Cl **FM** *SC* **FM** *P* **2** *L* **46** # 16

Issenhuth, Tom Huawei

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

Copyright is shown as 2021. This issue continues throughout the document.

SuggestedRemedy

Update the copyright year throughout the document to 2022.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **155** *SC* **155.2.4.1** *P* **40** *L* **13** # 17

Issenhuth, Tom Huawei

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

Text reads "rate matching described at 119.2.4.1"

SuggestedRemedy

Typical wording is "described in". Change to read "rate matching described in 119.2.4.1"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **155** *SC* **155.2.4.5** *P* **42** *L* **34** # 1

Nicholl, Gary Cisco Systems

Comment Type **E** *Comment Status* **A**

I am not sure what the "LDI<0:2>" at the bottom of the figure is referring to ? Is it suppsoed to indicate that LDI<0> corresponds to STAT<5>, LDI<1> corresponds to STAT<6>, etc ?

SuggestedRemedy

Please clarify, and if my understanding in the comment is correct then perhaps move the "LDI<0:2>" text to make it clear it is referring to STAT<5:7>.

Also clean up some of the other formatting in Figure 155-4, eg the "JC" bytes are not aligned under Byte number 4 and 5.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Clean up Figure 155-4 to align JC bytes correctly. Delete LDI<0:2> since it causes the same bits to have 2 names. Check that only LD, and RD are used in text and correct as needed.

Cl **155** *SC* **155.2.5.7.1** *P* **50** *L* **40** # 2

Nicholl, Gary Cisco Systems

Comment Type **E** *Comment Status* **A**

Figure 155-9. Should this figure contain a breakout to detail the format of the STAT byte, as is done in Figure 155-4 in section 155.2.4.5 ?

SuggestedRemedy

Add breakout of STAT byte as done in Figure 155-4.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add breakout of STAT to Figure 155-9 as per Figure 155-4 but with the other modificaitons made there in response to comment #1.

Cl **155** *SC* **155.2.5.10** *P* **51** *L* **40** # 18

Issenhuth, Tom Huawei

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

Text reads "GMP de-mapper described at 155.2.5.8"

SuggestedRemedy

Typical wording is "described in". Change to read "GMP de-mapper described in 155.2.5.8"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **155** *SC* **155.3.3.3** *P* **56** *L* **29** # 19

Issenhuth, Tom Huawei

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

Text reads "gray mapped".

SuggestedRemedy

Gray should be capitalized so change to "Gray mapped"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **156** *SC* **156.1** *P* **75** *L* **14** # 10

Issenhuth, Tom Huawei

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

Text reads "defined in 45", missing Clause.

SuggestedRemedy

Change to "defined in Clause 45"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See response to comment 4.

Cl **156** *SC* **156.1** *P* **75** *L* **16** # 3

Nicholl, Gary Cisco Systems

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

Table 156-1. The description of the 400GAUIs, does not appear to follow the format used in both Clause 151 and Clause 154 , where for example "Chip-to-Module 400GAUI-8" is refered to as "400GAUI-8 C2M".

SuggestedRemedy

Update all of the 400GAUI descriptions to use the same format as used in 802.3cu, Clause 151.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change all references in the Table 156-1 from "Chip-to-chip 400GAUI-x" to "400GAUI-x C2C" and "Chip-to-module 400GAUI-x" to "400GAUI-x C2M" to align with the formating used in the P802.3 revision

Cl **156** *SC* **156.1** *P* **75** *L* **48** # 11

Issenhuth, Tom Huawei

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

Text reads "introduced in 116", missing Clause.

SuggestedRemedy

Change to "introduced in Clause 45"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See response to comment 4.

Cl **156** *SC* **156.1** *P* **76** *L* **34** # 12

Issenhuth, Tom Huawei

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

Text reads "(see 78)", missing Clause.

SuggestedRemedy

Change to "(see Clause 78)"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See response to comment 4.

Cl **156** *SC* **156.1.1** *P* **76** *L* **39** # 4

Nicholl, Gary Cisco Systems

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

"….400GBASE-ZR PMA (155)". I believe the correct fomat when referenceing another clause is "see Clause X" , so the text above should probably be" ….400GBASE-ZR PMA (see Clause 155)" . I believe there is a cross-reference command in Frame Maker to insert a clause cross-reference.

SuggestedRemedy

Please use the correct format (according to the style manual) when cross-referencing another Clause. Review the rest of Clause 156 for similar issues, and fix where necessary.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change existing cross reference from "(155)" to "(Clause 155)" and correct any other cross reference formating issues through out the document

Cl **156** *SC* **156.1.1** *P* **76** *L* **39** # 13

Issenhuth, Tom Huawei

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

Text reads "PMA (155)", missing see and Clause.

SuggestedRemedy

Change to "PMA (see Clause 155)"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See response to comment 4.

Cl **156** *SC* **156.1.1** *P* **76** *L* **42** # 14

Issenhuth, Tom Huawei

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

Text reads "CFEC (155)", missing see and Clause.

SuggestedRemedy

Change to "CFEC (see Clause 155)"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See response to comment 4.

Cl **156** *SC* **156.3.2** *P* **77** *L* **41** # 5

Nicholl, Gary Cisco Systems

Comment Type **T** *Comment Status* **A**

The first paragraph refers to "FEC lanes" . This appears to be the only two reference to "FEC lanes" in the whole draft. There is also no separate FEC Sublayer in this draft, and Clause 155 only calls out a 400GBASE-ZR PCS. This appears to be similar as to what was done in Clause 119 , in which case there are no "FEC lanes" and only "PCS lanes" (as the PCS includes the FEC).

It appears that the current wording might have been copied from 802.3ct, where there is a separate FEC sub-layer and "FEC lanes" is the correct terminology.

SuggestedRemedy

In the first paragraph of 156.3.2, replace "FEC lanes" with "PCS lanes". Another solution would be go with the approach adopted in the equivalent section in Clause 122, and replace "FEC lanes" with "lanes".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace "FEC lanes" with "lanes"

Cl **156** *SC* **156.4** *P* **78** *L* **9** # 15

Issenhuth, Tom Huawei

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

Text reads "described in 45", missing Clause.

SuggestedRemedy

Change to "described in Clause 45"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See response to comment 4.

Cl **156** *SC* **156.5.4** *P* **80** *L* **4** # 6

Nicholl, Gary Cisco Systems

Comment Type **E** *Comment Status* **A**

The second sentence refers to a "CFEC sublayer" and then references section 155.2.1. The is no separate "FEC sub-layer" in this draft. There is only the PCS sublyaer defined in Clause 155, which happens to include a CFEC.

SuggestedRemedy

Change:
"The presence of a valid signal is determined only by the CFEC sublayer (see 155.2.1)"
To:
"The presence of a valid signal is determined only by the PCS sublayer (see 155.2.1)"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the second sentence to "The presence of a valid signal is determined only by the 400GBASE-ZR PCS (see 155.2.1)."

Cl **156** *SC* **156.6** *P* **81** *L* **40** # 7

Nicholl, Gary — Cisco Systems

Comment Type **E** *Comment Status* **R**

"The 400GBASE-ZR PMD is specified on the basis that it can be connected to a DWDM black link that contains a portion where multiple DWDM opticall channels are present, each connected to a separate 400GBASE-ZR transmitter." The text "that contains a portion" is confusing, possible incorrect, and may have been inserted by mistake.

SuggestedRemedy

Change:
" The 400GBASE-ZR PMD is specified on the basis that it can be connected to a DWDM black link that contains a portion where multiple DWDM opticall channels are present, each connected to a separate 400GBASE-ZR transmitter."
To:
"The 400GBASE-ZR PMD is specified on the basis that it can be connected to a DWDM black link where multiple DWDM opticall channels are present, each connected to a separate 400GBASE-ZR transmitter."

Response *Response Status* **C**

REJECT.

This language is consistent with the language used in P802.3ct 2021.

Cl **156** *SC* **156.7.1** *P* **84** *L* **36** # 32

Sluyski, Mike — Cisco Systems

Comment Type **TR** *Comment Status* **R**

Add parameter to table 156-6: Tx clock phase noise (PN)- Maximum total integrated RMS phase jitter between 10kHz and 10MHz-
The proposed changes is part of a general proposal to modify the current draft's approach of using EVM methodology, and instead replacing it with a known industry approach that can support the goal of ensuring interop. A supporting presentation will be presented into the Task Force for review.

SuggestedRemedy

Add Parameter to Table 156-6: Tx clock phase noise (PN)- Maximum total integrated RMS phase jitter between 10kHz and 10MHz. With value: (See 156.9.x)
Add defintion and test methodology in 156.9.x - Tx Clock Phase Noise (PN) - Maximum total integrated RMS phase jitter between 10kHz and 10MHz:

rms random jitter:

σ_rj=1/(2πf_c) √(2·∫_(f_1)^(f_2)▒〖10^((L(f))/10) df〗)

rms periodic jitter (spurs):

σ_(pj,i)=1/(√2 πf_c)·10^(s_i/20)

where,

■(f_1=10kHz,@f_2=10MHz,@f_c=f_baud/128=~467.53MHz@L(f)=phase noise (PN)@s_i=individual spur in [dBc])

rms total jitter:

σ_tj=√(〖σ_rj〗^2+∑_(i=1)^N▒〖σ_(pj,i)〗^2)

where,

■(N=total number of spurs).

Response *Response Status* **C**

REJECT.

Insufficient justification provided to add TX Clock Phase Noise (PN) - Maximum total integrated RMS phase jitter between 10kHz and 10MHz. To Table 156-6 and there were concerns on the measurability.

This comment was related to comment 31 which was rejected via straw poll

Cl **156** *SC* **156.7.1** *P* **84** *L* # 42

Sluyski, Mike Cisco Systems

Comment Type **TR** *Comment Status* **A**

Update Out-of-band OSNR (min) in table 156-6; with value TBD

SuggestedRemedy

Update TBD in Table 156 with value 23 dB/0.1nm.
Add definition and test methodology in 156.9.x: Out-of-band OSNR(min):

Out-of-Band OSNR is defined as the Tx signal power between the -20dB Tx Spectral Mask frequency points, referenced to the maximum optical noise power within any optical bandwidth of 0.1nm @ 193.7 THz or 12.5 GHz outside of the -20dB Tx Spectral Mask.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See responses to comments 20, 21 and 22

Cl **156** *SC* **156.7.1** *P* **84** *L* # 38

Sluyski, Mike Cisco Systems

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

Add parameter to table 156-6: Transmit Ouptut Power Stability (min) - New parameter required to address Xtalk when operating on 75 GHz Grid

SuggestedRemedy

Add New Parameter: Transmit Outut Power Stability (min) to Table 156-6. With value -1 dB.

Add definition and test methodology in 156.9.x: Transmit Output Power Stabilty:
Definition and test Methodology to be provided.

Output power stability over time (EOL) when operating at a fixed wavelength and temperature.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Insufficient justification provided to remove EVM and replace it with separate TX parameters

Cl **156** *SC* **156.7.1** *P* **84** *L* # 37

Sluyski, Mike Cisco Systems

Comment Type **TR** *Comment Status* **A**

Add parameter to table 156-6:: IQ Quadrature skew (max)
The proposed changes is part of a general proposal to modify the current draft's approach of using EVM methodology, and instead replacing it with a known industry approach that can support the goal of ensuring interop. A supporting presentation will be presented into the Task Force for review.

SuggestedRemedy

Add New Parameter to Table 156-6: IQ quadrature skew (max); With value 0.75 ps
Add definition and test methodology in 156.9.x: IQ quadrature skew (max):
Definition and test Methodology to be provided.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add New Parameter to Table 156-6: IQ Quadrature skew (max) with a value of 0.75 ps.

Add definition and test methodology for IQ Quadrature skew (max) in 156.9.x as a TBD.

With editorial license.

Cl **156** *SC* **156.7.1** *P* **84** *L* # 36

Sluyski, Mike Cisco Systems

Comment Type **TR** *Comment Status* **A**

Add parameter to table 156-6:: IQ phase error (max) - The proposed changes is part of a general proposal to modify the current draft's approach of using EVM methodology, and instead replacing it with a known industry approach that can support the goal of ensuring interop. A supporting presentation will be presented into the Task Force for review.

SuggestedRemedy

Add New Parameter to Table 156-6: IQ phase error (max). With value +5 deg
Add definition and test methodology in 156.9.x: IQ phase error (max):
Definition and test Methodology to be provided.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add New Parameter to Table 156-6: IQ phase error (max) with a value of 5 deg.

Add definition and test methodology for IQ phase error (max) in 156.9.x as a TBD.

With editorial license.

Cl **156** *SC* **156.7.1** *P* **84** *L* # 41

Sluyski, Mike Cisco Systems

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

Add New Parameter to table 156-6: Transmit Output Power Absolute Accuracy (max) - New parameter required to address Xtalk when operating on 75 GHz Grid

SuggestedRemedy

Add New Parameter to Table 156-6 : Transmit Output Power Absolute Accuracy (max). With value +1 dB.
Add definition and test methodology in 156.9.x: Transmit Output Power Accuracy: Definition and test Methodology to be provided.

Absolute accuracy of delivered transmit output power relative to the TX Target Output Power setting. When operating at a fixed wavelength over temperature and over time (EOL).

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Insufficient justification provided to remove EVM and replace it with separate TX parameters

Cl **156** *SC* **156.7.1** *P* **84** *L* # 33

Sluyski, Mike Cisco Systems

Comment Type **TR** *Comment Status* **R**

Add parameter to table 156-6: TX clock Phase Noise, Maximum total integrated RMS phase jitter between 1MHz and 200MHz
The proposed changes is part of a general proposal to modify the current draft's approach of using EVM methodology, and instead replacing it with a known industry approach that can support the goal of ensuring interop. A supporting presentation will be presented into the Task Force for review.

SuggestedRemedy

Add Parameter to Table 156-6: Tx clock phase noise (PN) - Maximum total integrated RMS phase jitter between 1MHz and 200MHz. With value (See 156.9.x)
Add definition and test methodology in 156.9.x: TX clock Phase Noise - Maximum total integrated RMS phase jitter between 1MHz and 200MHz.
rms random jitter:

σ_rj=1/(2πf_c) √(2·∫_(f_1)^(f_2)▒〖10^((L(f))/10) df〗)

rms periodic jitter (spurs):

σ_(pj,i)=1/(√2 πf_c)·10^(s_i/20)

where,

■(f_1=1MHz,@f_2=200MHz,@f_c=f_baud/128=467.53MHz,@L(f)=phase noise (PN),@s_i=individual spur in [dBc])

rms total jitter:
σ_tj=√(〖σ_rj〗^2+∑_(i=1)^N▒〖σ_(pj,i)〗^2)

where,

■(N=total number of spurs).

Response *Response Status* **C**

REJECT.

Insufficient justification provided to add TX Clock Phase Noise (PN) - Maximum total integrated RMS phase jitter between 1MHz and 200MHz to Table 156-6 and there were concerns on the measurability.

This comment was related to comment 31 which was rejected via straw poll

Cl **156** *SC* **156.7.1** *P* **84** *L* # 35

Sluyski, Mike Cisco Systems

Comment Type **TR** *Comment Status* **A**

Add New Parameter: IQ phase error (min)-
The proposed changes is part of a general proposal to modify the current draft's approach of using EVM methodology, and instead replacing it with a known industry approach that can support the goal of ensuring interop. A supporting presentation will be presented into the Task Force for review.

SuggestedRemedy

Add New Parameter to Table 156-6: IQ phase error (min). With value: -5 deg
Add definition and test methodology in 156.9.x: IQ phase error (min):
Definition and test methodology to be provided.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add New Parameter to Table 156-6: IQ phase error (min) with a value of -5 deg.

Add definition and test methodology for IQ phase error (min) in 156.9.x as a TBD.

With editorial license.

Cl **156** *SC* **156.7.1** *P* **84** *L* # 39

Sluyski, Mike Cisco Systems

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

Add parameter to table 156-6: Transmit Ouptut Power Stability (max) - New parameter required to address Xtalk when operating on 75 GHz Grid

SuggestedRemedy

Add New Parameter to Table 156-6: Transmit Ouptut Power Stability (max). With value +1 dB.

Add definition and test methodology in 156.9.x: Transmit Output Power Stability:
Definition and test Methodology to be provided.

Output power stability over time (EOL) when operating at a fixed wavelength and temperature.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Insufficient justification provided to remove EVM and replace it with separate TX parameters

Cl **156** *SC* **156.7.1** *P* **84** *L* # 34

Sluyski, Mike Cisco Systems

Comment Type **TR** *Comment Status* **A**

Add parameter to table 156-6: IQ amplitude imbalance (mean)-
The proposed changes is part of a general proposal to modify the current draft's approach of using EVM methodology, and instead replacing it with a known industry approach that can support the goal of ensuring interop. A supporting presentation will be presented into the Task Force for review.

SuggestedRemedy

Add New Parameter to Table 156-6: IQ amplitude imbalance (mean). With value 1 dB
Add definition and test methodology in 156.9.x: IQ amplitude imbalance (mean). Definition and test methodology to be provided.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add New Parameter to Table 156-6: IQ amplitude imbalance (mean) with a value of 1 dB.

Add definition and test methodology for IQ amplitude imbalance (mean) in 156.9.x as a TBD.

With editorial license.

Cl **156** *SC* **156.7.1** *P* **84** *L* # 40

Sluyski, Mike Cisco Systems

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

Add New Parameter to table 156-6: Transmit Output Power Absolute Accuracy (min) - New parameter required to address Xtalk when operating on 75 GHz Grid

SuggestedRemedy

Add New Parameter to Table 156-6 : Transmit Output Power Absolute Accuracy (min).
With value -1 dB
Add definition and test methodology in 156.9.x: Transmit Output Power Accuracy:

Definition and test Methodology to be provided.

Absolute accuracy of delivered transmit output power relative to the TX Target Output Power setting. When operating at a fixed wavelength over temperature and over time (EOL).

When operating at a fixed wavelength over temperature and over time (EOL).

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Insufficient justification provided to remove EVM and replace it with separate TX parameters

Cl **156** *SC* **156.7.1** *P* **84** *L* # 31

Sluyski, Mike Cisco Systems

Comment Type **TR** *Comment Status* **R**

Add parameter to table 156-6: TX Clock Phase Noise (PN)-
The proposed changes is part of a general proposal to modify the current draft's approach of using EVM methodology, and instead replacing it with a known industry approach that can support the goal of ensuring interop. A supporting presentation will be presented into the Task Force for review.

SuggestedRemedy

Add parameter to table 156-6: TX Clock Phase Noise (PN) with value: (See 156.9.x);
Add Mask, definition and test methodology in 156.9.x: TX Clock Phase Noise (PN):

-1001.00E+04
-1201.00E+05
-1301.00E+06
-1401.00E+07

Phase noise, L(f),

f_c=f_baud/128=~467.53 MHz

Mask does not apply to spurs, broadband phase noise only. Spurs are considered separately.

Response *Response Status* **C**

REJECT.

Insufficient justification provided to add TX Clock Phase Noise (PN) to Table 156-6 and there were concerns on the measurability.

A straw poll was taken " I supporting rejecting comment 31"
Yes: 11, No: 10

Cl **156** *SC* **156.7.1** *P* **84** *L* **41** # 20

Lewis, David — Lumentum

Comment Type **TR** *Comment Status* **A**

Out-of-band OSNR (min) has been set to a relaxed value (23 dB) in other specifications for DWDM links that do not include color-less add/drop components such as ROADMs. Since our intended use case does not include ROADMs in the network, we should adopt the same value

SuggestedRemedy

Replace TBD with 23 dB.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace TBD with 23

Cl **156** *SC* **156.7.1** *P* **84** *L* **49** # 30

Sluyski, Mike — Cisco Systems

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

Remove parameter in Table 156-6: Error Vector magnitude (max).
The proposed change is part of a general proposal to modify the current draft's approach of using EVM methodology, and instead replacing it with a known industry approach that can support the goal of ensuring interop. A supporting presentation will be presented into the Task Force for review.

SuggestedRemedy

Remove parameter from 156-6: Error Vector magnitude (max).

Removal is not required if TF can agree that EVM can be considered a supplementary (optional) specification and test.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **156** *SC* **156.7.2** *P* **86** *L* **18** # 24

Lewis, David — Lumentum

Comment Type **T** *Comment Status* **A**

Receiver damage threshold is a component rating specification rather than a required characteristic for link operation. Coherent receiver optics have very high ratings, e.g. +17 dBm, but are intended to operate normally at much lower power levels, e.g. -12 to 0 dBm.

SuggestedRemedy

Remove the damage threshold value from the table.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Retain Damage threshold in Table 156-7 and replace TBD with 6.

Cl **156** *SC* **156.7.2** *P* **86** *L* **22** # 23

Lewis, David — Lumentum

Comment Type **T** *Comment Status* **A**

Back-to-back measurements on multiple receivers with multiple different transmitters were reported in rahn_3cw_01a_220223. Those results support the receiver OSNR tolerance of 26 dB in Table 156-7. The value for receiver OSNR with transmitter and DWDM link impairments needs to be set higher than the tolerance value by a reasonable margin, say 2 dB.

SuggestedRemedy

Replace TBD with 28 dB

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 44.

Cl **156** *SC* **156.7.2** *P* **86** *L* **22** # 44

Zhang, Bo — Marvell

Comment Type **TR** *Comment Status* **A**

Address TBD value

SuggestedRemedy

Given the methodology adopted in 802.3ct, suggest the following two categories. For average receive power < -12dBm, min Receiver OSNR is 34dB. For average receive power >= -12dBm, min Receiver OSNR is 29dB.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In Table 156-7 for Receiver OSNR (min) replace TBD with 29.

Cl **156** *SC* **156.8** *P* **86** *L* **43** # 26

Lewis, David — Lumentum

Comment Type **T** *Comment Status* **A**

Set the value of ripple max to a practical value.

SuggestedRemedy

Suggest a max value of 2.5 dB

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In Table 156-8, for Ripple (max) replace TBD with 2.5

Cl **156** *SC* **156.8** *P* **87** *L* **7** # 27

Lewis, David — Lumentum

Comment Type **T** *Comment Status* **A**

Average output power at TP3 needs to cover a range that will be encountered at the demux outputs of the DWDM link. The line system providers set that power by adjusting the gain of the pre-amplifier to account for the loss through the demux and any line protection and/or patchcords. A good minimum value is -12 dBm.

SuggestedRemedy

Replace TBD with -12 dBm.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In Table 156-8, for Average output power at TP3 (min) for OSNR at TP3 (12.5GHz) replace TBD with -12

Cl **156** *SC* **156.8** *P* **87** *L* **10** # 28

Lewis, David — Lumentum

Comment Type **T** *Comment Status* **A**

OSNR at TP3 (min) needs to be the same value as OSNR at TP3 listed in Table 156-7. Another comment proposes a value of 28 dB and if accepted, the same value is needed here.

SuggestedRemedy

Replace TBD with 28 dB

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In Table 156-8, for OSNR at TP3 (min) replace TBD with 29. See response to comment 44.

Cl **156** *SC* **156.8** *P* **87** *L* **27** # 29

Lewis, David — Lumentum

Comment Type **T** *Comment Status* **R**

Interferometric crosstalk is defined in ITU-T G.698.2 to be the ratio of disturbing power to the wanted power within a single channel. The disturbing power is the power (not including ASE) that would remain if the wanted signal were removed from the link, while leaving all other link conditions the same. Because we are defining limits for adjacent channel isolation in Table 156-9, we should not need to define a value for interferometric crosstalk.

SuggestedRemedy

Delete the parameter "interferometric crosstalk at TP3 (max)".

Response *Response Status* **C**

REJECT.

Based on task force discussion it was decided to retain interferometric crosstalk at TP3 (max) in Table 156-8 with a TBD value.

Cl **156** *SC* **156.9** *P* **88** *L* **37** # 21

Lewis, David — Lumentum

Comment Type **TR** *Comment Status* **A**

Transmitter OOB OSNR is not listed in Table 156-11.

SuggestedRemedy

Add a row for Transmitter out-of-band OSNR with pattern 5, and a new related subclause 156.9.xx

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add a row for Transmitter out-of-band OSNR with pattern 5 in Table 156-11 after transmitter in-band OSNR, and a new related subclause 156.9.14a. With editorial license.

Cl **156** *SC* **156.9.1** *P* **88** *L* **38** # 8

Nicholl, Gary — Cisco Systems

Comment Type **T** *Comment Status* **R**

Table 156-11. Should the pattern called out in the first three rows of this table be "400GBASE-ZR" and not "400GBASE-R" (see Clause 155 and Figure 155-1) ?

SuggestedRemedy

Replace "400GBASE-R" with "400GBASE-ZR" in the first three rows of Table 156-11.

Response *Response Status* **C**

REJECT.

Use of x00GBASE-R is consistent with 802.3ct and 802.3cu.

Cl **156** *SC* **156.9.1** *P* **89** *L* **19** # 45

Zhang, Bo — Marvell

Comment Type **ER** *Comment Status* **A**

Remove optical path OSNR penalty parameter

SuggestedRemedy

Given there is no such parameter defined in the optical spec table, there is no need to list it in Table 156-11

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Per task force discussion it was decided to retain Optical path OSNR penalty in Table 156-11. It noticed there was a previous mistake in removing Optical path OSNR penalty (max) from Table 156-8 per D1.2 comment 25. Insert Optical path OSNR penalty (max) in Table 156-8 with a value of 3 dB. With editorial license.

Cl **156** *SC* **156.9.10** *P* **92** *L* **3,4, 8** # 43

Sluyski, Mike — Cisco Systems

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

Change Text in Clause 156.9.10 : - The proposed change is part of a general proposal to modify the current draft's approach of using EVM methodology, and instead replacing it with a known industry approach that can support the goal of ensuring interop. A supporting presentation will be presented into the Task Force for review.

SuggestedRemedy

Remove sentence: The error vector magnitude shall be within the limits given in Table 156–6 if measured using the methods
specified in 156.10.1.1 and 156.10.1.2.

Removal is not required if TF can agree that EVM can be considered a supplementary (optional) specification and test.

Change Line 8 as: The components of the (optional) EVM test setup are described in 156.10.1

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **156** *SC* **156.9.14a** *P* **92** *L* **39** # 22

Lewis, David — Lumentum

Comment Type **TR** *Comment Status* **A**

Need a definition of transmitter out-of-band OSNR.

SuggestedRemedy

Insert a new subclause after 156.9.14 with the following text: "The transmitter out-of-band OSNR shall be within the limits given in Table 156-6. Out-of-band OSNR is the ratio of transmit signal power between the -20 dB spectral mask points of Figure 156-4 to the maximum optical noise power within any optical bandwidth of 0.1 nm at 193.7 THz or 12.5 GHz outside of the -20 dB spectral mask points.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert a new subclause 156.9.14a with the following text:

The transmitter out-of-band OSNR shall be within the limits given in Table 156-6. Out-of-band OSNR is defined as the ratio of the total signal power within the signal's -20 dB spectral mask points to the maximum integrated noise power (referred to 12.5 GHz) outside of the signal's -20 dB spectral mask points out to the limits of the C-band. See Figure 156-4.

NOTE—This definition of OSNR is consistent with the definition of OSNR in ITU-T G.698.2, except that in this clause the noise power density is referred to 12.5 GHz, instead of 0.1 nm in G.698.2. At a frequency of 193.6 GHz a measurement bandwidth of 0.1 nm is identical to 12.5 GHz.

With editorial license.

Cl **156** *SC* **156.9.17** *P* **93** *L* **1** # 47

Zhang, Bo Marvell

Comment Type **TR** *Comment Status* **A**

Provide Receiver OSNR tolerance definition

SuggestedRemedy

… is defined as "minimum OSNR that the receiver can withhold while maintaining a pre-FEC BER level lower than the CFEC threshold. The tolerance has to be met with a worst-case compliant transmitter, but it does not have to be met with the line impairments such as CD, PMD, PDL or optical crosstalk, etc."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the second sentence of 156.9.17 to "Receiver OSNR tolerance is defined as minimum OSNR that the receiver can tolerate while maintaining a pre-FEC BER level lower than the CFEC threshold. The tolerance has to be met with a worst-case compliant transmitter, but it does not have to be met with the line impairments such as CD, PMD, PDL or optical crosstalk, etc."

Cl **156** *SC* **156.9.18** *P* **93** *L* **9** # 25

Lewis, David Lumentum

Comment Type **T** *Comment Status* **A**

Ripple as defined in ITU-T G.698.2 is not the right definition for the 802.3cw DWDM black link. G.698.2 defines ripple as the roll-off of the channel characteristic at the maximum spectral excursion of the transmitter. For 802.3cw we have replace transmitter spectral excursion with parameters for transmit spectral shaping, including transmit spectrum (max) and transmit spectrum (min) in Table 156-6. This means that ripple of the DWDM black link needs to be defined with respect to the channel passband (max) and (min) parameters in Table 156-8.

SuggestedRemedy

Define ripple as the maximum peak-to-peak insertion loss variation between points in the channel passband, spaced +/- 32 GHz from the nominal channel center frequency.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change 156.9.18 to read "The ripple is the maximum peak-to-peak insertion loss variation between 3dB points in the channel passband."

Cl **156** *SC* **156.9.19** *P* **96** *L* **13** # 46

Zhang, Bo Marvell

Comment Type **ER** *Comment Status* **R**

Remove optical path OSNR penalty definition

SuggestedRemedy

Given there is no such parameter defined in the optical spec table, there is no need to define it.

Response *Response Status* **C**

REJECT.

See response to comment 45.

Cl **156** *SC* **156.10.1** *P* **93** *L* **45** # 9

Nicholl, Gary Cisco Systems

Comment Type **T** *Comment Status* **A**

The text tells you to connect the DP-16QAM transmitter to the "constellation analyzer" as shown in 156-6. However Figure 156-6 shows the DP-16QAM transmitter being connected to an "EVM reference receiver" and not a "constellation analyzer".

SuggestedRemedy

Change the second sentence in 156.10.1 from:
"Connect the 400 Gb/s DP- 16QAM transmitter and constellation analyzer using a single-mode fiber patch cord between 2 m and 5 m in length.."
To:
"Connect the 400 Gb/s DP-16QAM transmitter to the EVM reference reference using a single-mode fiber patch cord between 2 m and 5 m in length."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the second sentence in 156.10.1 from:
"Connect the 400 Gb/s DP- 16QAM transmitter and constellation analyzer using a single-mode fiber patch cord between 2 m and 5 m in length.."
To:
"Connect the 400 Gb/s DP-16QAM transmitter to the EVM reference receiver using a single-mode fiber patch cord between 2 m and 5 m in length."

Cl **156** *SC* **156.10.1.1** *P* **94** *L* **43** # 48

Zhang, Bo Marvell

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

Address TBD value

SuggestedRemedy

Suggest coherent receiver bandwidth of at least 30GHz (roughly half the symbol rate)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Replace "TBD GHz" with "30 GHz"

Cl **156** *SC* **156.10.1.1** *P* **94** *L* **44** # 49

Zhang, Bo Marvell

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

Address TBD value

SuggestedRemedy

Suggest digitizer ENOB of at least 4 bit (over frequency)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Replace "TBD bits" with "4 bits"

Cl **156** *SC* **156.10.1.1** *P* **94** *L* **44** # 50

Zhang, Bo Marvell

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

Address TBD value

SuggestedRemedy

Suggest sampling rate of 1.15 samples per symbol

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Replace "TBD(1) times the symbol rate" with "1.15(1) times the symbol rate"