.3.2.4."

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The proposed remedy is not consistent with the rest of the text, which described the FAS as a 6-octet value rather than 5-octets. The text as written reflects the fact that when striping across lanes, the final octet becomes a lane identifier and hence becomes variable. But it is still part of the 6-octet FAS.

Cl **153** *SC* **153.2.4.2** *P* **91** *L* **14** # 68

Bruckman, Leon Huawei

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

The alignment loss scheme can be simplified. Also the scheme is not consistent with similar ITU-T G.798 alignment schemes for similar signals.

SuggestedRemedy

Replace: "This function compares the values of first_fecl and current_fecl to determine if a valid frame alignment sequence has been detected and returns the result of the comparison using the variable fas_match. fas_match is true if the third, fourth and fifth octets match the known bits of the pattern described in 153.2.3.2.4, and the 6th octet of first_fecl (interpreted with the most significant bit transmitted first) modulo 20 is equal to the 6th octet of current_fecl (interpreted with the most significant bit transmitted first) modulo 20. Otherwise, fas_match is false."

With: "This function compares the values of first_fecl and current_fecl to determine if a valid frame alignment sequence has been detected and returns the result of the comparison using the variable fas_match. fas_match is true if the third, fourth and fifth octets match the known bits of the pattern described in 153.2.3.2.4. Otherwise, fas_match is false."

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The referenced G.798 process was defined as an "add on" to a base frame alignment process that was developed long before to deal with single-lane interfaces and adapted later for multi-lane interfaces, ignoring the variable bits entirely, then extracting the lane number from the variable bits and making the assumption that it matched while you were acquiring lock.
The process in this document deals only with this multi-lane interface, and is modeled after how alignment marker lock is acquired: not only must any fixed bits match, but the variable bits must match the same lane to lock onto that lane.

Cl **153** *SC* **153.2.4.4** *P* **92** *L* **13** # 69

Bruckman, Leon Huawei

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

There is no action in FAS_COMPARE state

SuggestedRemedy

Add the FAS_COMPARE function to the FAS_COMPARE state

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Add the FAS_COMPARE function to the FAS_COMPARE state. Change the exit transitions from FAS_COMPARE to be "fas_match" and "!fas_match" rather than "fas_valid" and "!fas_valid"

Cl **153** *SC* **153.2.4.1.1** *P* **90** *L* **37** # 70

Bruckman, Leon Huawei

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

Why is the fec_lane variable required ? It will always be assigned the same value as first_fecl, and it is only used in the 2_GOOD state to set the value of the FEC_lane_mapping<x> MDIO indication.

SuggestedRemedy

Remove the fec_lane variable and replace fec_lane with first_fecl in th 2_GOOD state.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
While in principle this might have been done with fewer variables, this precisely aligns with the variables defined for the same purpose in clause 91. You have a first_fecl and current_fecl which are compared while acquiring lock, and fec_lane (and more importantly, the MDIO-mapped FEC_lane_mapping<x>) are set on the fas_match transition out of COMP_2ND.

Cl **45** *SC* **45.2.1.186ab.7** *P* **37** *L* **25** # 71

Trowbridge, Steve Nokia

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

It is not clear to all readers why only the value "1" is supported.

SuggestedRemedy

Add an explanatory "NOTE: The FEC states that are optional in the context of Clause 91 are mandatory in the context of Clause 152. Therefore the value of this bit is fixed at 1, since these states are always supported for Clause 152 implementations."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE

Overtaken by events, see response to comment 30.

Cl **153** *SC* **153.2.3.4** *P* **85** *L* **6** # 72

Trowbridge, Steve — Nokia

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

Unclear Wording

SuggestedRemedy

Change "GMP is a generic mechanism that can accommodate arbitrary signaling rate difference between the payload and the space in which it is carried that uses a sigma/delta distribution algorithm" to "GMP is a generic mechanism that uses a sigma/delta distribution algorithm to accommodate an arbitrary signaling rate difference between a payload and the space in which it is carried"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **80** *SC* **80.1.4** *P* **56** *L* **32** # 79

D'Ambrosia, John — Futurewei, U.S. Subsidiary of Huawei

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

Description for 100 GBASE-ZR states
100Gb/s PHY using 100GBASE-R encoding over one WDM lane on a DWDM system, with reach up to at least 80 km (see Clause154). There is no use of the terminology "WDM lanes" in the draft

SuggestedRemedy

Change description to
100Gb/s PHY using 100GBASE-R encoding over a single wavelength/frequency on a defined frequency grid, with reach up to at least 80 km (see Clause154).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE

Change existing text "100Gb/s PHY using 100GBASE-R encoding over one WDM lane on a DWDM system, with reach up to at least 80 km (see Clause154)" to read "100Gb/s PHY using 100GBASE-R encoding over one DWDM channel in each direction of transmission, with reach up to at least 80 km (see Clause 154)"

Cl **1** *SC* **1.5** *P* **22** *L* **50** # 80

D'Ambrosia, John — Futurewei, U.S. Subsidiary of Huawei

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

SC-FEC is not defined in abbreviations

SuggestedRemedy

Add abbreviation to 1.5
SC-FEC Staircase FEC

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE

See response to comment 2.

Cl **154** *SC* **154.3.2** *P* **102** *L* **51** # 81

D'Ambrosia, John — Futurewei, U.S. Subsidiary of Huawei

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

the following text "Additional information on skew variation to be added." appears to be an editor's note.

SuggestedRemedy

change noted statement to an editor's note.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See resolution to comment #44

Cl **154** *SC* **154.3.2** *P* **103** *L* **10** # 82

D'Ambrosia, John — Futurewei, U.S. Subsidiary of Huawei

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

This comment does not appear in scope for 802.3ct.
"89.7.2 needs to be updated for multi-lane implementations"
Clause 89 is about 40GBASE-FR - which is not in scope for 802.3ct

SuggestedRemedy

delete noted comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Remove the reference to 89.7.2.
Include an editor's note stating that the requirements for skew and skew variation at TP5 are TBD (with editorial license) to take account of the fact that there are 2 logical streams each from two incoming polarizations are skewed.

Cl **154** *SC* **154.6** *P* **107** *L* **27** # 83

D'Ambrosia, John — Futurewei, U.S. Subsidiary of Huawei

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

There is a black square in Fig 154-3 that does not appear to belong in the figure

SuggestedRemedy

delete noted black square

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **154** *SC* **154.2** *P* **102** *L* **26** # 84

Schmitt, Matt — CableLabs

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

The font (or font size) of the last paragraph in 154.2 does not seem to match the text around it.

SuggestedRemedy

Adjust font and/or font size as necessary to match surrounding text.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Standard font size for a NOTE

Cl **154** *SC* **154.6** *P* **106** *L* **41** # 85

Schmitt, Matt — CableLabs

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

In the first sentence of 154.6, there is the following statement: "the PHY operates at a single optical frequency (often also referred to as wavelength)". This implies that frequency and wavelength are the same and interchangeable; in reality, they are directly related but distinctly different. Therefore, the statement is arguably misleading/incorrect.

SuggestedRemedy

Modify that portion of the sentence to read as follows:"the PHY operates at a single optical frequency (often also referred to by it's associated wavelength)". Or something similar.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement the suggested remedy with editorial license.

Cl **154** *SC* **154.7.1** *P* **109** *L* **37** # 86

Schmitt, Matt — CableLabs

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

In Table 154-8, there is a TBD for "Skew between the two polarizations (max)" that needs to be resolved.

SuggestedRemedy

Propose changing "TBD" to "10" [ps] to align with ITU requirement. The contribution from John DeAndrea at the November plenary (deandrea_3ct_01) shows data to support the more stringent 6 ps requirement in the CableLabs PHYv1.0 spec; however, barring evidence that a relaxation to 10 ps is harmful, I propose adopting the ITU requirement. I will plan to present on this at the interim in January.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **154** *SC* **154.7.1** *P* **109** *L* **43** # 87

Schmitt, Matt — CableLabs

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

In Table 154-8, there is a TBD for "Average launch power of OFF transmitter, each lane (max)" that needs to be resolved.

SuggestedRemedy

Propose changing "TBD" to "-35" [dBm] to align with other industry groups, as proposed in the contribution from John DeAndrea at the November plenary (deadrea_3ct_01).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement proposed remedy, but remove "each lane".
See also resolution to comment #58.

Cl **154** *SC* **154.7.1** *P* **109** *L* **44** # 88

Schmitt, Matt CableLabs

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

In Table 154-8, there is a TBD for "Optical return loss tolerance (max)" that needs to be resolved.

SuggestedRemedy

Propose changing "TBD" to "25" [dB] to align to CableLabs requirement, with the caveat that the calculation of this figure shall be done in the ITU manner (which is the inverse of that used in the CableLabs spec, hence the CableLabs requirement of -25 dB). That's slightly relaxed relative to the ITU requirement, and based on the presentation on reflectance by myself and Atul S. from NEL America at the call in December, this should have minimal impact on performance. Will prepare a presentation that includes this for the January interim.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
For task force discussion at the meeting in Geneva.

Cl **154** *SC* **154.7.1** *P* **109** *L* **46** # 89

Schmitt, Matt CableLabs

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

In Table 154-8, there is a TBD for "Transmitter reflectance (max)" that needs to be resolved.

SuggestedRemedy

Propose changing "TBD" to "20" [dB] to align with CableLabs and OIF specifications, as was proposed in the presentation from myself and Atul S. from NEL America at the call in December. Will prepare a presentation that includes this recommendation for the January interim.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
For task force discussion at the meeting in Geneva.

Cl **154** *SC* **154.7.2** *P* **110** *L* **28** # 90

Schmitt, Matt CableLabs

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

In Table 154-9, there is a TBD for "Receiver reflectance (max)" that needs to be resolved.

SuggestedRemedy

Propose changing "TBD" to "20" [dB] to align with CableLabs and OIF specifications, as was proposed in the presentation from myself and Atul S. from NEL America at the call in December. Will prepare a presentation that includes this recommendation for the January interim.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
For task force discussion at the meeting in Geneva.

Cl **154** *SC* **154.7.3** *P* **110** *L* **52** # 91

Schmitt, Matt CableLabs

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

In Table 154-10, there is a TBD for "Minimum optical return loss at TP2" that needs to be resolved.

SuggestedRemedy

Propose eliminating this parameter from the table (deleting the entire row). I believe this is functionally equivalent to the Tx Reflectance parameter in Table 154-8, and therefore is not needed here. I will prepare a presentation on this proposal for the January interim.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Optical return loss at TP2 is return loss into the black link. The Tx reflectance parameter is into the transmitter, thus completely different.

Cl **154** *SC* **154.7.3** *P* **110** *L* **53** # 92

Schmitt, Matt CableLabs

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

In Table 154-10, there is a TBD for "Maximum discrete reflectance between TP2 and TP3" that needs to be resolved.

SuggestedRemedy

Propose eliminating this parameter from the table (deleting the entire row). With the combination of Tx Reflectance (Table 154-8), Return Loss Tolerance (Table 154-8), and Receiver Reflectance (154-9), this parameter is not needed and is effectively redundant. I will prepare a presentation ont his proposal for the January interim.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
This parameter is intended to put restrictions on connection points (connectors, splices, etcetera) inside the black link to ensure that penalties due to reflections are minimized.

Cl **154** *SC* **154.8** *P* **111** *L* **17** # 93

Schmitt, Matt CableLabs

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

Clause 154.8 contains definitions of optical parameters and measurement methods. However, in comparing the list of optical parameters in Tables 154-8, -9, and -10 with this list, it appears that a number of parameters have no definition.

SuggestedRemedy

Propose adding sections for each parameter in Tables 154-8, -9, and -10, and if necessary for each where there currently isn't a definition simply listing the text as TBD in order to encourage contributions to address those gaps.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
It is not clear what is missing.
An insufficient remedy has been provided with proposed editor instructions to modify the draft.

Cl **154** *SC* **154.5.4** *P* **105** *L* **22** # 94

Maniloff, Eric Ciena

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

Definition of "Both Lanes" is ambiguous. The lanes being referred to here should be defined.

SuggestedRemedy

Change wording to something along the lines of "on each polarization state".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See resolution to comment #58

Cl **154** *SC* **154.6** *P* **107** *L* **34** # 95

Maniloff, Eric Ciena

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

Black link loss budget does not support the full 80km reach for unamplified applications. The amplified case is the primary application, and the only application with all parameters defined. This should be noted in the Black Link description.

SuggestedRemedy

Note that the primary application is amplified, as the unamplified case will not reach 80km based on the Tx power and Rx power specs, along to fiber loss.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Clause 154.6 is intended to clarify how a black link works.

It is proposed to add the following note to Tables 154-8 and 154-9:
"This parameter is not necessary to support amplified DWDM links up to at least 80 km of SMF, but has been added to allow operation on unamplified links."
For the following parameters:
Transmitter OSNR(193.6) (min)
Minimum average input power [unamplified]
Minimum OSNR(193.6) [unamplified]

See also resolution to comment #99.

Cl **154** *SC* **154.7.1** *P* **109** *L* **43** # 96

Maniloff, Eric Ciena

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

The Tx power being referred to here is for Tx disabled.

SuggestedRemedy

Change Description text to "disabled transmitter".

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The current parameter name is consistent with in-force clauses, e.g. in 140.

Cl **154** *SC* **154.8.12** *P* **113** *L* **5** # 97

Maniloff, Eric Ciena

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

Text reading "defines the range over which the requirement for OSNR(193.6) needs to be met" is misleading. This appies to 154.8.13 as well.

SuggestedRemedy

Change wording to "defines the input power range over which the BER requirement must be met at the minimum OSNR defined by OSNR(193.6)".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **154** *SC* **154.8.14** *P* **113** *L* **17** # 98

Maniloff, Eric Ciena

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

Power range for OSNR measurement is not specified.

SuggestedRemedy

Add text indicating that OSNR requirement must be met over power range as specified in Table 154-9

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change the text of 154.8.14 to:
"The OSNR(193.6) [amplified] shall be within the limit given in Table 154-9 over the average input power [amplified] range specified in Table 154-9 for a black link that contains optical amplifiers."

Cl **154** *SC* **154.8.15** *P* **113** *L* **24** # 99

Maniloff, Eric Ciena

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

Text reading " with likely shorter links than 80 km" is awkward.

SuggestedRemedy

Change wording to "The requirement for OSNR(193.6) [unamplified] is intended to specify usage of the same receiver for unamplified applications. DWDM channel loss will likely limit the maximum reach of these applications to less than the 80km maximum reach specified."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change the wording of 154.8.15 to:
"The requirement for OSNR(193.6) [unamplified] is intended to specify usage of the same receiver for unamplified applications. The associated channel loss will likely limit the maximum reach of these applications to less than the 80km maximum reach specified for amplified applications."

Cl **154** *SC* **154.7.1** *P* **109** *L* **25** # 100

Zhang, Bo Inphi

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

Similar to receiver characteristics spec table, suggest separate the average channel output power to amplified and unamplified cases.

SuggestedRemedy

average channel output power [amplified] (min): -10dBm. Average channel output power [unamplified] (min): -8dBm @193.6THz

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The specified transmitter optical power ranges should support both amplified and unamplified cases.
See also resolution to comment #95

Cl **154** *SC* **154.7.1** *P* **109** *L* **46** # 101

Zhang, Bo Inphi

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

Suggest fill in the value instead of TBD. In line with recent presentation (http://www.ieee802.org/3/ct/public/tf_interim/19_1219/schmitt_3ct_01_191219.pdf) which we are in support of.

SuggestedRemedy

-20dB'

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See resolution comment #89

Cl **154** *SC* **154.7.2** *P* **110** *L* **28** # 102

Zhang, Bo Inphi

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

Suggest fill in the value instead of TBD. In line with recent presentation (http://www.ieee802.org/3/ct/public/tf_interim/19_1219/schmitt_3ct_01_191219.pdf) which we are in support of.

SuggestedRemedy

-20dB'

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See resolution to comment #90.

Cl **45** *SC* **45.2.1.186an** *P* **45** *L* **29** # 103

Nicholl, Gary Cisco Systems

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

The following sentence seems quite clumsy "Registers 1.2280, 1.2281, 1.2282, and 1.2283 are used to read the 64-bit counter value, the register 1.2280 is read first, the values of registers 1.2281, 1.2282 and 1.2283 are latched when (and only when) register 1.2280 is read, and reads of registers 1.2281, 1.2282, and 1.2283 return the latched value rather than the current value of the counter."

SuggestedRemedy

Suggest spliting into at least two sentences, perhaps something like "Registers 1.2280, 1.2281, 1.2282, and 1.2283 are used to read the 64-bit counter value. Register 1.2280 is read first and the values of registers 1.2281, 1.2282 and 1.2283 are latched when (and only when) register 1.2280 is read. Reads of registers 1.2281, 1.2282, and 1.2283 always return the latched value rather than the current value of the counter."

Suggest using similar language for the description of other 32-bit and 64-bit counters in this section.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE

See response to comment 48.

Cl **80** *SC* **80.1.3** *P* **48** *L* **10** # 104

Nicholl, Gary Cisco Systems

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

Need to update the text of list item h to be consistent with changes made by 802.3cu

SuggestedRemedy

Change "The MDIs as specified in Clause 89 for 40GBASE-FR, Clause 140 for 100GBASE-DR, and Clause 154 for 100GBASE-ZR use a single lane data path."
to
"The MDIs as specified in Clause 89 for 40GBASE-FR, Clause 140 for 100GBASE-DR, 100GBASE-FR1, and 100GBASE-LR1, and Clause 154 for 100GBASE-ZR use a single lane data path."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE

See response to comment 19.

Cl **80** *SC* **80.1.5** *P* **49** *L* **6** # 105

Nicholl, Gary — Cisco Systems

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

Table 80-4b should only have PMD columns for 100GBASE-ZR. Basically this table should be consistent with Table 154–1.

SuggestedRemedy

Remove the following columns…
100GBASE-SR10 PMD
CPPI
100GBASE-LR4 PMD
100GBASE-ER4 PMD
100GBASE-SR4 PMD

Also remove all underlying in the table. This is a new table and you are not updating an existing table (so no need for strickthrough or underline)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT

Cl **80** *SC* **80.2.3** *P* **49** *L* **42** # 106

Nicholl, Gary — Cisco Systems

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

The editing instruction states " ..as changed by IEEE Std 802.3cd-2018 and IEEE Std 802.3cu-xx", but the text does not include the changes made by 802.3cu.

SuggestedRemedy

Please include the changes made by 802.3cu, specifically reference to the 100GBASE-FR1 and 100GBASE-LR1 PMDs (see 802.3cu D1.1).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE

Add the new FR1 and LR1 PHYs from 802.3cu changing the existing text "100GBASE-DR, and 100GBASE-ZR PHYs" to read "100GBASE-DR, 100GBASE-FR1, 100GBASE-LR1 and 100GBASE-ZR PHYs"

Cl **80** *SC* **80.3.2** *P* **49** *L* **27** # 107

Nicholl, Gary — Cisco Systems

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

The editing instruction states "Change the first sentence of the second paragraph of 80.3.2 as follows:", but there are no changes indicated in the following text (i.e. no strickthrough and no underline".

SuggestedRemedy

Please identify the changes to the text with strickthrough and/or underline.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE

See response to comment 20.

Cl **80** *SC* **80.3.2** *P* **49** *L* **28** # 108

Nicholl, Gary — Cisco Systems

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

"Examples of inter-sublayer service interfaces for 40GBASE-R, 100GBASE-R, and 100GBASE-P ….". I thought we were adding a new 100GBASE-Z PHY type (see Table 80-4b), so shouldn't this be included in the list ?

SuggestedRemedy

Add reference to the 100GBASE-Z PHY

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE

See response to comment 20.

Cl **80** *SC* **80.1** *P* **48** *L* **3** # 109

Nicholl, Gary — Cisco Systems

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

Don't we need to update Figure 80-1 to show the stack for a 100GBASE-Z PHY ?

SuggestedRemedy

Update Figure 80-1 to show the 100GBASE-Z PHY stackup.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE

Modify the further right PHY in the diagram to list "100GBASE-R, 100GBASE-P, or 100GBASE-Z"

Cl **80** *SC* **80.1.4** *P* **48** *L* **15** # 110

Nicholl, Gary — Cisco Systems

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

Rather than changing the description for 100GBASE-R to add DP_DQPSQ modulation, don't we need to add a new decription below 100GBASE-P to describe the new 100GBASE-Z PHY type we are defining (see Table 80-4b). ?

SuggestedRemedy

Delete the current editing instruction and add to new editing instruction to add a description of 100GBASE-Z just below the current description for 100GBASE-P.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE

Delete reference and proposed modifications to the sixth paragraph of 80.1.4. Add new 8th paragraph to 80.1.4 stating "100GBASE-Z represents a family of Physical Layer devices using the Clause 82 Physical Coding Sublayer for 100 Gb/s operation over multiple PCS lanes (see Clause 82) and a PMD implementing DP-DQPSK modulation. Some 100GBASE-Z Physical Layer devices also use the transcoding and FEC of Clause 91, the FEC of Clause 153, or the FEC of Clause 74."

Cl **80** *SC* **80.4** *P* **51** *L* **49** # 111

Nicholl, Gary — Cisco Systems

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

Table 80-5 is being updated by 802.3ct

SuggestedRemedy

Update editing instruction to reflect the changes to Table 80-5 made by 802.3ct. The simplest way to do this might be to just show the new rows being added (with unchnaged rows now shown). That way you should be independent from any changes made in 3ct.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE

Update the editing instructions to reference the changes made by 802.3cu and include 100GBASE-FR1 and 100GBASE-LR1 in the table.

Cl **152** *SC* **152.1.1** *P* **58** *L* **12** # 112

Nicholl, Gary — Cisco Systems

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

"This sublayer is used in cases where the Reed-Solomon FEC specified in Clause 91 is used across a chip-to-chip or chip-to-module interface and the 100GBASE-ZR FEC specified in Clause 153 is used between the PMD sublayers of two connected 100GBASE-ZR PHYs."

I thought we had agreed in Hawaii to remove the reference to 100GBASE-ZR in order to make the clause generic (and not specific to only 100GBASE-ZR) ?

SuggestedRemedy

Update scope description to remove reference to 100GBASE-ZR and make the clause generic so that it can be used for other PHYs as well.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See response to comment #16

Cl **152** *SC* **152.1.2** *P* **59** *L* **36** # 113

Nicholl, Gary — Cisco Systems

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

Figure 152-1 makes Clause 152 specific to the 100GBASE-ZR FEC and PMA.

SuggestedRemedy

Update the figure to make the Inverse RS-FEC sublayer generic (similar to what was down in Figure 91-1 in CLause 91), and update any other related text in the clause as necessary.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See response to comment #16

Cl **152** *SC* **152.5.1** *P* **61** *L* **46** # 114

Nicholl, Gary — Cisco Systems

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

Figure152-2 shows a FEC sublayer below the Inverse RS-FEC sublayer. In the spirit of keeping the description generic I would suggest also including PMA as an option.

SuggestedRemedy

Update Figure 152-2 to also show PMA as an option below the Inverse RS-FEC sublayer.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See response to comment #32

Cl **153** *SC* **153.3.2.2.1** *P* **95** *L* **38** # 115

Nicholl, Gary Cisco Systems

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

"..in this manner operates at a signaling rate of (255/227) × 24.8832 Gb/s ±20 ppm .."

SuggestedRemedy

Recommend doing the math and including the aggrgate signalling rate (as was done in section 153.3.1), so
change:
"signaling rate of (255/227) × 24.8832 Gb/s ±20 ppm"
to:
"signaling rate of (255/227) × 24.8832 Gb/s ±20 ppm (~ 27.9525 Gb/s)

Also in section 153.3.1 (page 94, line 49) we use "GBd" , whereas in this section we switch to using "Gb/s". Suggest being consistent throughtout the clause. Given that the earlier description talks about 'bit streams" I would recommend using "Gb/s" .

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement remedy to comment #56.
In the final paragraph on page 94, replace GBd with Gb/s (2 occurrences).

Cl **153** *SC* **153.3.2.2.2** *P* **95** *L* **51** # 116

Nicholl, Gary Cisco Systems

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

"..The signaling rate of each stream of DQPSK symbols is (255/227) × 24.8832 GBd ±20 ppm."

SuggestedRemedy

Recommend doing the math and including the aggrgate signalling rate (as was done in section 153.3.1), so
change:
"signaling rate of of each stream of DQPSK symbols is (255/227) × 24.8832 GBd ±20 ppm"
to:
"signaling rate of of each stream of DQPSK symbols is (255/227) × 24.8832 GBd ±20 ppm (~ 27.9525 GBd)"

Note, since we are refering to QPSK symbols here, GBd is the correct termiology thisa time. .

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **154** *SC* **154.7.3** *P* **110** *L* **39** # 117

Nicholl, Gary Cisco Systems

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

The maximum chromatic dispersion in Table 154-10 is 2400 ps/nm". This corresponds to a distance of 120km, which is 50% greater than the 80km objective for this PHY. Requiring the PHY to operate over a reach 50% greater than the target objective could add cost and power to the solution , and compromise the BMP and EF.

I would also note that the OIF 400ZR specification has a chromatic dispersion spec of 2400 ps/nm, which is consistent with it's reach objective of 120km.

SuggestedRemedy

Change the maximum chromatic dispersion in Table 154-10 from 2400 ps/nm to 1600 ps/nm , to be consistent with an 80 km reach objective.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
A motion was taken at the Plenary Meeting in Vienna, July 2019, Vienna:
Motion 4:
Move to adopt the parameter list and corresponding values in the proposed strawman column on slides 8, 9 and 11 of stassar_3ct_02_0719 for the 100GBASE-ZR PMD specification.
Y - 24
N - 0
This motion included a specification for 2400 ps/nm for the black link, for which there was no opposition.

No evidence has been provided that meeting 2400 ps/nm would be a problem.