Cl **1** *SC* **1.4.160a** *P* **23** *L* **14** # I-1

Rolfe, Benjamin Blind Creek Associates

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

The term should not be used in its own definition. [IEEE Standards Style Manual, clause 10.6]

SuggestedRemedy

An approach where the input, output, and transfer characteristics of the uni-directional transmission path between TP2 to TP3 are specified, without specifying
how the transmission path is implemented.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Modify black link defintion to "A methodology where the input, output, and transfer characteristics of the uni-directional transmission path between TP2 to TP3 are specified, without specifying
how the transmission path is implemented."

Cl **154** *SC* **154.6** *P* **108** *L* **34** # I-2

Rolfe, Benjamin Blind Creek Associates

Comment Type **GR** *Comment Status* **D**

G.694.1 should listed in the bibliography (informative reference).

SuggestedRemedy

Add G.694.1 to the bibliography

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The normative reference to G.694.1 is already present in the in-force 2018 version of the 802.3 standard.

Cl **1** *SC* **1.4.181a** *P* **23** *L* **20** # I-3

Rolfe, Benjamin Blind Creek Associates

Comment Type **GR** *Comment Status* **D**

Should not re-define "channel spacing". The usual (commonly used) definition is adequate for use in this standard, and redefining the term to be WDM specific is a bad idea. All terms defined in IEEE standards are incorporated into the IEEE-SA Standards Definitions Database. Which does not need further polluting with this sort of incorrect use of the definitions clause of a standard. If you really must have a DWM specific definition of channel spacing, create a new term such as "DWM channel spacing" or "DWDM channel spacing" which is also more consistent with the definition of DWDM channel, DMDM link, etc. However, "channel spacing" is a commonly used term generally understood by anyone skilled in the art of communications in multi-channel mediums, understood to be the spacing between channels, which is how you have defined it here. SO really, you don't need it, as you are restating (slightly obscurely) the obvious.

SuggestedRemedy

Delete term from clause 1.4.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The commentor has not shown how the definition is inconsistent with in-force ITU-T standards and industry usage.

Cl **80** *SC* **80.1.4** *P* **50** *L* **54** # I-4

Rolfe, Benjamin Blind Creek Associates

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

Abbreviations/acronyms should be spelled out at first use, which appears to be here (not 153.3.2.2.2 where it is spelled out.

SuggestedRemedy

spelled out at first use

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

In 80.1.4 modify "DP-DQPSK" to read "dual polarization differential quadrature phase shift keying (DP-DQPSK)"

Cl **154** *SC* **154.6** *P* **107** *L* **38** # I-5

Rolfe, Benjamin — Blind Creek Associates

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

DWDM should be spelled out at first use. Which appears to be here.

SuggestedRemedy

expand acronym at first use

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Per the 2020 SA style manual "Within text, the acronym or abbreviation should follow the first use of the full term (the first time in the introduction, then the first time in the body of the document, and then the first time in any annexes in which the acronym appears)."

Modify 1.4.35b to read "IEEE 802.3 Physical Layer specification for 100 Gb/s dense wavelength division multiplexing (DWDM) PHY using 100GBASE-R encoding, DP-DQPSK modulation, and coherent detection with reach up to at least 80 km. (See IEEE Std 802.3, Clause 154.)

Modify the first sentence of 154.1 to read "This clause specifies the 100GBASE-ZR PMD together with the associated medium, which is a single-mode fiber based dense wavelength division multiplexing (DWDM) channel which may contain one or more optical amplifiers and is specified using black link methodology (see 154.6)."

Cl **45** *SC* **45.2.1.186ah.2** *P* **42** *L* **38** # I-6

Rolfe, Benjamin — Blind Creek Associates

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

Abbreviations/acronyms should be spelled out at first use, which appears to be here.

SuggestedRemedy

spelled out at first use

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The abbreviation is spelled out in its first use in 45.2.1.186ah.

Cl **45** *SC* **45.2.1.186aa.1** *P* **37** *L* **32** # I-7

Rolfe, Benjamin — Blind Creek Associates

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

"Inverse RS-FEC decoder" should be "Inverse RS-FEC (IFEC) decoder"

SuggestedRemedy

as indicated in the comment

Proposed Response *Response Status* **W**

PROPOSED REJECT.

See response to comment I-8. After implementing the proposed response, control register 1.2200 is changed to "IFEC control register". In this context IFEC is part of a register name and not an expandable acronym.

Cl **1** *SC* **1.5** *P* **24** *L* **4** # I-8

Rolfe, Benjamin — Blind Creek Associates

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

IFEC as used in the draft text is an abbreviation for inverse RS-FEC (without "sublayer"). E. g. "Inverse RS-FEC decoder", "Inverse RS-FEC Reed-Solomon decoder", "Inverse RS-FEC align status" and so on. Also, the abbreviation is not used consistently. In many places the full term is used. In other places IFEC is used. An abbreviation is not really needed if the full term is used everywhere (which I prefer) . But if you have it, use it.

SuggestedRemedy

Remove abbreviation IFEC and use the term "Inverse RS-FEC" consistently throughout.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Adopt option 1 from
https://www.ieee802.org/3/ct/public/20_11/trowbridge_3ct_01a_201116.pdf slides 5-13.

Replace the current defintion of IFEC in 1.5 with "inverse RS-FEC"

Cl **153** *SC* **153.2.3.2.4** *P* **84** *L* **45** # I-9

Rolfe, Benjamin — Blind Creek Associates

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

Abbreviations/acronyms should be spelled out at first use, which appears to be here (?)

SuggestedRemedy

spell out the abbreviation at the first use.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change:
"The FAS is the frame alignment signal. This is similar in concept ."
To:
"The frame alignment signal (FAS) is similar in concept ..."
For point 2 in the same list, Change:
"The MFAS is a multi-frame alignment signal. This field counts from ."
To:
"The multi-frame alignment signal (MFAS) is a field that counts from ."

Cl **152** *SC* **152.7.1** *P* **77** *L* **6** # I-10

Rolfe, Benjamin — Blind Creek Associates

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

This statement is (still) wrong: "The supplier of a protocol implementation that is claimed to conform to Clause 152, Inverse RS-FEC sublayer, shall complete the following protocol implementation conformance statement (PICS) proforma."
This is stating a requirement on the user of the standard. It is not stating a requirement for the implementation, but for the implementer. The behavior of the implementer is (still) outside the scope of this standard. I know, it has always been that way....and it has always been wrong. And BTW totally unnecessary as 80.7 says he same thing, but correctly.
You should stop repeating this invalid use of shall in the individual PICS clauses. Just sayin'. Alternately I suppose we could amend the scope of the standard to include human behavior, but I would strongly recommend against that solution .
Also (still) wrong in 153.4.1 and 154.11.1.
FYI: the correct resolution detail when you reject this comment is "this amendment conforms to the style of the base standard being amended" which is the IEEE-SA way of waving your hands in the air and shouting "it' tradition".

SuggestedRemedy

Delete the paragraph "The supplier of a protocol implementation that is claimed to conform to Clause 152, Inverse RS-FEC sublayer, shall complete the following protocol implementation conformance statement (PICS) proforma." here, in 153.4.1 and 154.11.1, and anywhere else it appears in this draft.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
This is boiler-plate text that appears in front of essentially every PICS table in the entire base standard.
This does not put a requirement on every implementer, only on those implementers that are claiming they conform to this clause.

Cl **153** *SC* **153.2.4.2** *P* **92** *L* **4** # I-11

Rolfe, Benjamin Blind Creek Associates

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

"However, an implementation shall ensure that all possible frame alignment positions are evaluated." is an incorrect use of "shall". This is not stating a verifiable requirement: the "all possible" is an unbounded (infinite) set. There would need to be (likely is) a finite set of frame alignment positions that should be evaluated. To be a valid requirement, you would need to change "possible" to "defined" and then provide a reference to where the defined set of frame alignment positions is enumerated and defined. Then at least you have a valid statement of a requirement. Tho the prior sentence suggests such specification is out of scope of this standard (kind of what "not specified" means). Also, does the SLIP function evaluate every defined position every time, or as suggested by the first sentence, only the next one in the (undefined) list of valid positions? I can see why y'all decided to leave this "implementation dependent" :-).

SuggestedRemedy

Delete "However, an implementation shall ensure that all possible frame alignment positions are evaluated."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

While significant freedom is allowed regarding how an implementation finds the FAS pattern, and there is no expectation that an implementation test additional positions after the FAS pattern has been located, there is a requirement that an implementation can find FAS pattern in any possible position.

Change:
"However, an implementation shall ensure that all possible frame alignment positions are evaluated."
To:
"An implemetation shall ensure that the FAS pattern can be detected in any possible position."

Cl **153** *SC* **153.2.4.3** *P* **92** *L* **20** # I-12

Rolfe, Benjamin Blind Creek Associates

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

"The synchronization state diagram determines" really isn't correct The diagram specifies something, it can illustrate something, it can even indicate something, but it can not determine anything. A diagram an specify how the synchronization process determines something, which is what I suspect you mean.

SuggestedRemedy

change to: The synchronization process determines when the SC-FEC has detected the location of the frame alignment sequence in the received bit stream for a given lane of the PMA service interface.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Numerous other clauses use similar wording, so in principle, it could be left as is without any risk to implementations.

However, it is more accurate to Change:
"The synchronization state diagram determines when the SC-FEC has detected the location of the frame alignment sequence in the received bit stream for a given lane of the PMA service interface."
To:
"The SC-FEC sublayer uses this process to detect the location of the frame alignment sequence in the received bit stream on each lane of the PMA service interface."

Cl **154** *SC* **154.1** *P* **101** *L* **11** # I-13

Rolfe, Benjamin Blind Creek Associates

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

The statement "shall be connected" is inappropriate in an overview subclause. This is a statement of fact relevant to the purpose of the overview, which is providing context.

SuggestedRemedy

Change "shall" to "is".

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The current wording is boiler-plate text, consistent with the wording in other in-force optical clauses.

Cl **154** *SC* **154.1.1** *P* **102** *L* **40** # I-14

Rolfe, Benjamin Blind Creek Associates

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

At line 40 and 44, "sufficiently random" is cited in a requirement. I can't seem to find a precise definition of "sufficiently random" nor do I understand how an implementation assures sufficient randomness of bit errors on the medium. I am not sure but I *think* the clause is trying to specify a minimum performance requirement for the implementation, not the physical world in which it will operate. However how this is verified is not at all clear.

SuggestedRemedy

Provide a reference to where sufficiently random is defined and how sufficiency is verified. Alternatively, remove the subclause.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The current wording is boiler-plate text, consistent with the wording in other in-force optical clauses.
The term "sufficiently random" is precisely specified in clause 154.1.1:
"sufficiently random that this results in a frame loss ratio (see 1.4.275) of less than 6.2 × 10-10 for 64-octet frames with minimum interpacket gap when additionally processed by the FEC (Clause 153) and PCS (Clause 82). If the error statistics are not sufficiently random to meet this requirement, then the BER shall be less than
that required to give a frame loss ratio of less than 6.2 × 10-10 for 64-octet frames with minimum interpacket gap."

Cl **154** *SC* **154.7.2** *P* **111** *L* **29** # I-15

Rolfe, Benjamin Blind Creek Associates

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

A table note (a note to a table) is informative. Thus "shall be able to tolerate" (stating a requirement) can not appear in a note to a table. The rquirement (3 dBm) is stated in the table (correctlly). The note appears (I'm guessing) to be explanatory text (informative) explaining "damage threshold". For sure, "shall" in a table note is wrong.

SuggestedRemedy

Change to "Damage threshold is the average optical signal average power level that is tolerated without damage. "

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The current wording is boiler-plate text, consistent with the wording in other in-force optical clauses.
This is a Table Footnote rather than a Table Note, which according to IEEE-SA Style Guide is normative so "shall be able to tolerate" is correct verbage.

Cl **154** *SC* **154.9.1** *P* **116** *L* **7** # I-16

Rolfe, Benjamin Blind Creek Associates

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

Oops. "Editor's Note (to be removed prior to SA ballot): Text must be aligned with changes to P802.3cr.". Welcome to SA ballot. Stuff happens - blame it on 2020 :-)

SuggestedRemedy

Remove note Editor's note that was meant to be removed before SA ballot

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **154** *SC* **154.9.5** *P* **116** *L* **46** # I-17

Rolfe, Benjamin Blind Creek Associates

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

"A system integrating a 100GBASE-ZR PMD shall comply with applicable local and national codes for the limitation of electromagnetic interference." is stating a requirement out of scope of this standard. It is the implementers responsibility to assure that the system complies with applicable codes, regulations, and laws. All of which are subject to change after the publication of this standard and all of which are outside the control of IEEE-SA and 802.3.

SuggestedRemedy

Change to: It is the implementers responsibility to assure a system integrating a 100GBASE-ZR PMD complies with applicable local and national codes for the limitation of electromagnetic interference.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

This is boiler-plate text that appears in front of essentially every PICS table in the entire base standard.

This does not put a requirement on every implementer, only on those implementers that are claiming they conform to this clause.

Cl **80** *SC* **80.1.4** *P* **51** *L* **4** # I-18

Huber, Thomas Nokia

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

The editing instruction is missing the word 'Table'

SuggestedRemedy

Change the editing instruction to read as follows: Insert a new row at the end of Table 80–1 (as inserted by IEEE Std 802.3cu-xx) as follows (unchanged rows not shown):

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **153** *SC* **153.2.1** *P* **82** *L* **7** # I-19

Huber, Thomas Nokia

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

The description of the sources from which the SC FEC receives information (PCS, Inverse RS-FEC, or PMA) and the destinations to which it sends information (PCS or PMA) are not consistent.

SuggestedRemedy

Revise the last sentence of the paragraph to include the Inverse RS-FEC as a potential destination: The FEC:IS_UNITDATA_i primitives are defined for i = 0 to 19. The PCS, Inverse RS-FEC, or PMA continuously sends 20 parallel bit streams to the SC-FEC sublayer, each at a nominal signaling rate of 5.15625 GBd. The SC-FEC sublayer continuously sends 20 parallel bit streams to the PCS, Inverse RS-FEC, or PMA, one per lane, each at a nominal signaling rate of 5.15625 GBd.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **153** *SC* **153.2.1** *P* **82** *L* **12** # I-20

Huber, Thomas Nokia

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

In the description of when the SIGNAL_OK is set to FAIL, the sentence should begin with "The" rather than "That" for consistency.

SuggestedRemedy

Revise the 3rd sentence, replacing 'That' with 'The': The SIGNAL_OK parameter of the FEC:IS_SIGNAL.indication primitive can take one of two values: OK or FAIL. The value is set to OK when the FEC receive function has identified codeword boundaries as indicated by fec_align_status equal to TRUE. The value is set to FAIL when the FEC receive function is unable to reliably establish codeword boundaries as indicated by fec_align_status equal to FALSE.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **153** *SC* **153.2.3.2.6** *P* **88** *L* **7** # I-21

Huber, Thomas Nokia

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

Figure 153-5 does not clearly indicate the flow into the 'XOR' functions at the top of the figure. There should be arrowheads on the tops of the vertical lines (as figure 11-3 of ITU-T G.709, on which this figure is based, includes).

SuggestedRemedy

Add arrowheads pointing into the three XOR functions on the vertical lines

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See response to comment I-35.

Cl **153** *SC* **153.2.3.2.7** *P* **88** *L* **40** # I-22

Huber, Thomas Nokia

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

It would be better to write the sentence below figure 153-6 in the passive voice (the FEC frame doesn't do the distribution; its contents are distributed)..

SuggestedRemedy

Replace: The entire FEC frame consisting of 4080 × 4 octets distributes 51 groups of 16 octets to each of the 20 FEC lanes. With: 51 groups of 16 octets are distributed from the FEC frame (consisting of 4080 x 4 octets) to each of the 20 FEC lanes.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **153** *SC* **153.2.3.2.7** *P* **88** *L* **44** # I-23

Huber, Thomas Nokia

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

There is ambiguity in the parsing of the first sentence of the second paragraph after figure 153-6 as to whether it is discussing groups of 16 octets (as intended) or 16 "octet groups". A hyphen will make the intended meaning clear.

SuggestedRemedy

Add a hyphen as shown: At each FEC frame boundary, the assignment of 16-octet groups to FEC lanes is rotated..

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **A** *SC* **A** *P* **123** *L* # I-24

Huber, Thomas Nokia

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

Annex A does not contain an editing instruction to add G.798, but the NOTE in clause 153.2.3.3.1 is making a reference to it..

SuggestedRemedy

Add an editing instruction to insert a reference for [Bxx] ITU-T G.798, Characteristics of optical transport network hierarchy equipment functional blocks

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Add an editing instruction to insert the following reference before [B48a] as inserted by IEEE Std 802.3ca-2020 "[Bxx] ITU-T G.798 - Characteristics of optical transport network hierarchy equipment functional blocks".

Cl **153** *SC* **153.2.3.3.2** *P* **89** *L* **21** # I-25

Huber, Thomas Nokia

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

The main point of the second sentence in the paragraph is that the 6th octet of the FAS is used, modulo 20. This would be more clear if the indication that the FAS was inserted based on 153.2.3.2.7 was in parentheses. The cross-reference is helpful but should not detract from the main idea.

SuggestedRemedy

Revise the second sentence to add a comma after 'lane number' and add parentheses as shown: The receive SC-FEC shall order the received FEC lanes according to the FEC lane number, which is the 6th octet of the FAS (inserted as per 153.2.3.2.7) modulo 20.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **153** *SC* **153.2.3.3.5** *P* **89** *L* **49** # I-26

Huber, Thomas Nokia

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

The first sentence of the paragraph would be more clear if it included the words 'that was' after 66B blocks.

SuggestedRemedy

Add 'that was' as shown: The GMP demapper extracts the deskewed and serialized stream of 66B blocks that was inserted according to the process described in 153.2.3.2.4 from the SC-FEC frame

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **153** *SC* **153.2.4** *P* **91** *L* **32** # I-27

Huber, Thomas Nokia

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

The restart_lock variable references a "5_BAD" state. The state diagram on p93 includes a 15_BAD state and transitions based on fas_bad_count being equal to or less than 15.

SuggestedRemedy

Correct the text in the definition of restart_lock to reference 15_BAD.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See response to comment I-37.

Cl **154** *SC* **154.5.4** *P* **106** *L* **33** # I-28

Huber, Thomas Nokia

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

The NOTE above the table and the footnote to the table are largely redundant, with the only difference being the first sentence in the note.

SuggestedRemedy

Include the first sentence from the NOTE in the footnote to the table and delete the NOTE.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Replace the current content of clause 154.5.4 with the following new text:
"The PMD global signal detect function shall set the state of SIGNAL_DETECT parameter to a fixed OK level. Fixing the value of
SIGNAL_DETECT from the PMD sublayer at OK allows upper layers to determine whether a valid signal is being received, e.g., according to the ability to acquire frame alignment.
NOTE-Average input power is not a reliable indication of signal failure in an optically amplified system."

Cl **154** *SC* **154.8.22** *P* **115** *L* **45** # I-29

Laubach, Mark IEEE member / Self Employed

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

In ITU-T G.698.2, maximum Interferometric crosstalk only takes the value of -25 dB in Table 8-7 and Table 8-8 for class DP-DQPSK applications. In tables 8-1 through 8-6, the value is -40 dB for NRZ signals. Hopefully people won't look at the wrong section in the ITU doc.

SuggestedRemedy

As was done in other places in this draft, change "Recommendation ITU-T G.698.2" to "Recommendation ITU-T G.698.2 for DP-DQPSK signals" on line 45.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The requirements for the values for crosstalk are directly provided in Subclause 154.7. So there is no need to make more specific references to the relevant values in G.698.2

Cl **30** *SC* **30** *P* **25** *L* **19** # I-30

Trowbridge, Stephen Nokia

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

Significant material is missing from clause 30 where corresponding material is present in other projects or amendments. Material relating to clause 152 may not be necessary as this does not directly affect behavior at the external interface, but clause 153-related registers likely need to be added. A key decision is what needs to be visible in clause 30 for the case of clause 91 RS FEC on the host board running across the C2M interface, with clause 152 Inverse RS-FEC and clause 153 SC-FEC on the module side.

SuggestedRemedy

Add the following (or equivalent) attrubites:
aFECCorrectedBlocks (may need both Clause 152 and 153 equivalent)
aFECUncorrectableBlocks (may need both Clause 152 and 153 equivalent)
aRSFECBIPErrorCount (may need clause 152 equivalent)
aRSFECBypassAbility (may need clause 152 equivalent)
aRSFECBypassIndicationAbility (may need clause 152 equivalent)
aRSFECBypassEnable (may need clause 152 equivalent)
aRSFECBypassIndicationEnable (may need clause 152 equivalent)
aRSFECLaneMapping (may need clause 152 and 153 equivalent)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Charter an ad hoc to address what information needs to be accessible to a network manager and develop required modifications to clause 30.

Cl **45** *SC* **45.2.1.186ao** *P* **48** *L* **12** # I-31

Trowbridge, Stephen Nokia

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

Table 45–150am is for FEC corrected bits

SuggestedRemedy

Change "FEC uncorrected codewords" to "FEC corrected bits" in the Name column of all four rows of the table

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **78** *SC* **78.1.4** *P* **49** *L* **17** # I-32

Trowbridge, Stephen Nokia

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

Additional clauses may be used for 100GBASE-ZR PHYs

SuggestedRemedy

Add clauses 91, 135 and 152 to the list of relevant clauses for 100GBASE-ZR PHYs in Table 78-1

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **80** *SC* **80.1.4** *P* **51** *L* **1** # I-33

Trowbridge, Stephen Nokia

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

All 100GBASE-Z Physical Layer devices use clause 153 SC-FEC. Only some use clause 91 RS-FEC and clause 152 Inverse RS-FEC

SuggestedRemedy

Change "… over multiple PCS lanes (see Clause82) and a PMD implementing DP-DQPSK modulation." to "… over multiple PCS lanes (see Clause82), the FEC of Clause 153, and a PMD implementing DP-DQPSK modulation." Change the following sentence to read: "Some 100GBASE-Z Physical Layer devices also use the FEC of Clause 91 and the Inverse RS-FEC of clause 152."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **80** *SC* **80.3.2** *P* **53** *L* **44** # I-34

Trowbridge, Stephen Nokia

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

By earlier convention, this should be called 100GBASE-Z

SuggestedRemedy

Change 100GBASE-R to 100GBASE-Z in the title of Figure 80-4a

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **153** *SC* **153.2.3.2.6** *P* **88** *L* **5** # I-35

Trowbridge, Stephen Nokia

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

Missing arrowheads on Figure 153-5

SuggestedRemedy

Add right facing arrows before the squiggles on the two bottom lines. Add upward arrows to the three vertical lines to the XOR (circled plus) at the top

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **A** *SC* **A** *P* **123** *L* **11** # I-36

Trowbridge, Stephen Nokia

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

Missing addition of bibliographic reference to ITU-T G.798

SuggestedRemedy

Insert [Bxx] ITU-T G.798-Characteristics of optical transport network hierarchy equipment functional blocks

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See response to comment I-24.

Cl **153** *SC* **153.4.1** *P* **91** *L* **32** # I-37

Lewis, David Lumentum Inc.

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

The description of restart_lock says it is set to true when 5 FASs fail to match (5_BAD state). However, the state diagram in Fig 153-7 shows a transition to the 15_BAD state when fas_bad_count = 15.

SuggestedRemedy

Change 2nd sentence of restart_lock description from: "It is set to TRUE when 5 FASs in a row fail to match (5_BAD state)" to "It is set to TRUE when 15 FASs in a row fail to match (15_BAD state)".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **FM** *SC* **FM** *P* **13** *L* **47** # I-38

Issenhuth, Tom Issenhuth Consulting, LLC,Huawei Technologies Co.,

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

Amendment ordering has been changed with 802.3ct preceeding 802.3cp

SuggestedRemedy

Remove 802.3cp from the list

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **FM** *SC* **FM** *P* **14** *L* **8** # I-39

Issenhuth, Tom Issenhuth Consulting, LLC,Huawei Technologies Co.,

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

Amendment ordering has been changed with 802.3ct preceeding 802.3cs

SuggestedRemedy

Remove 802.3cs from the list

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **30** *SC* **30.5.1.1.2** *P* **25** *L* **12** # I-40

Issenhuth, Tom — Issenhuth Consulting, LLC,Huawei Technologies Co.,

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

States insert after 100GBASE-ER4 but 802.3cd inserted 100GBASE-CR2, KR2, SR2 and DR after 100GBASE-ER4.

SuggestedRemedy

Change to "insert after 100GBASE-DR as inserted by IEEE Std 802.3cd-2018."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **154** *SC* **154.7.2** *P* **111** *L* **31** # I-41

Stassar, Peter — Huawei Technologies Co., Ltd

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

Note b suggests that there are actually 2 PMDs, one for amplified and one for unamplified. Note b was included to express that the unamplified parameters are "informative" and not necessary for the 80 km DWDM project objective. It needs to be anambiguously clear that there is only one PMD specification for the Tx/Rx. If the unamplified receiver parameters become mandatory, we need to re-examine that the values are not too restrictive for the primary objective, potentially reducing yield.

SuggestedRemedy

Delete Note b.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See resolution to comment I-42.

Cl **154** *SC* **154.7.3** *P* **111** *L* # I-42

Stassar, Peter — Huawei Technologies Co., Ltd

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

The black link characteristics in Table 154-10 are specifically to satisfy the project objective of 80 km over a DWDM link. This can only be done on by defining a black link "appropriate for the inclusion of one or more optical amplifiers" (thus without actually requiring it). Then fiber loss is not specified. The specification methodology is based upon that principle. Because of the intent to serve unamplified applications it would be useful to add one or more table(s) with an illustrative (thus informative) power budget for unamplified applications operating over shorter distances than 80 km. This illustrative power budget could contain an example of a fiber loss specification and the addition of an optical path (e.g. dispersion) penalty, without "destroying" the fundamental principle of black link specification methodology.

SuggestedRemedy

A proposal for a new Table and associate informative content will be made in a presentation (pending)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
For Task Force discussion.

Refer to presentation
https://www.ieee802.org/3/ct/public/20_11/stassar_3ct_01_201116.pdf.

Cl **154** *SC* **154.7.2** *P* **111** *L* **31** # I-43

Schmitt, Matthew — Cable Television Laboratories Inc. (CableLabs)

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

The inclusion of note "b" in table 154-9 might be interpreted to imply that we're either defining two PHYs or that both data points are not mandatory, which was not the intent. It's also not necessary to convey the requirements accurately, and therefore could be removed.

SuggestedRemedy

Delete note "b" from Table 154-9.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See resolution to comment # i-42.

Cl **154** *SC* **154.8.14** *P* **114** *L* **46** # I-44

Schmitt, Matthew — Cable Television Laboratories Inc. (CableLabs)

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

In clause 154.8.14 the parameter in question is called out as "OSNR(193.6) [amplified]", without indication that it is a receiver requirement. However, in Table 154-9, the parameter is listed as "Receiver OSNR(193.6) [amplified]", which makes that clear but does not match the text in Table 154.9.

SuggestedRemedy

Change the name of the parameter (including the section title) to "Receiver OSNR(193.6) [amplified]" in order to match Table 154-9.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See resolution to comment # i-42

Cl **154** *SC* **154.8.15** *P* **115** *L* **1** # I-45

Schmitt, Matthew — Cable Television Laboratories Inc. (CableLabs)

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

In clause 154.8.15, the parameter in question is called out as "OSNR(193.6) [unamplified]", without indication that it is a receiver requirement. However, in Table 154-9, the parameter is listed as "Receiver OSNR(193.6) [unamplified]", which makes that clear but does not match the text in Table 154.9.

SuggestedRemedy

Change the name of the parameter -- including the section title -- to "Receiver OSNR(193.6) [unamplified]" in order to match Table 154-9.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See resolution to comment # i-42.

Cl **154** *SC* **154.7.2** *P* **111** *L* **20** # I-46

Schmitt, Matthew — Cable Television Laboratories Inc. (CableLabs)

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

In looking at Table 154-9, it's not clear that "Average receive power [amplified] (min)" is intrinsically linked to "Receiver OSNR(193.6) [amplified] (min)"; you only learn about the linkage by looking at clause 154.8.12. The same situation exists with "Average receive power [unamplified] (min)" and "Receiver OSNR(193.6) [unamplified] (min)", whose linkage is only clarified by clause 154.8.13. This could lead to confusion with the actual requirements.

SuggestedRemedy

Consider adding a note or notes to Table 154-9 to clarify these linkages. Alternately, consider replacing or supplementing the table with a graph that shows what is required and what isn't.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See resolution to comment # i-42.

Cl **153** *SC* **153.2.3.2.6** *P* **88** *L* **4** # I-47

Dawe, Piers J G — NVIDIA

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

Some lines that pass through squiggle-breaks have arrowheads there, others don't. Three lines going up to (+) don't have arrows. The arrow pointing to p15 is not quite horizontal.

SuggestedRemedy

Tidy up

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See response to comment I-35.

Cl **154** *SC* **154.11.4.6** *P* **122** *L* **1** # I-48

Dawe, Piers J G — NVIDIA

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

Black Link

SuggestedRemedy

black link

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **153** *SC* **153.2.3.2.7** *P* **88** *L* **27** # I-49

Dawe, Piers J G NVIDIA

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

Not the usual font for figures

SuggestedRemedy

Change to Arial

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **1** *SC* **1.4.35b** *P* **23** *L* **9** # I-50

Dawe, Piers J G NVIDIA

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

What the Clause 153 SC-FEC sublayer does is much the same as what the Clause 50 WAN Interface Sublayer does: it takes a 64B/66B encoded stream and puts it in a telecoms style wrapper. The SC-FEC is quite different to the "KR4" or "KP4" FEC. Also, this PHY uses a telecoms style clock domain on the line. It doesn't work by "using 100GBASE-R encoding". While it may carry a 64B/66B stream, what it actually uses is SC-FEC framing, and is significantly different to all in-force BASE-R (or BASE-P) PHYs.

SuggestedRemedy

Change "using 100GBASE-R encoding, DP-DQPSK modulation" to "using 100GBASE-R encoding, GMP mapping, SC-FEC framing, and DP-DQPSK modulation".
(If the group is ashamed of using all those things, it could change how the PHY works, but that would be more disruptive.)

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The commentor has not demonstrated how changing it would improve the quality of the draft. The same comment was submitted as technical, not required in D2.0, comment 139 and the working group modified the wording to the current definition.

Cl **1** *SC* **1.4.35b** *P* **23** *L* **8** # I-51

Dawe, Piers J G NVIDIA

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

1.4.70 10GBASE-W: An IEEE 802.3 physical coding sublayer for serial 10 Gb/s operation that is data-rate and format compatible with SONET STS-192c. (See IEEE Std 802.3, Clause 49.)
1.4.31 100GBASE-P: An IEEE 802.3 family of Physical Layer devices using 100GBASE-R encoding and a PMD that employs pulse amplitude modulation with more than 2 levels. (See IEEE Std 802.3, Clause 80.)
1.4.32 100GBASE-R: An IEEE 802.3 family of Physical Layer devices using 100GBASE-R encoding and a PMD that employs 2-level pulse amplitude modulation. (See IEEE Std 802.3, Clause 80.)
1.4.33 100GBASE-R encoding: The physical coding sublayer encoding defined in Clause 82 for 100 Gb/s operation. (See IEEE Std 802.3, Clause 82.)
DQPSK has a similarity with 100GBASE-P (2 bits/UI), but what the Clause 153 SC-FEC sublayer does is much the same as what the Clause 50 WAN Interface Sublayer does: it takes a 64B/66B encoded stream and puts it in a telecoms style wrapper. The SC-FEC is quite different to the "KR4" or "KP4" FEC. Also, this PHY uses a telecoms style clock domain. It doesn't work by "using 100GBASE-R encoding". While it may carry a 64B/66B stream, what it actually uses is SC-FEC framing. All in all, it's significantly different to "BASE-R" and should be named appropriately so that future projects and implementations with breakout options are not confused. Straw polls two years ago don't alter the technical issue.

SuggestedRemedy

Change the name to 100GBASE-ZW

Proposed Response *Response Status* **W**

PROPOSED REJECT.

A similar comment was brought forward in D2.1, comment 10 which was rejected due to lack of support to make a change. As stated in the previous comment response, the -ZR nomenclature was adopted by the task force and reaffirmed without opposition.

Cl **154** *SC* **154.7.3** *P* **111** *L* **45** # I-52

Dawe, Piers J G NVIDIA

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

802.3 writes interoperability specifications. The definitions of transmitter, receiver and channel must each be independently complete enough so that any compliant transmitter, receiver and channel will interoperate. The transmitter and receiver have specified power ranges; the channel must have specifications that control the loss or gain for compliant transmitted signals so that the power window at TP3 is met. In G.698.2, 7.4.1 Maximum and minimum mean input power:
"This parameter (together with the maximum and minimum mean channel output power) also places a requirement on the maximum and minimum channel insertion loss (or gain) of the black link.
The requirement is that while the mean channel output power at point SS is within the specified limits, the channel insertion loss (or gain) of the black link for that channel must be such that the power level at point RS is within the maximum and minimum mean input power limits."
So in G.698.2, there is a channel insertion loss (or gain) requirement. Here, with the three pieces specified separately, the channel insertion loss (or gain) spec has got lost in translation, and a channel can be compliant with any amount of loss, even when obviously unusable.

SuggestedRemedy

Add black link specifications in 154.7.3, preferably in Table 154-10, so that a black link will deliver the right power at TP3, giving effect to what G.698.2 says, "while the mean channel output power at point SS [TP2] is within the specified limits, the channel insertion loss (or gain) of the black link for that channel must be such that the power level at point RS [TP3] is within the maximum and minimum mean input power limits". Different for amplified and non-amplified cases. Add associated PICS.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See response to comment I-42.

Cl **1** *SC* **1.5** *P* **23** *L* **5** # I-53

Dawe, Piers J G NVIDIA

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

Abbreviation that needs expanding

SuggestedRemedy

Add entry for OSNR, here or in 154.8

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Add "OSNR - optical signal to noise ratio" after MFAS in sublcause 1.5 and in 154.8.11 modify heading to read "Transmitter in-band optical signal to noise ratio (OSNR)(193.6)"

Cl **154** *SC* **154.8.11** *P* **114** *L* **24** # I-54

Dawe, Piers J G NVIDIA

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

Inadequately defined term. This says "OSNR and OSNR(193.6) are defined in Recommendation ITU-T G.698.2. G.698.2, 7.4.2, says "optical signal-to-noise ratio (OSNR) is the ... value of the ratio of the signal power in the wanted channel to the ... noise power density (referred to 0.1 nm) ..." Not "...to the noise power in 0.1 nm". So it's power / power_density. The units then would be dB/nm maybe? But they aren't. And, what does G.698.2 mean by "signal power"? Is it the average power, the OMA, or something else? I see that 7.2.12, Maximum error vector magnitude, has a "signal power" derived after some mathematical manipulation from a measurement, but I believe that OSNR existed before EVM, so that's probably a different thing.

SuggestedRemedy

Provide an unambiguous definition of OSNR

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See resolution to comment # i-82.

Cl **154** *SC* **154.7.2** *P* **111** *L* **25** # I-55

Dawe, Piers J G NVIDIA

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

This draft lacks a sensitivity or stressed sensitivity spec, but has a spec for receiver OSNR tolerance(193.6), defined in 154.8.16 by reference to G.698.2, where 7.4.3 defines it as at: worst EVM_RMS, IQ offset, optical return loss at point SS, receiver connector degradations and measurement tolerances, but excluding chromatic dispersion, non-linear effects, reflections from the optical path, PMD, PDL and optical crosstalk. This would need a great deal of interpretation to turn into an actual measurement, with too much opportunity for alternative choices and disagreement. 802.3 doesn't put measurement tolerances in parameter values like that; they are the measurer's problem not the standard's. Not specifying the receiver for tolerance to chromatic dispersion is contrary to all 802.3 SMF specs since 2002. Not having a specific stressed sensitivity spec is contrary to all 802.3 SMF specs since 1998. It is not clear that receiver OSNR tolerance(193.6) enforces the right receiver sensitivity for the unamplified link.

SuggestedRemedy

Add clear, specific receiver sensitivity criteria, addressing signal strength, sinusoidal jitter, EVM_RMS, IQ offset, chromatic dispersion, and for the amplified case, OSNR.
Make the unamplified case a "major option" if it's more onerous than the amplified case.
If it makes sense to specify tolerance to OSNR and some other things in one spec item, and chromatic dispersion and some others in another spec item, as G.698.2 does, do so.
Because this PMD has its own clock domain, the sinusoidal jitter won't be the usual amount.
Add associated PICS.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The comment does not provide a specific proposal or provide evidence that the suggested change will improve the quality of the draft.
Furthermore it is very similar to previously submitted comments #15 to D2.1 and #140 to D2.0 which were both rejected.

Cl **153** *SC* **153.2.3.2.4** *P* **85** *L* **2** # I-56

Dawe, Piers J G NVIDIA

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

"as described in 153.2.3.2.4": we are in 153.2.3.2.4; where do you mean?

SuggestedRemedy

Give a more specific reference

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change:
"as described in 153.2.3.2.4"
To:
"as shown in Figure 153-3"

Cl **154** *SC* **154.5.4** *P* **106** *L* **43** # I-57

Dawe, Piers J G NVIDIA

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

Requiring a receiver in an amplified link to declare signal detect OK when it's up to 14 dB below sensitivity is a bad requirement.

SuggestedRemedy

The limit in the "Receive conditions" column should be the minimum average input power [unamplified or amplified] according to whether the link is amplified or not. Formally, we can say that we tell that to the PMD through the management interface or otherwise, or we ask the receiver to report that the signal is above each of the limits (when it is) separately, without having to know. As the higher sublayers formally don't know either, the first way seems better. If unamplified ability becomes optional, SD for unamplified would be optional with it. With this change, implementers can do just as this draft allows, or do better if they wish.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See resolution to comment #i-28.

Cl **154** *SC* **154.7.2** *P* **111** *L* **22** # I-58

Dawe, Piers J G NVIDIA

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

In this draft, the black link must comply with chromatic dispersion (max) and (min), but there is no corresponding spec on the receiver. Compare G.698.2:
"7.3.2 Maximum and minimum (residual) chromatic dispersion
These parameters define the maximum and minimum value of the optical path end-to-end chromatic dispersion that the system shall be able to tolerate."
This draft has lost something very important in translation. Not specifying the receiver for tolerance to chromatic dispersion is contrary to all 802.3 SMF specs since 2002.

SuggestedRemedy

Add a requirement for the receiver to tolerate the range of chromatic dispersion, e.g. similar to the stressed sensitivity spec in any 802.3 SMF clause.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The final sentence of the comment reads "Not specifying the receiver for tolerance to chromatic dispersion is contrary to all 802.3 SMF specs since 2002."
None of recent in-force and draft receiver specifications contain a requirement for tolerance to chromatic dispersion. Instead chromatic dispersion requirements are provided in the channel requirements. Therefore it is very appropriate to include the chromatic dispersion requirements in the black link specifications.

Cl **154** *SC* **154.5.4** *P* **106** *L* **45** # I-59

Dawe, Piers J G NVIDIA

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

A table with only one row isn't a table.

SuggestedRemedy

Reinstate the row "All other conditions Unspecified"
then it makes sense as a table and works the same way.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See resolution to comment #i-28.

Cl **153** *SC* **153.2.3.2.4** *P* **84** *L* **22** # I-60

Dawe, Piers J G NVIDIA

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

The GMP mapper and SC-FEC encoder are far too complicated to be implemented with high confidence based on only these sections, G.709 and G.709.2 Annex A.

SuggestedRemedy

As requested before, please provide a sample SC-FEC frame. There is provision for a downloadable file if it is larger than one would want in the standard. It may be acceptable to publish the beginning and end of the frame, omitting most of the payload if what is omitted really is obvious.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
An example SC-FEC codeword will be generated and provided in the http://standards/ieee.org/downloads/802.3/, with the expected filename 802.3ct-2021_downloads.zip.

Add to the end of clause 153.2.3.2.5 SC-FEC Encoder the following:
"NOTE-A file containing an example SC-FEC codeword is available at http://standards.ieee.org/downloads/802.3/."

Cl **154** *SC* **154.7.1** *P* **110** *L* **30** # I-61

Zhang, Bo Inphi Corporation

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

The cell reads 'The frequency in Table 154-6 corresponding to the variable Tx_optical_channel_index'. However, there is no variable named Tx_optical_channel_index in Table 154-6. There is a similar variable in the MDIO table Table 154-2 however the cell has not properly cross referenced it.

SuggestedRemedy

Suggest change the cell sentence to 'The frequency in Table 154-6 corresponding to the variable Channel center frequency'. The other option is to simplify the cell to 'The frequencies shown in Table 154-6'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The frequency in Table 154–6 where the channel index number equals the variable Tx_optical_channel_index.

Cl **154** *SC* **154.7.2** *P* **111** *L* **16** # I-62

Zhang, Bo Inphi Corporation

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

The value cell reads 'The frequency in Table 154-6 corresponding to the variable Rx_optical_channel_index'. However, there is no such variable in Table 154-6.

SuggestedRemedy

Suggest change the cell sentence to 'The frequency in Table 154-6 corresponding to the variable Channel center frequency' or simplify to 'The frequencies shown in Table 154-6'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The frequency in Table 154–6 where the channel index number equals the variable Tx_optical_channel_index.

Cl **154** *SC* **154.7.1** *P* **110** *L* **33** # I-63

Zhang, Bo — Inphi Corporation

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

Parameter side-mode suppression ratio (SMSR) has an extra comma in the Description cell.

SuggestedRemedy

Suggest remove the comma after (SMSR) and before (min), to make it consistence with all other parameters in the table.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **154** *SC* **154.7.2** *P* **111** *L* **23** # I-64

Zhang, Bo — Inphi Corporation

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

Parameter Receiver OSNR (193.6) is missing the unit after 193.6. This applies to also two more parameters in the same Rx table.

SuggestedRemedy

Suggest add the unit 'THz' after 193.6 in three parameters in the Rx table.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See resolution to comment # i-65.

Cl **154** *SC* **154.7.1** *P* **110** *L* **43** # I-65

Zhang, Bo — Inphi Corporation

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

Transmitter in-band OSNR is a Tx parameter that needs to be guaranteed across the defined frequencies. I see in the 154.8 definition section 154.8.11 subsection a note mentioning the reference frequency of 193.6 THz. However, it cannot be only specified at a single wavelength for this parameter. Instead, this parameter should be specified for all relevant frequencies.

SuggestedRemedy

Suggest remove (193.6) in the parameter description. Also, make corresponding changes in section 154.8.11 by removing (193.6) in several places. Remove the 'NOTE' as it does not add value.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
For Task Force discussion.

The part (193.6) in the parameter name is intended to convey 193.6 THz is the calibration point of the requirement and not that it is only applicable at 193.6 THz.
Concerns have been raised that 193.6 could refer to a future, not yet existing, clause of the 802.3 standard. Adding THz on the other hand could even enforce the impression that it's only applicable at the 193.6 THz channel (even it's not even a used channel).

Instead change the measurement bandwidth of 0.1 nm to 12.5 GHz and remove 193.6 from OSNR related parameters. Thus the unit in the relevant cells would be "dB (12.5 GHz)" instead of "dB (0.1 nm)".
With editorial license to update related other subclauses.

See also resolution to comment # i-42.

Cl **FM** *SC* **FM** *P* **3** *L* **8** # I-66

D'Ambrosia, John — Futurewei Technologies, U.S. Sub

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

The term "black link" describes the methodology to describe the DWDM channel. Given its importance in this specificatinon, it should be added to the list of keywords

SuggestedRemedy

Add "black link" to list of keywords

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **153** *SC* **153.1.2** *P* **81** *L* **34** # I-67

D'Ambrosia, John Futurewei Technologies, U.S. Sub

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

As this clause is specific to 100GBASE-ZR PHYs, this should be noted at the bottom of the diagram in 153-1.

SuggestedRemedy

Add "100GBASE-ZR" below the box labeled "medium" in Fig 153-1.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **154** *SC* **154.8.12** *P* **114** *L* **30** # I-68

D'Ambrosia, John Futurewei Technologies, U.S. Sub

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

Title of subclause does not match the name of the parameter in Table 154-9

SuggestedRemedy

Add "receive" to subtitle after "average"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement remedy with editorial license and make consistent with resolution to comment # i-42

Cl **154** *SC* **154.8.13** *P* **114** *L* **37** # I-69

D'Ambrosia, John Futurewei Technologies, U.S. Sub

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

Title of subclause does not match the name of the parameter in Table 154-9

SuggestedRemedy

Add "receive" to subtitle after "average"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement remedy with editorial license and make consistent with resolution to comment # i-42.

Cl **154** *SC* **154.8.14** *P* **114** *L* **46** # I-70

D'Ambrosia, John Futurewei Technologies, U.S. Sub

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

Title of subclause does not match the name of the parameter in Table 154-9

SuggestedRemedy

Add "Receiver" before "OSNR"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See resolution to comment # i-42.

Cl **154** *SC* **154.8.15** *P* **115** *L* **115** # I-71

D'Ambrosia, John Futurewei Technologies, U.S. Sub

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

Title of subclause does not match the name of the parameter in Table 154-9

SuggestedRemedy

Add "Receiver" before "OSNR"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement remedy with editorial license and make consistent with resolution to comment # i-42.

Cl **154** *SC* **154.1** *P* **101** *L* **9** # I-72

D'Ambrosia, John Futurewei Technologies, U.S. Sub

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

It is stated that the DWDM channel is specified using black link methodology, which specifies the parameters in Table 154-10. This table, however targets a DWDM channel with amplification. While this meets the objective of the project, it does not adequaltely address the reach requirements of the Cable/MSO distribution networks noted in the project's CSD response for Broad Market potential. Data submitted in https://www.ieee802.org/3/B10K/public/18_05/schmitt_b10k_01a_0518.pdf highlights the reach needs (citing data for <30km, <40km, <60km, <80km, and <120km), as well as noting that in the survey that a significant amount of optical channels were not amplified.

SuggestedRemedy

Develop black link specifications that would address DWDM channels that do not include amplifiers.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See resolution to comment #i-42.

Cl **154** *SC* **154.6** *P* **107** *L* **46** # I-73

D'Ambrosia, John Futurewei Technologies, U.S. Sub

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

The following is stated - The black link is intentionally "black", implying that no details are provided on how the link is constructed,
configured or operated so that the end-to-end parameter requirements are met.

This is contradicted in the draft by reference to "amplified" and "unamplified" channels / parameters.

SuggestedRemedy

1. Develop a generic black model, based on Black Link Output power versus OSNR, similar to Page 10 of https://www.ieee802.org/3/ct/public/19_07/stassar_3ct_02_0719.pdf. Presentation to be submitted with proposed values. Note - unamplified and amplified scenarios are implied by the noted OSNR specifications. Generic text to describe relationship of parameters to amplified and unamplified scenarios should be added. Will be included in noted presentation.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See resolution to comment #i-42.

Cl **154** *SC* **154.1** *P* **101** *L* **46** # I-74

D'Ambrosia, John Futurewei Technologies, U.S. Sub

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

The following is stated - The black link is intentionally "black", implying that no details are provided on how the link is constructed,
configured or operated so that the end-to-end parameter requirements are met.

It is noted that the DWDM channel may contain one or more optical amplifiers.

SuggestedRemedy

Delete text indicating that the DWDM channel may contain one or more optical amplifiers.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The current wording is appropriate because the emphasis is on "may contain", reflecting the possibility of optical amplifiers inside the black link, which is of crucial importance for the reader to understand the application spaces and the background of how the black link characteristics are defined.

Cl **154** *SC* **154.6** *P* **107** *L* **42** # I-75

D'Ambrosia, John Futurewei Technologies, U.S. Sub

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

The following is stated - The black link is intentionally "black", implying that no details are provided on how the link is constructed,
configured or operated so that the end-to-end parameter requirements are met.

It is noted that the DWDM channel may contain one or more optical amplifiers.

SuggestedRemedy

Delete text indicating that the DWDM channel may contain one or more optical amplifiers.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The emphasis is on "may contain", which correctly reflects the possibility that there may be optical amplifiers inside the black link, which is crucial for the reader to understand and also as a background to the definition of the black link specifications.

Cl **154** *SC* **154.7** *P* **48** *L* **48** # I-76

D'Ambrosia, John Futurewei Technologies, U.S. Sub

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

Following is noted -
A PMD that exceeds the operating range requirement while meeting all other optical specifications is considered compliant (e.g., a
100GBASE-ZR PMD that could operate over 90 km would meet the operating range requirement of 2 m to 80 km).

This is obvious and adds no value

SuggestedRemedy

Delete noted text

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The current wording is consistent with the wording in other in-force optical clauses.

Cl **154** *SC* **154.7** *P* **109** *L* **52** # I-77

D'Ambrosia, John Futurewei Technologies, U.S. Sub

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

It is noted -
Table 154-7 and Table 154-8 contain several parameters that have been added to allow operation on unamplified links, which are not necessary to support amplified DWDM links up to at least 80 km of single-mode fiber.

Two issues
1. To meet broad market potential of project - unamplified DWDM channels need to be supported.
2. This specification is for a single PHY, yet this statement appears to indicate that the rx doesnt need to support certain parameters in different instances.

SuggestedRemedy

Delte noted text

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **154** *SC* **154.7.1** *P* **110** *L* **43** # I-78

D'Ambrosia, John Futurewei Technologies, U.S. Sub

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

No explanation of the unit dB (0.1nm).

SuggestedRemedy

Editor should add reference to ITU-T G.698.2 Clause 7.4.2.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement remedy with editorial license.

Cl **154** *SC* **154.7.2** *P* **111** *L* **32** # I-79

D'Ambrosia, John Futurewei Technologies, U.S. Sub

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

Note B appears to imply that a Rx may not need to support certain parameters for unamplified scenarios and appears to create a potential interoperability problem

SuggestedRemedy

Delete Note B

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See resolution to comment I-42.

Cl **154** *SC* **154.8.12** *P* **114** *L* **31** # I-80

D'Ambrosia, John Futurewei Technologies, U.S. Sub

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

154.8.12 and 154.8.13 both identify ampflied and non-amplfied scenarios for the average receive input power, but the references to these states should be deleted and instead point to the minimum OSNR that is being targeted

SuggestedRemedy

Reword 154.8.12
The average receive input power shall be within the limits given in Table 154-9. f. The average input power [amplified] defines the input power range over which the BER requirement must be met at the minimum OSNR defined by the OSNR(193.6) of the target black link.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See resolution to comment # i-42

Cl **154** *SC* **154.8.14** *P* **114** *L* **47** # I-81

D'Ambrosia, John Futurewei Technologies, U.S. Sub

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

154.8.14 and 154.8.15 both identify amplfied and non-amplfiied scenarios for the average receive input power, but the references to these states should be deleted and instead point to the average receive input power that is being targeted

SuggestedRemedy

Reword 154.8.12
The average receiver OSNR (193.6 THz) shall be within the limits given in Table 154-9 for the respective OSNR being targeted by the black link.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See resolution to comment # i-42

Cl **154** *SC* **154.7.1** *P* **110** *L* **42** # I-82

D'Ambrosia, John Futurewei Technologies, U.S. Sub

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

OSNR not defined in 802.3ct D3.0 or 802.3-2018

SuggestedRemedy

add definition for OSNR

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The current definition for OSNR and OSNR(193.6) is currently in 154.8.11 Transmitter in-band OSNR(193.6). Make it more generic to apply to other OSNR relevant definitions, with editorial license.
See also resolution to comment #i-42 and I-53 which adds OSNR to 1.5 and spells out abbreviation in its first use in the body in the body of the document in 154.8.11.

Cl **154** *SC* **154.8.11** *P* **114** *L* **22** # I-83

D'Ambrosia, John Futurewei Technologies, U.S. Sub

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

The use of "(193.6)" as part of the name of a parameter is potentially problematic in the future when a future Clause 193.6 is expected to come into existence

SuggestedRemedy

Modify (193.6) to be (193.6 THz) in parameter names

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See resolution to comment # i-65.

Cl **154** *SC* **154.6** *P* **109** *L* **41** # I-84

D'Ambrosia, John Futurewei Technologies, U.S. Sub

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

The note states -
NOTE-Coexistence of DWDM optical signals with characteristics other than the 100GBASE-ZR PMD over the same black link is not covered by this standard.

This note is unclear, as the "black link" is just a methodology, and what is contained within the same DWDM system is similar or not.

Also, it is not clear whether this standard covers the coexistence of 100GBASE-ZR PMD signaling targeting the two OSNRs.

SuggestedRemedy

Change Note to
Coexistence between DWDM links supporting 100GBASE-ZR PMDs and DWDM links supporting other optical signaling charateristics is not covered by this standard.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
It's essential to state that "Coexistence of DWDM optical signals with characteristics other than the 100GBASE-ZR PMD over the same black link is not covered by this standard.", with emphasis on the "over the same black link".
Implementing the suggested remedy reduces the quality of the draft.

Cl **154** *SC* **154.8.9** *P* **114** *L* **13** # I-85

Ghiasi, Ali Ghiasi Quantum LLC,Inphi Corporation

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

Error vector magnitude references ITU 698.2, where N pairs of in-phase and quadratures sampes are aquired with real time scope. A shorter capture will proivde more optimistic results than longer.

SuggestedRemedy

It has been suggested that receiver receiver will have 2 MHz tracking BW, if one assumes 2 MHz tracking BW and Baudrate of 27.9525 GBd then number of samples N should be defiend as 13976.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The comment is not clear, especially the statement "A shorter capture will proivde more optimistic results than longer.".
The remedy is in the form of a statement instead of a proposal including a speculative suggestion without any evidence that it would improve the quality of the draft.

Cl **154** *SC* **154.7.2** *P* **111** *L* **4** # I-86

Ghiasi, Ali — Ghiasi Quantum LLC,Inphi Corporation

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

The conditions for receiver stress test such the target BER must be met is not defined.

SuggestedRemedy

Recomend adding a new section defining stress trest conitions such as:
- EVM 23%
- at min/max power
- at Min OSNR receiver must operate
- a sinosidal jitter mask with 2 MHz corner frequency (5UI@20 KHz-0.05UI@ 2 MHz with-20 dB/dec) assuming SJ can be added to the test instrumentaiton.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The comment does not provide a specific proposal or provide evidence that the suggested change will improve the quality of the draft.
Furthermore the proposed remedy is not clear for which requirement/parameter this would apply.
See also resolution comment # i-55.

Cl **1** *SC* **1.4.160a** *P* **23** *L* **15** # I-87

Ran, Adee — Intel Corporation

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

TP2 and TP3 are undefined terms that make this definition meaningless out of its context. A methodology should not be bound by such specific names.

In addition, the endpoints are defined for measurement purposes at the end of patch cords, and may not exist in any link. The transmission is between PHYs.

SuggestedRemedy

Change "between TP2 and TP3" to "between two PHYs".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

TP2 and TP3 are widely used and understood test points and are used to define the input and output of the black link in clause 154. Modify existing definition by adding "(See IEEE Std 802.3, Clause 154, Figure 154-2)" which shows the location of TP2 and TP3.

Cl **45** *SC* **45.2.1.133a.1** *P* **29** *L* **30** # I-88

Ran, Adee — Intel Corporation

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

"supported" is not the right word for the meaning of an index number. Descriptions of other registers use "correspond" which is more appropriate.

SuggestedRemedy

Change "indicates the optical frequencies that are supported" to "indicates the corresponding optical frequencies".

Change "supported for each channel index number" to "corresponding to each channel index number".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.1.133e** *P* **33** *L* **19** # I-89

Ran, Adee — Intel Corporation

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

"Tx Rx different optical channel ability"

It is odd that a bit name in the "Rx optical channel control register" starts with "Tx". The meaning of this bit can be maintained with swapping Tx and Rx.

SuggestedRemedy

Change "Tx Rx" to "Rx Tx", in Table 45.102o and in 45.2.1.133e.1

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Signal flow is always from the transmitter to the receiver so TX to RX is an accurate name for a TX or RX register.

Cl **45** *SC* **45.2.1.133e.2** *P* **33** *L* **39** # I-90

Ran, Adee Intel Corporation

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

"supported" is not the right word for the meaning of an index number. Descriptions of other registers use "correspond" which is more appropriate.

SuggestedRemedy

Change "indicates the optical frequencies that are supported" to "indicates the corresponding optical frequencies".

Change "supported for each channel index number" to "corresponding to each channel index number".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.1.186ao** *P* **48** *L* **12** # I-91

Ran, Adee Intel Corporation

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

Register name says "corrected bits" as does the variable name in 153.2.5.4, but the "names" column has "uncorrected codewords" instead.

SuggestedRemedy

Change "uncorrected codewords" to "corrected bits" (4 times).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See response to comment I-31.