Cl **152** *SC* **152.5.2.3** *P* **62** *L* **27** # 1

Bruckman, Leon Huawei

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

Typo: tx_scrambed

SuggestedRemedy

Replace with: tx_scrambled

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **152** *SC* **152.5.2.5** *P* **62** *L* **37** # 2

Bruckman, Leon Huawei

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

This section is exactly the same as 91.5.3.5. Better refer to that section than repeat the whole thing

SuggestedRemedy

Replace the text in the section with: See 91.5.3.5

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Unfortunately it is not the same as 91.5.3.5. This clause operates on tx_coded/tx_scrambled, while clause 91 in this direction operates on rx_coded/rx_scrambled.

Cl **152** *SC* **152.5.3.5** *P* **66** *L* **40** # 3

Bruckman, Leon Huawei

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

This section is exactly the same as 91.5.2.5. Better refer to that section than repeat the whole thing

SuggestedRemedy

Replace the text in the section with: See 91.5.2.5

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Unfortunately it is not the same. This clause operates on rx_coded, while clause 91.5.2.5 operates on tx_coded.

Cl **152** *SC* **152.5.3.6** *P* **68** *L* **3** # 4

Bruckman, Leon Huawei

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

Substituting the fixed bytes of the alignment markers corresponding to PCS lanes 17, 18, and 19 with the fixed bytes for the alignment marker corresponding to PCS lane 16 is required for EEE deep sleep mode that is not define for 100GBASE-ZR.

SuggestedRemedy

Remove requirement to substitute PCS lanes 17, 18, and 19 with the fixed bytes for the alignment marker corresponding to PCS lane 16

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The purpose of this is not only for deep sleep, but to allow the RS FEC sublayer on the host side of the C2M interface to find FEC lane alignment by looking for a particular set of fixed bytes on each FEC lane. That RS FEC sublayer may be a legacy implementation used when plugging a 100GBASE-ZR module into the socket. In addition, other than the scope paragraph, the contents of this clause are generic and could be used anywhere an RS 544 FEC needs to be removed in the Tx direction, for example, if P802.3ck decides to implement an interleaved 100G FEC.

Cl **153** *SC* **153.2.3.2.4** *P* **84** *L* **45** # 5

Bruckman, Leon Huawei

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

From the text it is not clear why MFAS is required. I assume the main reason of defining and using it is that the SC-FEC uses it to identify the blocks (and not for the PT identification). It will be beneficial to have some text justifying the MFAS support.

SuggestedRemedy

Replace 2) with the following text: The MFAS is a multi-frame alignment signal. This field counts from 0 to 255, encoded with the most significant bit transmitted first; and it is required by the SC-FEC to identify the blocks (refer to ITU-T G.709.2 Annex B).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Add to the existing text "This is used to locate the payload type (see 153.2.3.2.4), for aligning SC-FEC base blocks with the SC-FEC frame and synchronizing the SC-FEC error decorrelator."

Cl **153** *SC* **153.2.3.2.4** *P* **84** *L* **48** # 6

Bruckman, Leon Huawei

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

Missing part of the reference "G.709.2"

SuggestedRemedy

Refer to "ITU-T G.709.2"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **153** *SC* **153.2.3.2.4** *P* **85** *L* **17** # 7

Bruckman, Leon Huawei

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

Text not clear.

SuggestedRemedy

Replace: "While GMP is a generic mechanism that can accommodate an arbitrary signaling rate difference between the payloadand the space in which it is carried that uses a sigma/delta distribution algorithm," with: "While GMP is a generic mechanism that can accommodate an arbitrary signaling rate difference between the payloadand the space in which it is carried by implementing a sigma/delta distribution algorithm,

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Add a sentence to the beginning of the paragraph beginning on page 85 line 6:
"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."

In the 3rd paragraph below the numbered list on page 85, change:
"While
GMP is a generic mechanism that can accommodate an arbitrary signaling rate difference between the payload and the space in which it is carried that uses a sigma/delta distribution algorithm, the limited number of cases for this particular use allow the positions of data and stuff to be pre-computed."
to:
"While the GMP mechanism is generic, the particular clock rates and tolerances for this application result in a small number of cases, allowing the positions of data and stuff to be pre-computed."

Cl **153** *SC* **153.2.3.2.4** *P* **86** *L* **23** # 8

Bruckman, Leon Huawei

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

In table 153-1 the II and DI bits in rows 2 and 3 are wrong

SuggestedRemedy

II in row 2 should be 1 and DI should be 0, and in row 3 II should be 0 and DI should be 1.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **153** *SC* **153.2.3.2.4** *P* **87** *L* **23** # 9

Bruckman, Leon Huawei

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

The note may mislead people to think that the 100GBASE-RZ signal is interoperable with an OTU4 interface, but this is not the case since all OAM fields of an OTU4 signal (except FAS, MFAS and PT) are not assigned in a 100GBASE-RZ signal.

SuggestedRemedy

I recommend to consider one of the following options:
1 - Do not define the PT and remove the note
2 - Just remove the note

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Filling in the FAS, MFAS, and PT are part of the adopted baseline.
The wording is "may facilitate interconnection with", not "will interoperate with". It is fully correct that more is needed (e.g., the far end needs to be able to be provisioned to ignore other overheads not filled in by a 100GBASE-ZR PHY).

Cl **153** *SC* **153.2.3.3.5** *P* **89** *L* **29** # 10

Bruckman, Leon Huawei

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

This section describe the GMP demapper, so the demapper should be quoted.

SuggestedRemedy

Replace: "The principles of the GMP mapper" with: "The principles of the GMP demapper"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **153** *SC* **153.2.4** *P* **89** *L* **50** # 11

Bruckman, Leon Huawei

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

Since the MFAS is required for the SC-FEC block identification, the MFAS synchronization algorithm should be defined.

SuggestedRemedy

Add MFAS sinchronization similar to the one defined in ITU-T G.798 section 8.2.2

Proposed Response *Response Status* **W**

PROPOSED REJECT.
While the MFAS needs to be filled in with an incrementing sequence, the Rx doesn't need a full MFAS frame alignment process for proper operation. There is no requirement for the Rx to check the PT, but if it chose to do so, this could be found by pattern-matching MFAS=0x00 without the need for frame alignment. The use of MFAS by the FEC encoder/decoder is specified by reference to ITU-T G.709.2 and is not in this document. Even for that purpose the base block alignment can be found by examining only the lower-order bit of MFAS, and the error decorrelator in ITU-T G.709.2 has its own process for aligning MBAS with MFAS

Cl **153** *SC* **153.2.5** *P* **93** *L* **31** # 12

Bruckman, Leon Huawei

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

In table 153-2 there is no instatus for MFAS

SuggestedRemedy

Add MFAS lock status to table 152-3

Proposed Response *Response Status* **W**

PROPOSED REJECT.
See response to comment 11.

Cl **154** *SC* **154.5.4** *P* **105** *L* **22** # 13

Bruckman, Leon Huawei

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

There is a single optical lane

SuggestedRemedy

Repalce: "SIGNAL_DETECT shall be a global indicator of the presence of optical signals on both lanes." with: "SIGNAL_DETECT shall be an indicator of the presence of an optical signals ."
Also fix accordingly Table 154-5 by removing from row 1 "For any lane;" and from row 2: "For all lanes;"

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The 100GBASE-ZR interface contains 2 optical lanes, one for each polarisation, which is clarified in clause 154.5.2.

Cl **45** *SC* **45.2.1.186** *P* **45** *L* **24** # 14

Maniloff, Eric Ciena

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

SC-FEC needs counters defined to allow monitoring pre-FEC BER. Counters for corrected bits (pre-Fec bit-errors) and total bits would provide this.

SuggestedRemedy

Add 64 bit counters for these

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Add any necessary 64 bit counters based on the resolution of comment 15.

Cl **153** *SC* **153.2.5** *P* **93** *L* **30** # 15

Maniloff, Eric Ciena

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

Table 153-2 should define registers for calculating pre-FEC BER.

SuggestedRemedy

Add corrected bits and total bits to Table 153-2

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Pending presentation.

Cl **154** *SC* **154.7.3** *P* **110** *L* **39** # 16

Maniloff, Eric Ciena

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

No value in table 154-10 for power penalty for unamplified applications

SuggestedRemedy

Add power penalty entry

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Clause 154 specifically specifies parameters and associated values for the optically amplified 80 km application and not a non-specified unamplified application.
Therefore the relevant penalties are provided only for the amplified application.
The receiver specification in clause 154.7.2 contains some additional parameters to describe its operation in unamplified applications, but without actually providing a full link specification for that case.

Cl **154** *SC* **154.7.3** *P* **111** *L* **6** # 17

Maniloff, Eric Ciena

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

PDL level is low for amplified DWDM application

SuggestedRemedy

Increase PDL to 2.5dB

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Insufficient evidence has been provided that the PDL can be increased to 2.5 dB.

Cl **153** *SC* **153.2.3.2.4** *P* **84** *L* **37** # 18

Schmitt, Matt CableLabs

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

The text immediately following Figure 153-3 reads awkwardly: the first sentence reads as if it should end with a colon because it's setting up the list, whereas the second sentence with the colon is providing more context.

SuggestedRemedy

The two sentences should ideally be merged together, perhaps by making the second sentence a paranthetical comment on the first (in other words, putting all of the second sentence in parantheses), which then technically has the colon at the end of a single sentence.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change the first paragraph following Figure 153-3 from:
"The information in the Staircase FEC frame includes the following. Since the majority of the frame is scrambled prior to transmission (see 153.2.3.2.6), the contents are described before scrambling:"
to
"The majority of the frame is scrambled prior to transmission (see 153.2.3.2.6). The information in the Staircase FEC frame includes the following, described before scrambling:"

Cl **00** *SC* **0** *P* **85** *L* **48** # 19

Schmitt, Matt CableLabs

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

Is it standard practice in 802.3 to use a dash "--" to designate bullets in a list? It looks odd, and shows up in multiple places (the first being on page 85 in 153.2.3.2.4, line 48).

SuggestedRemedy

Replace with dotted bullets, if permissible under 802.3 style guidelines.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The use of dashed lists consistent with IEEE practice as defined in 11.3 of the 2014 IEEE-SA Standards Style Manual "if the list consists of short, unordered items". Similar lists contained within 802.3-2018 and amendments.

Cl **153** *SC* **153.3.2.3.2** *P* **96** *L* **31** # 20

Schmitt, Matt CableLabs

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

In the title and text of this section, should the word be "disinterleave" or "deinterleave"? I am more familiar with the latter.

SuggestedRemedy

Change "disinterleave" to "deinterleave".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change "disinterleave" to "de-interleave" in the title of 153.3.2.3.2.
Change "disinterleaved" to "de-interleaved" in the first paragraph of 153.2.3.2.3.
Change "disinterleave" to "de-interleave" in Figure 153.9.

Cl **154** *SC* **154.6** *P* **107** *L* **40** # 21

Schmitt, Matt CableLabs

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

This table has been constructed so that there are two parallel sets of 3 columns each within the same table. Because there is nothing to show a separation between the two sets of 3 columns, unless you study the table closely, it appears instead to be a 6 column table, and it's not immediately obvious that the last 3 columns are "wrap around" data from the first 3 columns (especially since the table already goes across pages).

SuggestedRemedy

While it might take up more pages, for clarity, a single table of 3 columns might work much better. Alternately, create some separation between the 3rd and 4th columns so that it's clear it's two separate sets of data.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Add a clear separation between the left and right groups of 3 columns. With editorial license.

Cl **154** *SC* **154.6** *P* **107** *L* **44** # 22

Schmitt, Matt CableLabs

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

While technically the "Channel Index Number" is arbitrary, and therefore starting from zero makes a certain amount of logical sense, it is common practice in other forums to align the "channel number" with the last two digits of the Channel Center Frequency, thereby making it easy to understand immediately from the channel number what the frequency is or vice versa. This would improve the value and usability of the channel number.

SuggestedRemedy

Change the first "Channel index number" from "0" to 14 (to align with 191.4 THz Channel center frequency), and update all subsequent "Channel index numbers" accordingly, such that the last "Channel index number" becomes "61".

Proposed Response *Response Status* **W**

PROPOSED REJECT.
It is not the intent of the channel index number to define channel numbers.
The channel index number is a logical number to refer to the MDIO control variable, Tx optical frequency index.

Cl **154** *SC* **154.8.12** *P* **113** *L* **4** # 23

Schmitt, Matt CableLabs

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

It's good that we point out that there is a linkage/pairing between this parameter and OSNR(193.6) [amplified]. However, we don't explain what that linkage is and how it applies, which could leave a reader confused as to what that means.

SuggestedRemedy

Add an explanation of how they're linked. This could be an extensive one -- probably in a separate section -- that includes a diagram along the lines of what was presentec to the TF in a previous contribution, or it could even be some simple text added here (or both).
Some possible example text of an extension to the existing sentence might be along the lines of: "Note that this parameter is paired with OSNR(193.6) [amplified], in that it defines the average input power at which the OSNR(193.6) [amplified] is measured."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
It is proposed to replace the current clause text for 154.8.12:
“The average input power [amplified] shall be within the limits given in Table 154–9 for a black link that contains optical amplifiers. Note that this parameter is paired with OSNR(193.6) [amplified].”
By
“The average input power [amplified] shall be within the limits given in Table 154–9 for a black link that contains optical amplifiers. Note that this parameter is paired with OSNR(193.6) [amplified], which is defined in 154.8.14. The average input power [amplified] defines the range over which the requirement for OSNR(193.6) needs to be met. ”

Cl **154** *SC* **154.8.13** *P* **113** *L* **9** # 24

Schmitt, Matt CableLabs

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

Same comment as above for 154.8.12.

SuggestedRemedy

Same comment as above for 154.8.12.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
It is proposed to replace the current clause text for 154.8.13:
"The average input power [unamplified] shall be within the limits given in Table 154–9 for a black link that does not contain any optical amplifiers. Note that this parameter is paired with OSNR(193.6) [unamplified]."
By:
"The average input power [unamplified] shall be within the limits given in Table 154–9 for a black link that does not contain any optical amplifiers. Note that this parameter is paired with OSNR(193.6) [unamplified], which is defined in 154.8.15. The average input power [unamplified] defines the range over which the requirement for OSNR(193.6) [unamplified] needs to be met."

And to add to the end of Clause 154.8.15:
"The requirement for OSNR(193.6) [unamplified] is intended to specify usage of the same receiver for unamplified applications with likely shorter links than 80 km, without including requirements for the associated medium."

Cl **154** *SC* **154.8.16** *P* **113** *L* **23** # 25

Schmitt, Matt CableLabs

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

The definition in G.698.2 that is being referenced here states in part that: "The receiver OSNR tolerance is defined as the minimum value of OSNR at point RS that can be tolerated while maintaining the maximum BER of the application. This must be met for all powers between the maximum and minimum mean input power with a transmitter with worst-case values of...[list of parameters]. And also that: "The receiver OSNR tolerance is equal to the minimum OSNR at point RS minus the maximum optical path OSNR penalty." We have defined a maximum optical path OSNR penalty of 3 dB, and have therefore established that the value of this parameter is 16.5 dB (in Table 154-9). This is based off of subtracting 3 from the Minimum OSNR(193.6) [amplified] value of 19.5 dB. However, that last parameter is only relevant to the amplified case; we also have a Minimum average input power [unamplified] which is -30, and an associated Minimum OSNR(193.6) [unamplified] of 35 dB (meaning that achieving a minimum average input power of -30 dBm is only possible when the OSNR is 35 dB or greater). However, a strict reading of the definition for Receiver OSNR tolerance implies that -30 dBm would also have to be met at 16.5 dB OSNR, which is not realistic or intended.

SuggestedRemedy

There are several possible options for addressing this. One would be to create separate Receiver OSNR tolerance parameters for the amplified and unamplified cases. Another would be to clarify that this parameter applies only in the amplified case. Another would be to introduce a more thorough explanation of the relationship between power and OSNR in the requirements (as suggested above). A combination of more than one of these solutions would likely work as well.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Add a note to Clause 154.8.16:
NOTE: For the application specified in this Clause, it is assumed that the black link defined in 154.6 contains one (or more) optical amplifiers and therefore the black link parameters in 154.7.3 are only specified for this application and not the unamplified case."

Cl **45** *SC* **45.2.1.186ab** *P* **36** *L* **21** # 26

Trowbridge, Steve Nokia

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

Clause 152.6.6 indicates that FEC_optional_states is always set to true. Note that this was a bug fix that was only made optional to avoid making implementations prior to the maintenance request non-compliant. Since Inverse RS-FEC is new, these states should not be optional.

SuggestedRemedy

Remove "0 = RS-FEC does not support optional states in Figure 91–8"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Remove "0 = RS-FEC does not support optional states in Figure 91-8".

Cl **45** *SC* **45.2.1.186ab** *P* **37** *L* **25** # 27

Trowbridge, Steve Nokia

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

Clause 152.6.6 indicates that FEC_optional_states is always set to true. Note that this was a bug fix that was only made optional to avoid making implementations prior to the maintenance request non-compliant. Since Inverse RS-FEC is new, these states should not be optional.

SuggestedRemedy

Remove "When read as a zero, bit 1.2201.7 indicates that the optional states are not implemented."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Remove "When read as a zero, bit 1.2201.7 indicates that the optional states are not implemented."

Cl **80** *SC* **80.1.5** *P* **48** *L* **3** # 28

Trowbridge, Steve Nokia

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

This editing instruction seems not entirely consistent with prior projects. IEEE Std 802.3cd has added a Table 80-4a (which presumably gets merged into Table 80-4 at the next revision) with the 100GBASE-SR2 and 100GBASE-DR PHY types. P802.3cu Draft 1.0 shows adding 100GBASE-FR1 and 100GBASE-LR1 to P802.3cd Table 80-4a rather than to Table 80-4 itself. As a single-lane PHY, does this belong in Table 80-4a rather than Table 80-4, or alternatively, should a new Table 80-4b be created for this new different PHY type?

SuggestedRemedy

Either add 100GBASE-ZR to Table 80-4a from 802.3cd or to a new Table 80-4b

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Add new table 80-4b. Table 80-4b will be labeled "100GBASE-DWDM" to highlight the use of coherent modulation and support over a DWDM system. A new definition will be added to 1.4 "100GBASE-DWDM - An IEEE 802.3 family of Physical Layer devices using 100GBASE-R encoding and is capable of running over a DWDM System".

Cl **80** *SC* **80.5** *P* **53** *L* **1** # 29

Trowbridge, Steve Nokia

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

Since the Inverse RS-FEC and SC-FEC sub-layers remove all prior skew and start a fresh skew budget, the only real question to be answered regarding whether we need to establish new skew limits for this interface is if the skew opportunity between SP3 and SP4 (which could only occur between the two streams of DQPSK symbols on the two polarizations) could exceed the 80ns of skew or 2.4ns of skew variation already included in clause 80.5.

SuggestedRemedy

Add to editor's note that this depends on whether the maximum skew between streams of DPQPSK symbols on the two orthogonal polarizations can experience more than 80ns of skew or 2.4ns of skew variations across the black link.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Modify editor's note to say "skew variation needs to be revisted, input requested"

Cl **152** *SC* **152.5** *P* **60** *L* **28** # 30

Trowbridge, Steve Nokia

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

While it is specified elsewhere, it is worth noting in the overview that another difference from Clause 91 is that the FEC optional states are mandatory here.

SuggestedRemedy

Add a sentence to this clause "The FEC optional states in clause 91 are mandatory for the Inverse FEC sublayer"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **152** *SC* **152.5.2.1** *P* **62** *L* **7** # 31

Trowbridge, Steve Nokia

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

While it is specified elsewhere, it is worth noting where Figure 91-8 is referenced that the FEC optional states from that state diagram are mandatory in this context.

SuggestedRemedy

Add a sentence "Note that the FEC optional states, illustrated with the states within the dotted line of Figure 91-8, and Transition A, are mandatory in the context of the Inverse RS FEC sublayer."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **152** *SC* **152.5.3.2** *P* **66** *L* **17** # 32

Trowbridge, Steve Nokia

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

Since there is no more skew opportunity between the RS FEC and Inverse RS FEC sublayer (generally at most a single C2M interface, no optical link) than there is between the PCS and the RS FEC sublayer, no reason not to use the same skew and skew variation limits as Clause 91 in the Tx direction.

SuggestedRemedy

Change the skew TBD to 49ns and the skew variation TBD to 400ps

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **153** *SC* **153.2.3.2.2** *P* **84** *L* **10** # 33

Trowbridge, Steve Nokia

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

In the Tx direction, there is exactly the same skew opportunity between the PCS or Inverse FEC sublayer and the SC-FEC sublayer as there is between the PCS and the RS FEC sublayer, so no reason to use any other value than Clause 91

SuggestedRemedy

Change the skew TBD to 49ns and the skew variation TBD to 400ps

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **153** *SC* **153.4.4.1** *P* **98** *L* **20** # 34

Trowbridge, Steve Nokia

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

As described in other comments, no reason to use different skew or skew variation numbers in the Tx direction than Clause 91

SuggestedRemedy

Change the skew TBD to 49ns and the skew variation TBD to 400ps

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **154** *SC* **154.1** *P* **101** *L* **27** # 35

Trowbridge, Steve Nokia

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

Unbalanced legend under Figure 154-1

SuggestedRemedy

Move PCS to the top of the right column so both columns are the same length

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The current layout is identical to in-force optical clauses 139 and 140. Therefore there is no need to make the suggested modification.

Cl **154** *SC* **154.4** *P* **103** *L* **42** # 36

Trowbridge, Steve Nokia

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

Indianapolis Motion #5 adopted the channel plan for 48 channels, so TX index 47 (left and right columns) doesn't need to be magenta

SuggestedRemedy

Change Tx index 47 (two occurrences) to black font. Also Rx index 47 (two occurrences) to black font two rows later in the table

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **154** *SC* **154.9.2** *P* **114** *L* **7** # 37

Trowbridge, Steve Nokia

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

Since this is a new kind of interface for 802.3 where multiple signals from different Ethernet PHYs are combined over the same fiber inside of the black-link, clarify where this text applies.

SuggestedRemedy

Add to the first paragraph that this text applies to the single-channel MDI for this PMD, and that optical safety at a multi-channel reference point (e.g., after a WDM multiplexer and amplifier) is outside of the scope of this standard.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Insert a note after the first paragraph of 154.9.2.:
NOTE: The laser safety requirements apply only to the single channel points at TP2 and TP3, as shown in Figure 154-3, and not to any (multi-channel) point inside the black link, which is outside the scope of clause 154.

Cl **45** *SC* **45.2.1.133b** *P* **27** *L* **18** # 38

Nicholl, Gary Cisco

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

This sectuoin talks about "Tx optical frequency index" but referes to Table 154-6 which uses the term "Channel Index number"

SuggestedRemedy

Propose using consistent terminologt between Clause 45 and Clause 154.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Modify the definitions from 45.2.1.133 to 45.2.1.133h from "optical frequency" to "optical channel" to align with the terminology in table 154.6.

Cl **80** *SC* **80.1.3** *P* **46** *L* **7** # 39

Nicholl, Gary Cisco

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

Shouldn't the editing instruction and associated text reference IEEE Std 802.3cu as well as IEEE Std 802.3cd. 802.3cu also made changes to item h on the list.

SuggestedRemedy

Change the editing instruction from "as changed by IEEE Std 802.3cd-2018" to "as changed by IEEE Std 802.3cd-2018" to "as changed by IEEE Std 802.3cd-2018 and IEEE Std 802.3cu-20xx" and modify the text to inorporate the changes made by 802.3cu

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change the editing instructions to include "as modified by IEEE Std 802.3cd-2018 and by IEEE Std 802.3cu-20xx".
Update the text to include the modifications made by 802.3cu-200xx.

Cl **80** *SC* **80.1.4** *P* **47** *L* **19** # 40

Nicholl, Gary Cisco

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

Is the sentence beginning with "Some 100GBASE-R Physical …." missing a comma after Clause 91 abnd Clause 153 ?

SuggestedRemedy

Add missing commas.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Modify the existing proposed langugage "Some 100GBASE-R Physical Layer devices also use the
transcoding and FEC of Clause 91 or the FEC of Clause 153 and some may also use the FEC of Clause 74" to read "Some 100GBASE-R 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* **80.1.5** *P* **48** *L* **6** # 41

Nicholl, Gary Cisco

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

Should the new PMD be inlcuded in Table 80-4, Table 80-4a or a new Table ?

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Resolve using the response to comment #28.

Cl **80** *SC* **80.2.3** *P* **48** *L* **47** # 42

Nicholl, Gary Cisco

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

Shouldn't the editing instruction be updated to reflect the changes made in 802.3cu D1p0 ?

SuggestedRemedy

Change editing instruction from "as changed by IEEE Std 802.3cd-2018" to "as changed by IEEE Std 802.3cd-2018 and modified by IEEE Std 802.3cu-20xx" . Update the text to reflect the changes made by IEEE Std 802.3cu-20xx.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change the editing instructions to "as modified by IEEE Std 802.3cd-2018 and IEEE Std 802.3cu-20xx".
Update the text to include the modifications made by 802.3cu-20xx.

Cl **80** *SC* **80.4** *P* **51** *L* **3** # 43

Nicholl, Gary Cisco

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

Table 80-3 does not show the new 100G PMDs added by IEEE Std 802.3cu-20xx.

SuggestedRemedy

Suggest changing the editing instruction to only show the new rows that are being inserted , as was done in IEEE Std 802.3cu-20xx

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Assuming resolution of comment 28 as proposed, Table 80-4 will no longer be referenced in the document so this comment is no longer valid.

Cl **153** *SC* **153.2.3.2.4** *P* **87** *L* **23** # 44

Nicholl, Gary Cisco

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

Note appears to be using the wronf font.

SuggestedRemedy

Fix font used fo note.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
This is the font for the "Note" paragraph style, which is indeed a smaller point-size than the Normal paragraph style

Cl **153** *SC* **153** *P* **81** *L* **1** # 45

Nicholl, Gary Cisco

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

Would it be better to have the 100GBASE-ZR PMA in a separate clause ? It doesn't look like it has to be in the same clause as 153 and cluld easily be separated. Having it in the same claue as the SC-FEC, adds another layer of sub-layer number for the SC-FEC description.

SuggestedRemedy

Consider pulling the 100GBASE-ZR PMA into a seoarate clause to simoplify the sub-clause numbering in Clause 153.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
We discussed this option in the editorial team. As there is never any physically instantiated interface between the SC-FEC and ZR PMA sublayers, it was considered to be more appropriate to combine the sublayers into a single clause. This is similar to the approach followed in several of the BASE-T PHY types where a collection of sublayers have no physically instantiated interface between them.

Cl **119** *SC* **119.2** *P* **57** *L* **1** # 46

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

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

While currently in scope of P802.3ct, if the proposed modification of P802.3ct PAR receives necessary approvals, modifications to 400GBASE-R would no longer be in scope of 802.3ct, but would be part of the new proposed P802.3cw

SuggestedRemedy

Delete all proposed changes to 119

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Per Motion 6 of the September Interim meeting, 400GBASE-R was removed from .ct and moved to a new project .cw. If the necessary approvals are recieved for the creation of .cw all references to 400GBASE-R will be removed.

Cl **1** *SC* **1.4** *P* **22** *L* **20** # 47

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

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

DWDM System is not defined

SuggestedRemedy

Add definition - DWDM System - An aggregate of DWDM links over either a single optical fiber or a single optical fiber per direction.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Insert the following new definition after 1.4.237 "duplex channel" as defined in the terminology ad hoc report on March 7, 2018 "DWDM System - An aggregate of DWDM links over a single optical fiber". Additionly add a new abbreviation in 1.5 for "DWDM-Dense Wave Division Multiplexing"

Cl **154** *SC* **154.1** *P* **100** *L* **8** # 48

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

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

DWDM Channel is not defined

SuggestedRemedy

Add definition - DWDM Channel - The transmission path over a single wavelength on a defined frequency grid between a DWDM PHY transmitting to another DWDM PHY.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See response clause comment #49

Cl **154** *SC* **154.1** *P* **100** *L* **8** # 49

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

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

"black link" is not defined

SuggestedRemedy

Leverage industry definition

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Insert a (cross) reference to clause 154.6, where an extended description is provided for the DWDM channel.
Modify the current text of 154.1 from:
"which is a single-mode fiber based DWDM channel described in the form of a "black link""
to
"which is a single-mode fiber based DWDM channel (defined in 154.6) described in the form of a "black link" (also defined in 154.6)"
Also insert a new sentence between the first and second sentence in 154.6:
"The medium associated with the 100GBASE-ZR PMD is also referred to as a DWDM channel which is defined as the transmission path over a single wavelength/frequency on a defined frequency grid between a DWDM PHY transmitting to another DWDM PHY."

Cl **152** *SC* **152.1.2** *P* **59** *L* **19** # 50

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

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

There are now two versions of 100G PMAs - 100GBASE-R and 100GBASE-Z. Use of generic "PMA" might cause confusion.

SuggestedRemedy

Update all layer diagrams in 802.3 where "PMA" represents 100GBASE-R PMA to "100GBASE-R PMA"

Proposed Response *Response Status* **W**

PROPOSED REJECT.
This change would involve opening many clauses that are not part of this project, including 84, 85, 86, 87, 88, 92, 93, 94, 95, 136, 137, 138, 140 and would introduce an inconsistency with any of these clauses not touched. Commenter is invited to raise this issue in maintenance or in the next revision project.

Cl **154** *SC* **154.5.1** *P* **104** *L* **20** # 51

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

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

DWDM link is not defined

SuggestedRemedy

Add definition - DWDM Link - One DWDM PHY transmitting to one other DWDM PHY through the transmission path between them

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The "DWDM link" is contained in a figure and not in the text.
It is proposed to modify "DWDM link" to "100GBASE-ZR medium", which is clarified in clause 154.6

Cl **80** *SC* **80.1.4** *P* **47** *L* **30** # 52

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

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

During discussion of terminology it was agreed to distinguish the PHYs as "DWDM PHYs" not just a regular PHY. This should e reflected in the description of 100GBASE-ZR. Additionally WDM lanes is terminology that has been used with WDM PHYs, which might cause some confusion.

SuggestedRemedy

Modify description (and definition in 1.4) to 100 Gb/s DWDM PHY using 100GBASE-R encoding over a single wavelength on a defined frequency grid and is capable of running over a DWDM system, with reach up to at least 80 km (see Clause 154)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
In 1.4.35a replace the definition of "100BASE-ZR" with "IEEE 802.3 Physical Layer specification for 100 Gb/s DWDM PHY using 100GBASE-R encoding and DP-DQPSK modulation over a single channel on a DWDM system, with reach up to at least 80 km."

Cl **80** *SC* **80.1.4** *P* **47** *L* **30** # 53

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

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

Based on proposed modification of 100GBASE-ZR description, add a definition for DWDM PHY.

SuggestedRemedy

Add definition - DWDM PHY - An Ethernet PHY that operates at a single wavelength on a defined frequency grid and is capable of running over a DWDM system

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Insert the following new definition after 1.4.237 "duplex channel" as defined in the terminology ad hoc report on March 7, 2018 "DWDM PHY - An Ethernet PHY that operates at a single wavelength on a defined frequency grid and is capable of running over a DWDM system"

Cl **154** *SC* **154.1** *P* **100** *L* **11** # 54

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

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

This statemet is erroneous -
"When forming a complete Physical Layer, a PMD shall be connected to the appropriate PMA as
shown in Table 154-1,"
a complete 100GBASE-ZR PHY is based on the Clause 82 PCS, Lcause 153 SC FEC / 100GBASE-ZR PMA, and 100GBASE-ZR PMD.
THe 100GBASE-ZR PMD sublayer may be part of a complete PHY that can be attached to an existing 100GBASE-R PMA sublayer.

SuggestedRemedy

Change following text
"When forming a complete Physical Layer, a PMD shall be connected to the appropriate PMA as shown in Table 154-1,"
to
"To form a complete 100GBASE-ZR physical layer, a PMD shall be connected to the 100GBASE-ZR PMA as shown in Table 154-1. The PMD may also be connected to the 100GBASE-R PMA sublayer as shown in Table 154-1."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Replace:
"When forming a complete Physical Layer, a PMD shall be connected to the appropriate PMA as shown in Table 154-1, to the medium through the MDI ."
With
"When forming a complete Physical Layer, a PMD shall be connected to the 100GBASE-ZR PMA as shown in Table 154-1, to the medium through the MDI ."

Cl **152** *SC* **152.1** *P* **58** *L* **58** # 55

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

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

The scope statement is insufficent -
The Inverse RS-FEC sublayer specifies a Reed-Solomon Forward Error Correction (RS-FEC) sublayer for
100GBASE-R PHYs. 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.

SuggestedRemedy

add at end of sentence - "of two connected 100GBASE-ZR PHYs.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **154** *SC* **154.6** *P* **107** *L* **23** # 56

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

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

The label "DWDM network" is not defined

SuggestedRemedy

Add definition - DWDM Network - TBD

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The intent of Figure 154-3 is to show the generic block diagram of up to n transmitters, each at their own transmitting frequency, connected to up to the same amount (up to n) receivers, via a black link with some examples what the black link may consist of. A detailed description of what's inside the black link is provided in the text of 154.6, including a description that inside the black link the up to n signals are optically multiplexed onto one fiber and at the end optically demultiplexed.
It is not the intent of Figure 154-3 to clarify what a DWDM network means.

The commenter is also invited to propose modifications (if necessary) to the text of clause 154.6.

Cl **154** *SC* **154.6** *P* **107** *L* **31** # 57

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

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

The DWDM frequency grid is defined by Table 154-6, which corresponds to Recommendation ITU-T G.694.1.

SuggestedRemedy

Reword - These multiple DWDM channels operate on a DWDM frequency grid, according to Recommendation ITU-T G.694.1. The 100GBASE-ZR PMD specification covers a maximum
of 48 channels. Operation of a DWDM system with any number of channels between 1 and 48 is supported.
Table 154-6 shows the mapping of the 100GBASE-ZR channel index numbers to the optical channel center
frequencies.
to
These multiple DWDM channels operate on a DWDM frequency grid, defined by Table 154-6, which shows the mapping of the 100GBASE-ZR channel index numbers to the optical channel center
frequencies. This grid corresponds to the DWDM frequency grid defined by Recommendation ITU-T G.694.1. The 100GBASE-ZR PMD specification covers a maximum
of 48 channels. Operation of a DWDM system with any number of channels between 1 and 48 is supported.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
New text:
“These multiple DWDM channels operate on a DWDM frequency grid, defined by Table 154-6, which shows the mapping of the 100GBASE-ZR channel index numbers to the optical channel center frequencies. This grid corresponds to the DWDM frequency grid defined by Recommendation ITU-T G.694.1. The 100GBASE-ZR PMD specification covers a maximum of 48 channels over a DWDM system, supporting between 1 and 48 channels.”

Cl **154** *SC* **154.7** *P* **108** *L* **46** # 58

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

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

Unnecessary text - A PMD that exceeds the
operating range requirement while meeting all other optical specifications is considered compliant (e.g., a
100GBASE-ZR PMD operating at 90 km meets the operating range requirement of 2 m to 80 km).

SuggestedRemedy

Delete noted text

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change the sentence to: “A 100GBASE-ZR that could operate over 90 km would meet the operating range requirement of 2 m to 80 km.”