Cl **FM** *SC* **FM** *P* **2** *L* **16** # 480

Remein, Duane Futurewei Technologie

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

This is the only case of Point to Multipoint in the draft.

SuggestedRemedy

Replace with Point-to-multipoint.

Response *Response Status* **C**

ACCEPT.

Cl **1** *SC* **1.4.245a** *P* **22** *L* **33** # 481

Remein, Duane Futurewei Technologie

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

Surely there are other "unit of measurement of volume of information"

SuggestedRemedy

Change:
"The unit of measurement of volume of information." to
"A unit of information volume."

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3** *P* **38** *L* **17** # 482

Remein, Duane Futurewei Technologie

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

The entry "45.2.1.45a" in Table 45-176 should be "45.2.3.45a" and a live link.

SuggestedRemedy

per comment

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.8** *P* **40** *L* **4** # 483

Remein, Duane Futurewei Technologie

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

IEEE Std 802.3cb-2018 changed table 45-182 Bit(s) from 3.9.15:3 to 3.9.15:4. This should be reflected in our draft.

SuggestedRemedy

Change the crossed out 3 to a crossed out 4 in the first row of table 45-182

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.45a.2** *P* **42** *L* **45** # 485

Remein, Duane Futurewei Technologie

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

"When bit this bit is set" is a bit overstated. Same error at pg 43 line 3 and 17.

SuggestedRemedy

Change to "When this bit is set"

Response *Response Status* **C**

ACCEPT.

Comment is against line 45, not 44. Fixed.

Cl **45** *SC* **45.2.3.11ad** *P* **40** *L* **44** # 484

Remein, Duane Futurewei Technologie

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

Not quite able to achieve 125 Gb/s just yet.

SuggestedRemedy

Change:
"support the 125GBASE-PQ Tx only PCS" to:
"support the 25GBASE-PQ Tx only PCS"

Response *Response Status* **C**

ACCEPT.

Cl **56** *SC* **56.1.2** *P* **47** *L* **2** # 486

Remein, Duane Futurewei Technologie

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

This statement is confusing at best "Each PCS and PMA channel operates at a 25.78125 GBd line rate in the downstream direction and a 25.78125 GBd or a 10.3125 GBd in the upstream direction."

SuggestedRemedy

Change to:
"Each PCS and PMA channel in the downstream direction operates at a 25.78125 GBd line rate. A PCS and PMA channel in the upstream direction operates at either a 25.78125 GBd or a 10.3125 GBd line rate."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Since there is more than one PCS/PMA in upstream in 50/50G system, change to:
"Each PCS and PMA channel in the downstream direction operates at a 25.78125 GBd line rate. Each PCS and PMA channel in the upstream direction operates at either a 25.78125 GBd or a 10.3125 GBd line rate."

Cl **56** *SC* **56.1.3** *P* **49** *L* **25** # 487

Remein, Duane Futurewei Technologie

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

I believe Clause 141 defined more than one PMD.

SuggestedRemedy

Change
"All these systems employ the PMD defined in" to
"All these systems employ a PMD defined in"

Response *Response Status* **C**

ACCEPT.

Cl **56** *SC* **56.1.3** *P* **49** *L* **35** # 488

Remein, Duane Futurewei Technologie

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

There is a stray character (possibly an underlined space) at the end of this para.

SuggestedRemedy

Remove the stray character(s).

Response *Response Status* **C**

ACCEPT.

Cl **56** *SC* **56.1.3** *P* **53** *L* **1** # 489

Remein, Duane Futurewei Technologie

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

Table 56-4 is not clear with all the "XXXX" everywhere. Use the same insertion style that is used a clause 45 without the "XXXX"x. Note that this table is being inserted and therefore does not need any mark-up.

SuggestedRemedy

Remove all markup from table 56-4 (title and table proper).

Response *Response Status* **C**

ACCEPT.

Cl **141** *SC* **141.1.1** *P* **54** *L* **14** # 490

Remein, Duane Futurewei Technologie

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

141.1.1 Terminology and conventions
what of 142.1.1 Conventions, 143.3.3.1 Conventions, 143.3.4.1 Conventions and 144.1.6 Conventions?
Should we have a convention convention? OR perhaps a convention for Conventions?

SuggestedRemedy

Change 141.1.1 to just "Terminology"

Response *Response Status* **C**

ACCEPT.

Cl **141** *SC* **141.2.7** *P* **58** *L* **29** # 491

Remein, Duane Futurewei Technologie

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

What does "PMDs in the function transmitter launch power" mean in the parenthetical "a power budget is a characteristic of a link and depends on PMDs in the function transmitter launch power and receiver sensitivity"?

SuggestedRemedy

Change the parenthetical to read: "a power budget is a characteristic of a link and depends on the paired PMDs transmitter launch power and receiver sensitivity"

Response *Response Status* **C**

ACCEPT.

Cl **141** *SC* **141.2.7** *P* **58** *L* **32** # 492

Remein, Duane Futurewei Technologie

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

I do not see any "power budgets listed in Table 141–1 through Table 141–5."

SuggestedRemedy

change to read "power budgets listed in Table 141–8 through Table 141–9."

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Reference is correct as is.

Cl **141** *SC* **141.2.7.1** *P* **59** *L* **20** # 493

Remein, Duane Futurewei Technologie

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

I do not see any "medium power budgets as shown in Table 141–1 through Table 141–5"

SuggestedRemedy

Strike "as shown in Table 141–1 through Table 141–5"

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

There are 20-class power budgets shown in tables.

Cl **141** *SC* **141.2.7.2** *P* **60** *L* **20** # 494

Remein, Duane Futurewei Technologie

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

I do not see any high power budgets as shown in Table 141–1 through Table 141–5"

SuggestedRemedy

Strike "as shown in Table 141–1 through Table 141–5"

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

There are 30-class power budgets shown in tables.

Cl **141** *SC* **141.3.1.1** *P* **60** *L* **50** # 615

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **A** *delay; PICS*

AI #1 Delay (variation) Constraints

SuggestedRemedy

Replace the Editor's note with the following.
"Due to the nature of the Nx25G-EPON PMD delay variation within the PMD is expected to be very little (< ± 0.25 EQT)."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace the Editor's note with the following: "The Nx25G-EPON PMD delay variation within the PMD shall be less than 0.25 EQT."

Add PICS

Cl **141** *SC* **141.3.1.2** *P* **61** *L* **7** # 495

Remein, Duane Futurewei Technologie

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

This is excessively wordy just to say we have a signaling rate of 10 or 25G; it is also incorrect (assuming 25/10 & 5010 are included in Nx25G). "The PMA defined in 142.4 continuously sends the appropriate stream of bits to the PMD for transmission on the medium, at a nominal signaling speed of 25.78125 GBd in the case of Nx25G-EPON OLT and ONU PMDs. The PMA defined in 142.4 continuously sends the appropriate stream of bits to the PMD for transmission on the medium, at a nominal signaling speed of 10.3125 GBd in the case of 25/10G-EPON and 50/10G–EPON ONU PMDs."

SuggestedRemedy

Change to "The PMA defined in 142.4 continuously sends the appropriate stream of bits to the PMD for transmission on the medium. A nominal signaling speed of 25.78125 GBd or 10.3125 GBd depending on the rate class of the PMD."

Response *Response Status* **C**

REJECT.

Wordy != Bad. Text is technically correct as is.

Cl **141** *SC* **141.3.1.3** *P* **61** *L* **20** # 496

Remein, Duane Futurewei Technologie

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

Also wordy and incorrect. "The PMD continuously sends a stream of bits to the PMA defined in 142.4 corresponding to the signals received from the MDI, at the nominal signaling speed of 25.78125 GBd in the case of Nx25G–EPON OLT and ONU PMDs or to the PMA defined in 142.4 at the nominal signaling speed of 10.3125 GBd in the case of 25/10G–EPON and 50/10G-EPON OLT PMDs."

SuggestedRemedy

Change to "The PMD continuously sends a stream of bits to the PMA defined in 142.4 corresponding to the signals received from the MDI, at the nominal signaling speed of 25.78125 GBd or 10.3125 GBd depending on the rate class of the PMD."

Response *Response Status* **C**

REJECT.

Wordy != Bad. Text is technically correct as is.

Cl **141** *SC* **141.3.1.5** *P* **61** *L* **43** # 497

Remein, Duane Futurewei Technologie

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

signal names should not cross a line as in "PMD_global_sig-
nal_detect". Make the signal name non-breaking.

SuggestedRemedy

per comment

Response *Response Status* **C**

ACCEPT.

Cl **141** *SC* **141.3.5.3** *P* **63** *L* **30** # 498

Remein, Duane Futurewei Technologie

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

We seem to have some duplicate redundancy "The value of the SIGNAL_DETECT parameter for Nx25G–EPON PMDs shall be generated according to the conditions defined in T able 141–10. The Signal Detect value definitions for Nx25G-EPON PMDs are shown in Table 141–10."

SuggestedRemedy

Strike "The Signal Detect value definitions for Nx25G-EPON PMDs are shown in Table 141–10."

Response *Response Status* **C**

ACCEPT.

Cl **141** *SC* **141.5.2** *P* **65** *L* **36** # 433

Johnson, John Broadcom

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

Having an explicit TX spec for "Decision timing offset for transmitter and dispersion penalty" in Tables 141-13, 14, 17 and 18 is unnecessary. Clause 75 (10G-EPON) has this parameter in the TX tables, but more recent PMDs (100GBASE-LR4/ER4, 25GBASE-LR/ER) do not. They rely on the default value of +/- 0.05 UI that's included in the text of 52.9.10.4 which all of these clauses ultimately point to for TDP measurement. I don't think that the difference in between OLT TX (+/-0.05 UI) and ONU TX (+/-0.0625 UI) in 10G-EPON is significant enough to justify calling them out explicitly for Nx25G-EPON.

SuggestedRemedy

Delete the line for "Decision timing offset for transmitter and dispersion penalty" in Tables 141-13, 14, 17 and 18.

Response *Response Status* **C**

ACCEPT.

Wrong page, was 36, should be 65 (fixed)

Cl **141** *SC* **141.5.2** *P* **67** *L* **1** # 627

Kramer, Glen Broadcom

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

Signal Detect Threshold is measured in dBm, not GHz

SuggestedRemedy

In Tables 141-15 and 141-16, replace GHz with dBm in Units column

Response *Response Status* **C**

ACCEPT.

See comment #434

Cl **141** *SC* **141.5.2** *P* **67** *L* **1** # 453

Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **A** *UW1*

In “Table 141–15—OLT Receive Characteristics, medium power class”, there are 4 PHYs grouped together, which cover 10G upstream PHYs:
•25/10GBASE-PQG-D2
•50/10GBASE-PQG-D2
•25/10GBASE-PQX-D2
•50/10GBASE-PQX-D2
These include “G” and “X”, but for “Channel wavelengths (range)” they all point to Table 75-6. Of course “Table 75–6—PR type OLT PMD receive characteristics” only specifies Wavelength (range) 1260 to 1280, the “G” variant.

Same observation for Table 141–16—OLT Receive Characteristics, high power class.

SuggestedRemedy

For 25G upstream PHYs, Table 141–15 indeed shows both “G” UW0 and “X” UW1 options. It appears to me that we need to explicitly specify in Table 141–15 an “X” UW1 wavelength for 10G.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Split the last column into two columns, a G column and an X column. Everywhere they will have common rows except for the Channel wavelengths (range), which will be split. I.e. the same as how the first two columns are handled. For "X" column, use the 1290 to 1310nm range.

Cl **141** *SC* **141.5.2** *P* **67** *L* **24** # 434

Knittle, Curtis CableLabs

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

Missing parameter for Signal detect threshold, each channel (min), wrong unit

SuggestedRemedy

Replace TBD with -40, replace GHz with dBm

Response *Response Status* **C**

ACCEPT.

Cl **141** *SC* **141.5.2** *P* **67** *L* **28** # 435

Knittle, Curtis CableLabs

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

Missing parameter for Receiver settling time (max)

SuggestedRemedy

Replace TBD with 800

Response *Response Status* **C**

ACCEPT.

Cl **141** *SC* **141.5.2** *P* **67** *L* **34** # 436

Knittle, Curtis CableLabs

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

Missing parameter for Stressed eye J2 Jitter, each channel

SuggestedRemedy

Replace TBD w/ 0.3

Response *Response Status* **C**

ACCEPT.

Cl **141** *SC* **141.5.2** *P* **67** *L* **36** # 437

Knittle, Curtis CableLabs

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

Missing parameter for Stressed eye J9 Jitter, each channel

SuggestedRemedy

Replace TBD w/ 0.47

Response *Response Status* **C**

ACCEPT.

Cl **141** *SC* **141.5.2** *P* **68** *L* **26** # 438

Knittle, Curtis CableLabs

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

Missing parameter for Signal detect threshold, each channel (min), plus wrong unit

SuggestedRemedy

Replace TBD with -40, replace GHz with dBm

Response *Response Status* **C**

ACCEPT.

Cl **141** *SC* **141.5.2** *P* **68** *L* **30** # 439
Knittle, Curtis CableLabs

Comment Type **TR** *Comment Status* **A**
Missing parameter for Receiver settling time (max)

SuggestedRemedy
Replace TBD with 800

Response *Response Status* **C**
ACCEPT.

Cl **141** *SC* **141.5.2** *P* **68** *L* **35** # 440
Knittle, Curtis CableLabs

Comment Type **TR** *Comment Status* **A**
Missing parameter for Stressed eye J2 Jitter, each channel

SuggestedRemedy
Replace each TBD w/ 0.3

Response *Response Status* **C**
ACCEPT.

Cl **141** *SC* **141.5.2** *P* **68** *L* **36** # 441
Knittle, Curtis CableLabs

Comment Type **TR** *Comment Status* **A**
Missing parameter for Stressed eye J9 Jitter, each channel

SuggestedRemedy
Replace each TBD w/ 0.47

Response *Response Status* **C**
ACCEPT.

Cl **141** *SC* **141.6.1** *P* **69** *L* **15** # 499
Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **A** *PICS*
Tables 141-17 & 18 are not referenced, This section seems to be lacking some text.

SuggestedRemedy
Add: "A medium power class Nx25G-EPON ONU PMD transmitter shall comply with the parameters shown in Table 141–17. A high power class Nx25G-EPON ONU PMD transmitter shall comply with the parameters shown in Table 141–18."
Update PICS as needed.

Response *Response Status* **C**
ACCEPT.

Cl **141** *SC* **141.6.2** *P* **72** *L* **29** # 442
Knittle, Curtis CableLabs

Comment Type **TR** *Comment Status* **A**
Missing parameter for Detect threshold, each channel (min)

SuggestedRemedy
Replace TBD w/ -40

Response *Response Status* **C**
ACCEPT.

Cl **141** *SC* **141.6.2** *P* **72** *L* **35** # 443
Knittle, Curtis CableLabs

Comment Type **TR** *Comment Status* **A**
Missing parameter for Stressed eye J2 Jitter, each channel

SuggestedRemedy
Replace TBD w/ 0.3

Response *Response Status* **C**
ACCEPT.

Cl **141** *SC* **141.6.2** *P* **72** *L* **36** # 444

Knittle, Curtis CableLabs

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

Missing parameter for Stressed eye J9 Jitter, each channel

SuggestedRemedy

Replace TBD w/ 0.47

Response *Response Status* **C**

ACCEPT.

Cl **141** *SC* **141.6.2** *P* **73** *L* **23** # 445

Knittle, Curtis CableLabs

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

Missing parameter for Detect threshold, each channel (min)

SuggestedRemedy

Replace TBD w/ -40

Response *Response Status* **C**

ACCEPT.

Cl **141** *SC* **141.6.2** *P* **73** *L* **30** # 446

Knittle, Curtis CableLabs

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

Missing parameter for Stressed eye J2 Jitter, each channel

SuggestedRemedy

Replace TBD w/ 0.3

Response *Response Status* **C**

ACCEPT.

Cl **141** *SC* **141.6.2** *P* **73** *L* **31** # 447

Knittle, Curtis CableLabs

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

Missing parameter for Stressed eye J9 Jitter,e each channel

SuggestedRemedy

Replace TBD w/ 0.47

Response *Response Status* **C**

ACCEPT.

Cl **141** *SC* **141.7** *P* **74** *L* **4** # 431

Hajduczenia, Marek Charter Communicatio

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

A "should" statement that is not intended to be an optional requirement: " … alternative verification methods should ensure adequate correlation ..."

SuggestedRemedy

Change to read "alternative verification methods need to ensure adequate correlation"

Response *Response Status* **C**

ACCEPT.

Cl **141** *SC* **141.7.2** *P* **74** *L* **16** # 500

Remein, Duane Futurewei Technologie

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

Referenced Table 88-11 lists "or valid 100GBASE-R signal" as an acceptable test pattern for use in several measurements. This is inappropriate for Nx25G-EPON.

SuggestedRemedy

Add to the end of the paragraph "A valid Nx25G-EPON signal may be used in any test where Table 88-11 indicates a valid 100GBASE-R signal may be used.

Response *Response Status* **C**

REJECT.

The text is correct as it is, since this subclause describes just the PMD test, not a system-level test.

Cl **141** *SC* **141.7.10** *P* **75** *L* **46** # 646

Powell, William Nokia

Comment Type **T** *Comment Status* **A** *PICS, Receive sensitivity*

Receiver Sensitivity
Current Section 141.7.10 only contains "TBD"

SuggestedRemedy

(Ref. powell_3ca_1_0319)
Replace contents of 141.7.10 with:
"Receiver sensitivity is defined for test patterns in 75.7.3 (10G) and 141.7.2 (25G), and an ideal input signal quality with the specified extinction ratio. The measurement procedure is described in 52.9.8 for 10 Gb/s PHYs and 88.8.9 for 25 Gb/s PHYs. The sensitivity shall be met for the bit error ratio defined in Table 141-15, Table 141-16, Table 141-19, or 141-20 as appropriate."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

"Receiver sensitivity is defined for test patterns in 75.7.3 (10G) and 141.7.2 (25G).
The test signal is required to have negligible impairments such as intersymbol interference (ISI), rise/fall times, jitter, and RIN. The measurement procedure is described in 52.9.8 for 10 Gb/s PHYs and 88.8.9 for 25 Gb/s PHYs. The sensitivity shall be met for the bit error ratio defined in Table 141-15, Table 141-16, Table 141-19, or Table 141-20 as appropriate."

Update PICS

Cl **141** *SC* **141.7.10** *P* **75** *L* **48** # 454

Umeda, Daisuke Sumitomo

Comment Type **TR** *Comment Status* **A** *PICS, Receive sensitivity*

Referred and modified 88.8.9 "Receiver sensitivity" on 100GBASE-LR4/ER4 and 114.7.9 "Receiver sensitivity" on 100GBASE-LR4/ER4. The modification is VECP = 0.5 dB for 25 Gb/s PHYs

SuggestedRemedy

Use the following definition.

141.7.10 Receiver sensitivity
Receiver sensitivity, which is defined for an ideal input signal for 10 Gb/s PHYs and an input signal with VECP = 0.5 dB for 25 Gb/s PHYs, is informative and compliance is not required. If measured, the test signal should have negligible impairments such as intersymbol interference (ISI), rise/fall times, jitter and RIN. Instead, the normative is stressed receiver sensitivity.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #646

Cl **141** *SC* **141.7.11** *P* *L* # 455

Umeda, Daisuke Sumitomo

Comment Type **TR** *Comment Status* **A** *ed receiver conformance test*

Referred and modified 88.8.10 "Stressed receiver sensitivity" on 100GBASE-LR4/ER4. The quality of reference transmitter is defined based on TDP in Figure 87-4. The recent standard of 25GBASE-LR/ER (114.7.10) uses the definition based on TDEC in Figure 95-4. But there's not enough correlation data between TDP and TDEC in the wide ER range, so I propose the reference transmitter based on TDP for 802.3ca.

SuggestedRemedy

Use the following definition.

141.7.11 Stressed receiver sensitivity
Stressed receiver sensitivity shall be within the limits given in Table 141–15, Table 141–16, Table 141–19 and Table 141–20 if measured using the method defined in 87.8.11 with the following exceptions:
a) Added sinusoidal jitter is as specified in Table 88–13 for 25 Gb/s PHYs.
b) The stressed eye J2 Jitter, stressed eye J9 Jitter, and vertical eye closure penalty are as given in Table 141–15, Table 141–16, Table 141–19 and Table 141–20.
c) The test pattern is as given in Table 88–11 for 25 Gb/s PHYs, with the exception of Pattern 5.
d) The reference receiver used to verify the conformance test signal is required to have the bandwidth given in 88.8.8 for 25 Gb/s PHYs.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #647

Cl **141** *SC* **141.7.11** *P* **75** *L* **50** # 647

Powell, William Nokia

Comment Type **T** *Comment Status* **A** *ed receiver conformance test*

Stressed RX conformance
The current 141.7.11 only contains "TBD"

SuggestedRemedy

(Ref. powell_3ca_1_0319)
Replace contents of 141.7.11 with:
"Compliance with stressed receiver sensitivity is mandatory for the following PMDs: 25GBASE-PQG-D2, 50/25GBASE-PQG-D2, 25GBASE-PQX-D2, 50/25GBASE-PQX-D2, 50/25GBASE-PQG-D2, 50GBASE-PQG-D2, 50/25GBASE-PQX-D2, 50GBASE-PQX-D2, 25/10GBASE-PQG-D2, 50/10GBASE-PQG-D2, 25/10GBASE-PQX-D2, 50/10GBASE-PQX-D2, 25GBASE-PQG-D3, 0/25GBASE-PQG-D3, 25GBASE-PQX-D3, 50/25GBASE-PQX-D3, 50/25GBASE-PQG-D3, 50GBASE-PQG-D3, 50/25GBASE-PQX-D3, 50GBASE-PQX-D3, 25/10GBASE-PQG-D3, 50/10GBASE-PQG-D3, 25/10GBASE-PQX-D3, and 50/10GBASE-PQX-D3. The stressed receiver conformance test is intended to screen against receivers with poor frequency response or timing characteristics that could cause errors when combined with a distorted but compliant signal. To be compliant with stressed receiver sensitivity, the receiver shall meet the specified bit error ratio at the power level and signal quality defined in Table 141-15, Table 141-16, Table 141-19, or 141-20 as appropriate, according to the measurement procedures of 52.9.9 for 10 Gb/s PHYs and 88.8.10 for 25 Gb/s PHYs."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Use the following text:

Compliance with stressed receiver sensitivity is mandatory for PMDs listed in Table 141-7. The stressed receiver conformance test is intended to screen against receivers with poor frequency response or timing characteristics that could cause errors when combined with a distorted but compliant signal. To be compliant with stressed receiver sensitivity, the receiver shall meet the specified bit error ratio at the power level and signal quality defined in Table 141-15, Table 141-16, Table 141-19, or 141-20 as appropriate, according to the measurement procedures of 52.9.9 for 10 Gb/s PHYs and 88.8.10 for 25 Gb/s PHYs.

Update PICS

Cl **141** *SC* **141.7.13** *P* **76** *L* **13** # 648

Powell, William Nokia

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

Laser timing parameters
Current text reads:
- Ton is defined in 141.7.13.1 and has the value of less than or equal to 128 ns (defined in Table 141–17 and Table 141–18).
- A method for measuring Treceiver_settling is illustrated in 141.7.13.2 (informative) and has a value of less than {TBD} ns (defined in Table 141–15 and Table 141–16).
- TCDR is defined in {TBD, Clause 142} and has the value of less than {TBD} ns.
- Toff is defined in 141.7.13.1 and has the value of less than or equal to 128 ns (defined in Table 141–17 and Table 141–18).

SuggestedRemedy

(Ref. powell_3ca_1_0319)
Eliminate bullet points 2 & 3 that include the TBDs. These items will be covered in other subclauses and comments to this draft.

Thus, final text for 141.7.13 should read:
- Ton is defined in 141.7.13.1 and has the value of less than or equal to 128 ns (defined in Table 141–17 and Table 141–18).
- Toff is defined in 141.7.13.1 and has the value of less than or equal to 128 ns (defined in Table 141–17 and Table 141–18).

Response *Response Status* **C**

ACCEPT.

Cl **141** *SC* **141.7.13.1** *P* **76** *L* **31** # 501

Remein, Duane Futurewei Technologie

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

Why is any valid 256B/257B symbol allow for Toff measurements when we have a defined EBD?

SuggestedRemedy

Change "The data transmitted may be any valid 256B/257B symbols." to "The data transmitted is the EBD257 as defined in 142.3.5.1."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change

"The data transmitted may be any valid 256B/257B symbols."

to

"The data transmitted may be any of the patterns listed in Table 88-10."

Cl **141** *SC* **141.7.14** *P* **77** *L* **1** # 623

Kramer, Glen Broadcom

Comment Type **T** *Comment Status* **A** *141.7.14*

Action item to update Figure 141-3 (remove Grant Length signal as it doesn't match the definition of grant in .3ca).

SuggestedRemedy

Update the figure and the text in 141.7.14.1 as shown in kramer_3ca_1_0319.pdf

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Updated subclause (was 141.7.13.1, should be 141.7.14)

Update the figure and the text in 141.7.14.1 as shown in kramer_3ca_1_0319.pdf. Also, use T_{rx_settling} consistently throughout the draft (text and drawings).

Cl **141** *SC* **141.7.14.1** *P* **77** *L* **39** # 649

Powell, William Nokia

Comment Type **T** *Comment Status* **A** *141.7.14*

RX settling time measurement
Current text reads:
"Treceiver_settling is denoted as the elapsed time beginning from the moment that the optical power in the receiver at TP7 reaches the conditions specified in 141.7.11 and ending at the moment that the electrical signal after the PMD at TP8[i] reaches within 15 % of its steady state average power, jitter (see {TBD}).
Treceiver_settling is presented in Figure <TBD>....."

SuggestedRemedy

(Ref. powell_3ca_1_0319)
Change the text at the end of the first sentence to read:
...the electrical signal after the PMD at TP8[i] reaches within 15 % of its "steady state average power and jitter (see Table 141-15 and Table 141-16)."

Change the second sentence to read:
Treceiver_settling is presented in Figure 141-3.
[the new Fig. 141-3 from Glen]

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #623

Cl **141** *SC* **141.7.14.2** *P* **79** *L* **37** # 650

Powell, William Nokia

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

Currrent text in this line has a TBD.

SuggestedRemedy

Replace "TBD" with "Table 141-17 and Table 141-18."

Response *Response Status* **C**

ACCEPT.

Cl **141** *SC* **141.7.14.2** *P* **79** *L* **42** # 432

Hajduczenia, Marek Charter Communicatio

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

A "should" statement that is not intended to be an optional requirement: " … Conformance should be assured for an optical signal at TP7 ..."

SuggestedRemedy

Change to read "Conformance needs to be assured for an optical signal at TP7"

Response *Response Status* **C**

ACCEPT.

Cl **141** *SC* **141.7.15** *P* **79** *L* **53** # 655

Powell, William Nokia

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

There is no home for Tcdr or definition in D1.5

SuggestedRemedy

Ref. powell_3ca_2_0319
Insert a new sub-clause 141.7.15 with the following text:
141.4.15 TCDR measurement

141.4.15.1 Definitions CDR lock time (denoted TCDR) is defined as a time interval required by the receiver to acquire phase lock on the incoming data stream. TCDR is measured as the time elapsed from the moment when the electrical signal after the PMD at TP8, as illustrated in Figure 141-3, reaches the conditions specified in 141.7.14 for receiver settling time to the moment when the signal phase is recovered and jitter is maintained for a network with BER of no worse than 10–2.

A PMA instantiated in an OLT becomes synchronized at the bit level within 400 ns (TCDR) after the appearance of a valid synchronization pattern (as defined in 142.1.3) at TP8.

141.15.2 Test specification
The test of the OLT PMA receiver TCDR time assumes that there is an optical PMD transmitter at the ONU with well known Ton time as defined in 141.7.13, and an optical PMD receiver at the OLT with well-known Treceiver_settling time as defined in 141.7.14. After Ton + Treceiver_settling time, the parameters at TP8 reach within 15% of their steady state values, measure TCDR as the time from the TX_ENABLE assertion, minus the known Ton + Treceiver_settling time, to the time the electrical signal at the output of the receiving PMA reaches up to the phase difference from the input signal of the transmitting PMA assuring BER of 10–2, and maintaining its jitter specifications. The signals transmitted throughout this test are the SP1 and SP2 patterns as illustrated in Figure 142-3, or the SP1, SP2, & SP3 patterns as illustrated in Figure 142-4.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **141** *SC* **141.7.15** *P* **79** *L* **53** # 656

Powell, William Nokia

Comment Type **T** *Comment Status* **A** *postdeadline; PICS*

There is no home for Tcdr or definition in D1.5

SuggestedRemedy

Ref. powell_3ca_2_0319
Insert a new sub-clause 141.7.15 with the following text:
141.4.15 TCDR measurement 141.4.15.1 Definitions CDR lock time (denoted TCDR) is defined as a time interval required by the receiver to acquire phase lock on the incoming data stream. TCDR is measured as the time elapsed from the moment when the electrical signal after the PMD at TP8, as illustrated in Figure 141-3, reaches the conditions specified in 141.7.14 for receiver settling time to the moment when the signal phase is recovered and jitter is maintained for a network with BER of no worse than 10–2. A PMA instantiated in an OLT becomes synchronized at the bit level within 400 ns (TCDR) after the appearance of a valid synchronization pattern (as defined in 142.1.3) at TP8. 141.15.2 Test specification The test of the OLT PMA receiver TCDR time assumes that there is an optical PMD transmitter at the ONU with well known Ton time as defined in 141.7.13, and an optical PMD receiver at the OLT with well-known Treceiver_settling time as defined in 141.7.14. After Ton + Treceiver_settling time, the parameters at TP8 reach within 15% of their steady state values, measure TCDR as the time from the TX_ENABLE assertion, minus the known Ton + Treceiver_settling time, to the time the electrical signal at the output of the receiving PMA reaches up to the phase difference from the input signal of the transmitting PMA assuring BER of 10–2, and maintaining its jitter specifications. The signals transmitted throughout this test are the SP1 and SP2 patterns as illustrated in Figure 142-3, or the SP1, SP2, & SP3 patterns as illustrated in Figure 142-4.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add CDR to list of abbreviations.

Use powell_3ca_2a_0319.pdf and place it at the end of the PMA subclause.

Update PICS accordingly.

Cl **141** *SC* **141.9.1** *P* **81** *L* **2** # 502

Remein, Duane Futurewei Technologie

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

Should "IEC 61280–
4–2:2000" cross the line? Probably not.

SuggestedRemedy

Make the reference non-breaking.

Response *Response Status* **C**

ACCEPT.

Likely an editorial comment, no?

Cl **141** *SC* **141.9.3** *P* **81** *L* **34** # 503

Remein, Duane Futurewei Technologie

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

"channel insertion loss specified in T able 141–21" but Table 141-21 does not describe insertion loss.

SuggestedRemedy

Change ref to Table 141-1 through 141-5

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "Table 141–21" to "Table 141-1 through Table 141-5". Make links live.

Cl **141** *SC* **141.10** *P* **82** *L* **1** # 422

Hajduczenia, Marek Charter Communicatio

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

PICS needed and missing

SuggestedRemedy

Use hajduczenia_3ca_1_0319.pdf

Response *Response Status* **C**

ACCEPT.

Cl **142** *SC* **142.1.1.3** *P* **86** *L* **1** # 504

Remein, Duane Futurewei Technologie

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

Figure 142–2— needs update

SuggestedRemedy

See file remein_3ca_3_0319.pdf (or remein_3ca_0319 PCS FBD.vcs). In draft globally replace "Parity staging buffer" (1x Fig 142-6) and "ParityStagingBuffer" (9x) with "TxParBuf" using proper formatting.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Use remein_3ca_3a_0319.pdf for figure reference.

Change
"The LDPC encoder in Figure 142–6 places the M-bit FEC parity bits into the ParityStagingBuffer for use by"
to
"The LDPC encoder in Figure 142–6 places the M-bit FEC parity bits into the parity staging buffer (TxParBuf) for use by"

Afterwards, globally replace "Parity staging buffer" (Fig 142-6) and "ParityStagingBuffer" with "TxParBuf" using proper formatting.

Cl **142** *SC* **142.1.1.4** *P* **86** *L* **42** # 628

Kramer, Glen Broadcom

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

Action item from Long Beach: "Subtraction for rollover (144.3.6.8, Page:172, Line: 52)"

I am not entirely convinced we need any explanation for subtraction. The subtraction operation is straighforward.

SuggestedRemedy

The explanation text is added to 142.1.1.4 (see kramer_3ca_6_0319.pdf). Discuss at the meeting if the standard needs to explain such fundamental concepts.

Response *Response Status* **C**

ACCEPT.

Cl **142** *SC* **142.1.1.4** *P* **87** *L* **39** # 505

Remein, Duane Futurewei Technologie

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

Stray period between parenthesis in Table 142-1 for "Indicates precedence or a set of function arguments"

SuggestedRemedy

Strike the stray period

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Likely an editorial comment, no?

Change (.) to (...)

Cl **142** *SC* **142.1.1.4** *P* **87** *L* **43** # 506

Remein, Duane Futurewei Technologie

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

Symbol for "is a member of" and ""is not a member of"" are not included in Table 142–1 but is used in Figure 144-5

SuggestedRemedy

Add both to the bottom of the table.

Response *Response Status* **C**

ACCEPT.

Cl **142** *SC* **142.1.2** *P* **88** *L* **15** # 616

Remein, Duane Futurewei Technologie

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

AI #16 Delay Constraints

SuggestedRemedy

Replace the Editor's note with the following.
Due to the nature of the Nx25G-EPON PCS and PMA the combined delay variation within these sublayers is expected to be very little (< ± one EQT for 25 Gbps and < ± two EQT for 10 Gbps).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace the Editor's note with the following:

The combined delay variation through the transmit path of the Nx25G-EPON PCS and PMA is expected to be less than 6 EQTs for channels operating at 25.78125 GBd and less than 15 EQTs for channels operating at 10.3125 GBd.

The combined delay variation through the receive path of the Nx25G-EPON PCS and PMA is expected to be less than 2 EQTs for channels operating at 25.78125 GBd and less than 5 EQTs for channels operating at 10.3125 GBd.

The aforementioned delay limits are applicable only for the data units (either EQ or the corresponding 257-bit block) located at the fixed offset within the FEC codeword.

Cl **142** *SC* **142.1.3** *P* **88** *L* **24** # 507

Remein, Duane Futurewei Technologie

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

Why is "(SP)" used to explain "FEC-unprotected area"? There is no lone "SP" in the figure.

SuggestedRemedy

Strike the wayward "(SP)"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change

synchronization pattern (SP) zones.

To

synchronization pattern zones.

Change

The upstream burst begins with a FEC-unprotected area (SP), comprising several explicit zones, each playing a separate role: SP1 zone, optimized for laser on (Ton) and Automatic Gain Control (AGC, Tsettling); SP2 zone, optimized for Clock and Data Recovery (CDR, TCDR); and SP3 zone, optimized for the start-of-burst delimiter (SBD) pattern. Each SP element is a multiple of 257 bits, aligning with the PCS (defined in 142.2 and 142.3) line code of 256B/257B.

to

The upstream burst begins with a synchronization pattern, which is not FEC protected. The synchronization pattern is comprised of: SP1 zone, optimized for laser on (Ton) and Automatic Gain Control (AGC, Tsettling); SP2 zone, optimized for Clock and Data Recovery (CDR, TCDR); and SP3 zone, optimized for the start-of-burst delimiter (SBD) pattern. Each SP element is a multiple of 257 bits, aligning with the PCS (defined in 142.2 and 142.3) line code of 256B/257B.

Cl **142** *SC* **142.1.3** *P* **88** *L* **27** # 508

Remein, Duane Futurewei Technologie

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

Are these zones or elements? "Each SP element … "

SuggestedRemedy

Change "Each SP element" to "Each zone"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "Each SP element" to "Each SP zone"

Cl **142** *SC* **142.1.3** *P* **88** *L* **34** # 509

Remein, Duane Futurewei Technologie

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

Remove the editor's note. Discovery operations are well addressed in the draft and no additional details are needed in this overview section.

SuggestedRemedy

per comment

Response *Response Status* **C**

ACCEPT.

Cl **142** *SC* **142.1.3.1** *P* **89** *L* **35** # 510

Remein, Duane Futurewei Technologie

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

What is "Tsetting"? The figure uses "Tsettling" while in 141.7.14.1 we use "Treceiver_settling". We should be consistent.

SuggestedRemedy

Use Tsettling throughout the draft (subscripted).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Use T_{rx_settling} throughout the draft (subscripted).

Cl **142** *SC* **142.2.1** *P* **90** *L* **48** # 511

Remein, Duane Futurewei Technologie

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

The following statement is redundant with the last ending sentence of the para preceding just before this one. "The PCS bit transmission order is illustrated in Figure 142–5."

SuggestedRemedy

Strike and remove the redundant statement.

Response *Response Status* **C**

ACCEPT.

Cl **142** *SC* **142.2.4** *P* **92** *L* **35** # 512

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **D** *FEC delay*

We should enforce a constant delay in the FEC Encoder, regardless of the size of the encoded FEC CW (i.e., even when the CW is shortened).

SuggestedRemedy

Add the following: "The FEC encoder shall have a constant delay for each FEC codeword including shortened codewords."
Add requirement to PICS.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

While reasonable, I fail to see how a simple word statement achieves just that. Also, it is not clear what the advantage of this proposal is for say, adding delay at the end of the burst for shortened codewords.

Cl **142** *SC* **142.2.4.2** *P* **95** *L* **25** # 641

Kramer, Glen Broadcom

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

QC-LDPC abbreviation is not defined

SuggestedRemedy

add to 1.5:
QC_LDPC quasi-cyclic low-density parity code

Throughout the draft, replace "LDPC" with "QC-LDPC"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

add to 1.5:

QC-LDPC quasi-cyclic low-density parity code

Throughout the draft, replace "LDPC" with "QC-LDPC"

Cl **142** *SC* **142.2.4.2** *P* **95** *L* **53** # 513

Remein, Duane Futurewei Technologie

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

Is the one double quoted u" (and p" on pg 96) correct?

SuggestedRemedy

Change to double prime (pg/ln: 95/52, 96/34, 96/35, 95/36, 96/42 (x2))

Response *Response Status* **C**

ACCEPT.

Cl **142** *SC* **142.2.4.2** *P* **96** *L* **1** # 514

Remein, Duane Futurewei Technologie

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

Figure 142–6—FEC encoder we should id what's in the FEC Encoder and what is in other SD's

SuggestedRemedy

Change figure to match remein_3ca_5_0319 (or remein_3ca_5_0319.Fig 142-6.vsd, red highlight can be omitted).
Make the same modifications to Figure 142A-1.

Response *Response Status* **C**

ACCEPT.

Cl **142** *SC* **142.2.5.1** *P* **101** *L* **38** # 640

Kramer, Glen Broadcom

Comment Type **T** *Comment Status* **A** *142.2.5.1*

There is nothing undefined in the definitions of FEC_PARITY_SIZE and FEC_PAYLOAD_SIZE

SuggestedRemedy

Replace "{10 TBD}" with "10"
Replace "{56 TBD}" with "56"
For both definitions, replace "Unit: 257 bits" with "Unit: 257-bit block"

Response *Response Status* **C**

ACCEPT.

Cl **142** *SC* **142.2.5.1** *P* **101** *L* **41** # 515

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **A** *142.2.5.1*

Value for FEC_PARITY_SIZE (10), and FEC_PAYLOAD_SIZE (56) need not be marked TBD

SuggestedRemedy

Strike offensive red TBD and curly braces in two places.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #640

Cl **142** *SC* **142.2.5.1** *P* **101** *L* **42** # 637

Kramer, Glen Broadcom

Comment Type **TR** *Comment Status* **A** *142.2.5.1*

TBDs in the definitions of FEC_PARITY_SIZE and FEC_PAYLOAD_SIZE constants.

SuggestedRemedy

The provided values are correct. Remove braces {} and TBDs.
Replace "Unit: 257 bits" with "Unit: 257-bit block"

Response *Response Status* **C**

ACCEPT.

See comment #640

Cl **142** *SC* **142.2.5.1** *P* **101** *L* **51** # 639

Kramer, Glen Broadcom

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

Action item to update definition of IBI (missing value)

SuggestedRemedy

Use the following definition:

IBI258
Type: 258-bit block
Description: The IBI258 constant holds the value of the inter-burst idle pattern.
Value: 0x0-(0A)₃₂

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Per comment + update IBI in Figure 142–11/12 to IBI258

Cl **142** *SC* **142.2.5.1** *P* **102** *L* **2** # 456

Remein, Duane Futurewei Technologie

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

The description "The IBI constant holds the value of the inter burst idle pattern." is incorrect as the inter burst idle pattern is only 257 bits long. (Note all other instance put a dash between inter and burst).
Also IBI value: need not be TBD

SuggestedRemedy

Change
"Description: The IBI constant holds the value of the inter burst idle pattern." to read
"Description: The IBI constant holds the value of the inter-burst idle pattern with a prepended MSB indicating the lower 257 bits are not scrambled."
Change Value to "0x0-(0A)32" with 32 subscripted (binary 00 concatenated with 32 x 0x0a)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #639

Cl **142** *SC* **142.2.5.1** *P* **102** *L* **4** # 457

Remein, Duane Futurewei Technologie

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

In most of the constant/variable/… definitions where we have “See x.y.x” there is no ending period. Technically I would classify these statements as sentences and they therefore should have a period. I notice in the current standard both forms are supported.

SuggestedRemedy

Throughout the draft add the ending period in each case. If staff object change wording to "This variable is defined in x.y.x." where x.y.x is the reefed clause.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Staff does remove the ending periods in these statements.

Cl **142** *SC* **142.2.5.2** *P* **102** *L* **33** # 635

Kramer, Glen Broadcom

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

ClkOut and ClkXfer are defined in terms of PMD output rate. This is not correct as the relationship should be the opposite: The PMD output rate is driven by the PMA clock.

Also, missing text on ONU loop-timing and the definitions of PMA transmit clock.

SuggestedRemedy

Modify definitions of ClkOut and ClkXfer in PCS and add missing text to the PMA subclause as shown in kramer_3ca_10_0319.pdf.

Response *Response Status* **C**

ACCEPT.

Cl **142** *SC* **142.2.5.2** *P* **102** *L* **34** # 458

Remein, Duane Futurewei Technologie

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

It would be good to ensure ClkOut for each channel is phase aligned.

SuggestedRemedy

Add to the description of ClkOut "in PHYs supporting multiple channels the ClkOut for each PCS instance is phase aligned.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #635

Cl **142** *SC* **142.2.5.2** *P* **102** *L* **43** # 459

Remein, Duane Futurewei Technologie

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

"... the MCRS Input Process …" really? I think not. Same issue:
pg 103 line 43, and 47

SuggestedRemedy

Change MCRS to PCS

Response *Response Status* **C**

ACCEPT.

Cl **142** *SC* **142.2.5.2** *P* **103** *L* **7** # 460

Remein, Duane Futurewei Technologie

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

The following variables should be italicized.
Pg 103 line 7 "TxFifo[]"
Pg 103 line 11 "ParityLeft"
Pg 103 line 16 "PayloadLeft"

SuggestedRemedy

per comment

Response *Response Status* **C**

ACCEPT.

Cl **142** *SC* **142.2.5.2** *P* **103** *L* **34** # 430

Hajduczenia, Marek Charter Communicatio

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

A "should" statement that is not intended to be an optional requirement: " … from the array should be sent to the TxFifo"

SuggestedRemedy

Change to read "from the array is sent to the TxFifo"

Response *Response Status* **C**

ACCEPT.

Cl **142** *SC* **142.2.5.3** *P* **104** *L* **36** # 461

Remein, Duane Futurewei Technologie

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

Missing articles.

SuggestedRemedy

Change
"data received from xMII" to
"data received from the xMII"

Response *Response Status* **C**

ACCEPT.

Cl **142** *SC* **142.2.5.3** *P* **104** *L* **44** # 624

Kramer, Glen Broadcom

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

Scramble() and Descramble() functions are not defined symattrically. Descramble takes a single 66b block and descrambles it. Scramble() takes an array of 66b blocks and scrambles 4 blocks at once.

Showing both functions operating on 66b is clearer and also would make it consistent with how these functions are defined in C49.

SuggestedRemedy

1) In Figure 142-10, replace
xBuffer[3:0] <= Scramble(xBuffer[3:0])
with
xBuffer[0] <= Scramble(xBuffer[0])
xBuffer[1] <= Scramble(xBuffer[1])
xBuffer[2] <= Scramble(xBuffer[2])
xBuffer[3] <= Scramble(xBuffer[3])

2) Use the following definition of Scramble (symmetric to Descramble):
Scramble(blk)
Description: This function accepts one 66-bit block blk and performs the scrambling operation on the 64-bit payload of the block, as described in 49.2.6. The returned value is a scrambled 66-bit block.

Response *Response Status* **C**

ACCEPT.

Cl **142** *SC* **142.2.5.4.1** *P* **106** *L* **1** # 652

Kramer, Glen Broadcom

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

Draft 1.4 added the scrambler initialization function ResetScrambler(), but it only showed it for the receiving side. The same function should be applied to the transmitting side

SuggestedRemedy

1) Insert text "ResetScrambler()" to state RESET_XBUF in Fig 142-12.
2) Move definition of ResetScrambler() function from 142.3.5.3 to 142.2.5.3
3) Replace the body of ResetScrambler() function definition in 142.3.5.3 with a reference to 142.2.5.3

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

1) Insert text "ResetScrambler()" to state RESET_XBUF in Fig 142-10.
2) Copy definition of ResetScrambler() function from 142.3.5.3 to 142.2.5.3
3) Replace the body of ResetScrambler() function definition in 142.3.5.3 with a reference to 142.2.5.3

Cl **142** *SC* **142.2.5.4.1** *P* **106** *L* **20** # 644

Kramer, Glen Broadcom

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

In state diagram 142-10, the following transition has ambiguous precedence or operations:

TxNext = RATE_ADJ_EQ OR
TxNext = IBI_EQ AND
xIndex = 0

SuggestedRemedy

Cnage the transition to the following:

TxNext = RATE_ADJ_EQ OR
(TxNext = IBI_EQ AND
xIndex = 0)

Response *Response Status* **C**

ACCEPT.

Cl **142** *SC* **142.2.5.4.3** *P* **105** *L* **34** # 462

Remein, Duane Futurewei Technologie

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

True or true (we are again using both). 30 instances of true 6 of True. Same if true for false/False (but only one False).

SuggestedRemedy

Pick one and be consistent.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Use "true" and "false" when in the middle of the sentence.

Cl **142** *SC* **142.2.5.4.3** *P* **105** *L* **36** # 463

Remein, Duane Futurewei Technologie

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

Grammar

SuggestedRemedy

Change:
"and data is being sent towards the PMA for transmission" to
"and the data is sent towards the PMA for transmission"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change:
"and data is being sent towards the PMA for transmission" to
"and data is sent towards the PMA for transmission"

Cl **142** *SC* **142.3** *P* **105** *L* **48** # 464

Remein, Duane Futurewei Technologie

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

Unclosed parenthetical

SuggestedRemedy

Change
"(25/25G-EPON, 50/25G-EPON, and 50/50G-EPON" to
"(25/25G-EPON, 50/25G-EPON, and 50/50G-EPON)"

Response *Response Status* **C**

ACCEPT.

Cl **142** *SC* **142.3.1** *P* **106** *L* **53** # 465

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **D** *FEC delay*

The FEC decoder should enforce a constant delay (i.e., same delay for shortened CWs ad for full length CWs)

SuggestedRemedy

Add the following: "The FEC decoder shall have a constant delay for each FEC codeword including shortened codewords."
Add requirement to PICS.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

While reasonable, I fail to see how a simple word statement achieves just that. Also, it is not clear what the advantage of this proposal is for say, adding delay at the end of the burst for shortened codewords.

Cl **142** *SC* **142.3.3** *P* **108** *L* **45** # 466

Remein, Duane Futurewei Technologie

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

The Descrambler in Cl 49.2.10 is 58 bits long, IBI_EQ is 72 bits. I assume that the lower 58 bits of IBI_EQ are being used

SuggestedRemedy

Change:
"the descrambler is initialized with the unscrambled value of IBI_EQ" to
"the descrambler is initialized with the lower 58 bits of the unscrambled value of IBI_EQ"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change:
"the descrambler is initialized with the unscrambled value of IBI_EQ"
to
"the descrambler is initialized with the lower 58 bits of the unscrambled value of IBI_EQ, i.e., bits s[0] through s[57] as shown in Figure 142–14."

in 142.2.2 Scrambler, change

the scrambler is initialized with the unscrambled value of IBI_EQ (see 143.3.3.3)

to

the scrambler is initialized with the unscrambled value of IBI_EQ (see 143.3.3.3), i.e., bits s[0] through s[57] as shown in Figure 142–5.

the scrambler is initialized with the unscrambled value of 0x88-88-88-88-88-88-88-88-88-88-88-88-8.

Cl **142** *SC* **142.3.4** *P* **109** *L* **40** # 467

Remein, Duane Futurewei Technologie

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

Need Figure 142-14 PCS receive bit ordering.

SuggestedRemedy

See remein_3ca_7_0319.pdf (also in .vsc format).

Response *Response Status* **C**

ACCEPT.

Note to Editor: make sure all lines are reproduced correctly (some are very thin).

Cl **142** *SC* **142.3.5.1** *P* **110** *L* **28** # 468

Remein, Duane Futurewei Technologie

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

SBD257 is defined as a constant yet some TF members indicate that it can change burst to burst and should therefore be a variable.

SuggestedRemedy

Move to 142.3.5.2. Globally change to Sbd257 (3x excluding SDs). Change the description from
"The SBD257 constant represents the start-of-burst delimiter, and its value is equal to either SP2 or SP3, depending on the most recently provisioned synchronization pattern (see 142.1.3.1). Once provisioned, this value does not change and is treated as constant by the state diagram." to
"The Sbd257 variable represents the most recently provisioned start-of-burst delimiter. Its value is equal to either SP2 or SP3, depending on the most recently provisioned synchronization pattern (see 142.1.3.1)."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Move to 142.3.5.2. Change the description from:
"The SBD257 constant represents the start-of-burst delimiter, and its value is equal to either SP2 or SP3, depending on the most recently provisioned synchronization pattern (see 142.1.3.1). Once provisioned, this value does not change and is treated as constant by the state diagram."
to
"The SBD257 variable represents the start-of-burst delimiter, and its value is equal to either SP2 or SP3, depending on the most recently provisioned synchronization pattern (see 142.1.3.1). Once provisioned, this value does not change and is treated as constant by the state diagram."

========== STAYS open for now

Cl **142** *SC* **142.3.5.2** *P* **111** *L* **18** # 469

Remein, Duane Futurewei Technologie

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

This description of PayloadLeft is a bit misleading, it has nothing to do with the FEC CW _reaching_ it's max length.

SuggestedRemedy

Change:
"This variable holds the number of EQs remaining until the FEC codeword payload reaches the maximum allowed length." to
"This variable holds the number of EQs remaining until one maximum length FEC codeword payload has been sent to the xMII."

Response *Response Status* **C**

ACCEPT.

Cl **142** *SC* **142.3.5.2** *P* **111** *L* **30** # 470

Remein, Duane Futurewei Technologie

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

This description of RateAdjLeft is a bit misleading, as the current FEC CW doe not fill any gaps left by the removal of FEC CW Parity.

SuggestedRemedy

Change:
"This variable holds the number of EQs remaining to be generated for the current FEC codeword to fill the gap left by the removal of FEC codeword parity data." to read
"This variable holds the number of EQs remaining to be generated in the PCS Output Process to fill the gap left by the removal of FEC codeword parity data from the current FEC codeword ."

Response *Response Status* **C**

ACCEPT.

Cl **142** *SC* **142.3.5.2** *P* **111** *L* **36** # 471

Remein, Duane Futurewei Technologie

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

While this definition is accurate it does nothing to help the reader understand what is going on without sending him or her in circles for additional definitions.

SuggestedRemedy

Change:
"storing up to FEC_CW_BLK_SZ 257-bit blocks" to read
"storing one full FEC codeword in blocks of 257-bits."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change:
"storing up to FEC_CW_BLK_SZ 257-bit blocks" to read
"storing one full FEC codeword."

Cl **142** *SC* **142.3.5.3** *P* **112** *L* **40** # 472

Remein, Duane Futurewei Technologie

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

This function definition seems overly complex. It is only used in the Synchronizes SDs and always take the same argument for "buffer", which is not a FIFO.
Note this is also the only mention of PMA_UNITDATA.indication in the draft which should include a channel reference "[ch]"

SuggestedRemedy

Change name to "ShiftInput(n),
Change description to "This function inserts n new bits at the MSB of the RxInput buffer via the PMA_UNITDATA.indication[i]<256:0> primitive while removing the same number of bits at the LSB of the buffer. The ShiftInput() function is blocking and its execution takes exactly n bit times at the given receiving line rate.
Update Synchronization SDs.

Response *Response Status* **C**

REJECT.

Unclear what the issue with the current definition really is (apart from overly complex, being subjective).

Cl **142** *SC* **142.3.5.4** *P* **113** *L* **1** # 473

Remein, Duane Futurewei Technologie

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

How can a process implement itself?
YASIP (Yet Another Self Implementing Process).

SuggestedRemedy

Change:
"The OLT Synchronizer Process shall implement an instance of state diagram as depicted in Figure 142–15 for every enabled receive channel." to
“The OLT shall implement an instance of Synchronizer Process as depicted in Figure 142–15 for every enabled receive channel.”

Response *Response Status* **C**

ACCEPT.

Update PICS accordingly

Cl **142** *SC* **142.3.5.5** *P* **113** *L* **1** # 474

Remein, Duane Futurewei Technologie

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

How can another process implement itself?
YASIP (Yet Another Self Implementing Process).

SuggestedRemedy

Change:
"The ONU Synchronizer Process shall implement an instance of state diagram as depicted in Figure 142–16 for every enabled receive channel." to
"The ONU shall implement an instance of Synchronizer Process as depicted in Figure 142–16 for every enabled receive channel."

Response *Response Status* **C**

ACCEPT.

Update PICS accordingly.

Cl **142** *SC* **142.3.5.6** *P* **113** *L* **49** # 645

Laubach, Mark Broadcom

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

PCS BER monitor Process text is currently TBD.

SuggestedRemedy

Insert new BER monitoring function variables, text, and SD as per laubach_3ca_1_0319.pdf. Update Clause 45 registers used for EPON BER monitoring function as per laubach_3ca_2_0139.pdf.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Update PICS

Use laubach_3ca_1_0319.pdf with the following changes:

- "terminating iterations before reaching the maximum count (e.g., < 15)." to "terminating iterations without exceeding the maximum count (e.g., 15)."
- "The ONU PCS shall perform the operation of the LDPC BER monitor shown in Figure 142-X." to "The ONU shall implement an instance of the LDPC BER monitor shown in Figure 142-X for each active downstream channel."

Use laubach_3ca_2_0319.pdf with the following changes:

- in Table 45–216, 3.81.0, "10GBASE-PR or 10/1GBASE-PRX PCS" needs to be struck out

Cl **142** *SC* **142.3.5.7** *P* **114** *L* **32** # 475

Remein, Duane Futurewei Technologie

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

potential number confusion: "56 257-bit blocks" is this 56,257-bit blocks with a missing comma or 56 x 257-bit blocks? The reader is left to wonder.

SuggestedRemedy

Change to "fifty-six 257-bit blocks"

Response *Response Status* **C**

ACCEPT.

Cl **142** *SC* **142.3.5.7** *P* **114** *L* **39** # 476

Remein, Duane Futurewei Technologie

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

How can any process implement itself?
YASIP (Yet Another Self Implementing Process).

SuggestedRemedy

Change:
"The PCS Output Process shall implement an instance of state diagram as depicted in Figure 142–17 for every enabled receive channel." to
"The PCS shall implement an instance of Output Process as depicted in Figure 142–17 for every enabled receive channel."

Response *Response Status* **C**

ACCEPT.

Update PICS

Cl **142** *SC* **142.4.1** *P* **114** *L* **50** # 651

Powell, William Nokia

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

PMA control register for CL45

SuggestedRemedy

Proposal to be available before the meeting starts.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Use slides 12-14 from powell_3ca_1a.pdf

Cl **142** *SC* **142.4.1** *P* **115** *L* **34** # 477

Remein, Duane Futurewei Technologie

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

In Fig 142-18 & 142-19. The default state for Cl 45 registers to "do nothing" is typically "0" and not "1". The Diff encoder should follow that principle.

SuggestedRemedy

Change "Control: 1 = off 0 =on" to "Control: 1 = on 0 = off"
Ensure Cl 45 matches this convention

Update PICS as needed.

Response *Response Status* **C**

ACCEPT.

Cl **142** *SC* **142.5** *P* **117** *L* **1** # 423

Hajduczenia, Marek Charter Communicatio

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

PICS needed and missing

SuggestedRemedy

Use hajduczenia_3ca_2_0319.pdf

Response *Response Status* **C**

ACCEPT.

Cl **143** *SC* **143.1** *P* **119** *L* **10** # 478

Remein, Duane Futurewei Technologie

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

Don't need to callout the same figure 2x in one para

SuggestedRemedy

Strike "(see Figure 143–1)"

Response *Response Status* **C**

ACCEPT.

Wrong Clause (was 141, corrected to 143)

Cl **143** *SC* **143.1** *P* **119** *L* **46** # 479

Remein, Duane Futurewei Technologie

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

We SHOULD have a convention for Conventions! They should all be in the Overview.

SuggestedRemedy

Move 143.3.3.1 Conventions, 143.3.4.1 Conventions to 143.1.1 Conventions.
We can leave 144.1.6 at it's low priority in Cl 144.1 Overview

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **143** *SC* **143.2.3** *P* **120** *L* **45** # 540

Remein, Duane Futurewei Technologie

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

In Cl 143 we need to distinguish MPRS channel from PMD channel or some other type of channel
Note that several of the proposed changes in this comment affect variable definitions, hence the "must be satisfied" designation.

SuggestedRemedy

In the following instances change channel to MCRS channel
pg/Line Current text
120/45 "MCRS transmit channels"
121/25 "multiple channels, envelopes may overlap"
125/42 "the number of channels supported"
126/43 "on different channels"
126/48 "on different channels carried"
127/2 "the receive channel write pointer"
127/14 "skew of the received channels"
127/21 "over all channels the receiver"
131/14 "envelope on channel ch" {ch should be in italics here}
131/22 "envelope in a given channel"
135/24 "ch - channel index" (left Figure 143-11)
136/13 "number of channels supported"
137/8 "current envelope for channel c."
137/28 "or Output Process for channel c."
137/45 "TX_CLK signal for channel c"
137/49 "indicates that channel c"
138/33 "(i.e., all channels are idle)"
139/2 "fill the transmit channel when"
140/28 "for each channel implemented"
142/30 "current LLID for that receive channel."
146/23 "for each channel implemented."
146/30 "data from multiple channels is"
151/10 "Both the channel rate asymmetry"
151/29 "operation over a single channel"
152/3 "receive channels are active"
152/8 "associated with the receive channel"
152/34 "pointers for all channels increment"

Globally replace "channel bonding" with "MCRS channel bonding"

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Context is clear, IMO, and adding MCRS in each every listed instance does not help with the readabilty in any way.

Cl **143** *SC* **143.2.3** *P* **152** *L* **51** # 619

Remein, Duane Futurewei Technologie

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

AI #21 Delay variability

SuggestedRemedy

Change:
"The actual delay is implementation dependent but an implementation shall maintain a combined delay variation through MCRS of no more than {TBD} EQ (see TBD 144.x.x.x) so as not to interfere with the MPCP timing." to
"The actual delay is implementation dependent but an implementation is expected to maintain a delay variation through the MCRS of no more than ± two EQT when operating at 25 Gbps and ± three EQT when operating at 10 Gbps so as not to interfere with the MPCP timing."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In 143.4.2, remove: "During the normal operation of a registered ONU, the delay any EQ experience in the EnvRx buffer is inversely correlated with the accumulated skew and jitter that this EQ encountered after leaving the EnvTx buffer in the transmitting MCRS, such that the sum of the two delays remain constant."

In 143.4.3, replace content with: "The Multi-Point Control Protocol (MPCP) relies on strict timing based on the distribution of timestamps. The MCRS is designed to allow a delay variability of up to 64 EQTs. During the normal operation of a registered ONU, the delay any EQ experiences in the EnvRx buffer is complementary to the accumulated skew and jitter that this EQ encountered after leaving the EnvTx buffer in the transmitting MCRS, such that the sum of the two delays remain constant."

Cl **143** *SC* **143.2.5.3** *P* **125** *L* **44** # 541

Remein, Duane Futurewei Technologie

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

While this statement is true it provides no guidance on the upper limit for the mechanism (160 ns due to the structure of the header).
"If an application requires additional skew mitigation the number of buffer rows can be increased."

SuggestedRemedy

Change the sentence to read: "If an application requires additional skew mitigation, up to 180 ns of skew can be accommodated by increasing the number of buffer rows."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the sentence to read: "If an application requires additional skew mitigation, up to +-81.92 ns of skew >>>may<<< be accommodated by increasing the number of buffer rows."

Cl **143** *SC* **143.3.1.1.1** *P* **130** *L* **1** # 622

Kramer, Glen Broadcom

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

Tables 143-1 and 143-2 are never introduced or referenced in text.

SuggestedRemedy

Add the following sentence just before Table 143-1:
"Depending on the MAC operating speed, the PLS_DATA.request primitive maps to one or multiple xMII transmit interfaces (see Table 143-1)."

Add the following sentence just before Table 143-2:
"Depending on the MAC operating speed, the PLS_DATA.indication primitive maps to one or multiple xMII receive interfaces (see Table 143-2)."

Response *Response Status* **C**

ACCEPT.

Cl **143** *SC* **143.3.1.3** *P* **131** *L* **36** # 542

Remein, Duane Futurewei Technologie

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

This statement is nonsequitur "For multi-channel MCRS systems the transmit XGMIIs are synchronous and only one TX_CLK is required." there is only one 10G channel ever (we don't support 20G).

SuggestedRemedy

Strike the sentence.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

This is a generic section, so multiple instances of XGMIIs are possible in some non-Nx25G-EPON implementation.

Cl **143** *SC* **143.3.2** *P* **132** *L* **38** # 543

Remein, Duane Futurewei Technologie

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

The xRef to Table 143–
3 should not cross the line.

SuggestedRemedy

per comment

Response *Response Status* **C**

ACCEPT.

Cl **143** *SC* **143.3.2.1** *P* **133** *L* **50** # 544

Remein, Duane Futurewei Technologie

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

Table 143–4 to 6, what is the meaning of the offensive highlighting?

SuggestedRemedy

Remove the offensive highlighting.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change highlight to gray + add footnote to tables indicating gray highlight with the text "Gray highlight indicates location and calculated value of CRC8 field" + remove "arrow" in Tables 143-4 through 6.

Cl **143** *SC* **143.3.3.2** *P* **135** *L* **42** # 638

Kramer, Glen Broadcom

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

Editor's Note (to be removed prior to publication) in the future, references to other applications-specific parameters are to be added in this subclause.

SuggestedRemedy

Just remove this note. There are no draft changes needed at this time.

Response *Response Status* **C**

ACCEPT.

Cl **143** *SC* **143.3.3.3** *P* **135** *L* **49** # 545

Remein, Duane Futurewei Technologie

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

Style, ADJ_BLOCK_SIZE s/b in italics in description.

SuggestedRemedy

per comment

Response *Response Status* **C**

ACCEPT.

Cl **143** *SC* **143.3.3.3** *P* **135** *L* **51** # 546

Remein, Duane Futurewei Technologie

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

Is there some real good reason to send the reader in an reef wild goose chase?

SuggestedRemedy

Change "(see 143.3.3.2)" to "(For Nx25G-EPON see 143.4.1.3)".
Do the same at the following locations (Pg/Line): 136/14, 136/34.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert a para in 143.3.3.2 at the end:

NOTE-References to future application-specific parameters are be added only to this subclause.

Cl **143** *SC* **143.3.3.3** *P* **136** *L* **7** # 547

Remein, Duane Futurewei Technologie

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

Apparently IEI_EQ mean Inter-Envelope Idle somewhere, but not here.

SuggestedRemedy

Change "Inter-Envelope Idle" to "IEI_EQ" (in italics of course)

Response *Response Status* **C**

ACCEPT.

Cl **143** *SC* **143.3.3.3** *P* **136** *L* **32** # 548

Remein, Duane Futurewei Technologie

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

The effective MAC rate is also dependent on the number of channels being used and the rate of that channel. And what is the "nominal MAC rate" anyway? It is not defined.

SuggestedRemedy

Change:
"The effective MAC rate is equal to <nominal MAC rate>" to
"The instantaneous MAC rate within a single envelope is equal to <xMII rate>"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "The effective MAC rate" to "The effective MAC rate (per channel)"

Cl **143** *SC* **143.3.3.3** *P* **136** *L* **39** # 549

Remein, Duane Futurewei Technologie

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

We are very inconsistent with the use of "ch" and "c" and seem to use these two variables interchangeable and/or without definition (for "c" anyway). I would like to suggest we adopt one and us it consistently. However, this is probably better left until after getting into WG Ballot so I will withdraw this comment against D1.5 (assuming we intent to go to WG ballot with 1.6).
Note there are 16 instances of "[c]" and 27 of "[ch]" with possible a few other variants of each so I will probably suggest changing "c" to "ch".
We are also quite inconsistent with including the [x] (where x = ch, c or something else) in variable definitions.

SuggestedRemedy

If anyone has an objection to this please voice it now.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace all "c" designators of channel with "ch"

Cl **143** *SC* **143.3.3.3** *P* **137** *L* **1** # 550

Remein, Duane Futurewei Technologie

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

Elsewhere we state that EnvRx or EnvTx have 32 rows (Fig 143-11/12) Here we state it is 64. We should be more precise

SuggestedRemedy

Change:
"The number of rows is 64, as determined by" to
"The number of rows can be up to 64, as determined by the expected skew remediation and"

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **143** *SC* **143.3.3.3** *P* **137** *L* **30** # 551

Remein, Duane Futurewei Technologie

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

rCol and rRow are modified in 143.4.1.3.2 but this is not mentioned here.

SuggestedRemedy

Add a cross reference to each "Also see 143.4.1.3.2"

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

The definitio is correct for generic section. Nx25G-EPON specific section overrides these definitions. Otherwise, the generic section would not be really generic.

Cl **143** *SC* **143.3.3.4** *P* **137** *L* **44** # 552

Remein, Duane Futurewei Technologie

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

The is no "TX_CLK signal for channel c" there is only one TX_CLK.

SuggestedRemedy

Strike "for channel c"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Modify defintion as follows

TxClk[c]
Type: Boolean
Description: The TxClk[c] variable represents the MCRS transmit clock for channel c. Each TxClk[c] clear on read variable is set to true on each edge, rising and falling, of the TX_CLK signal (see Table 143–1).

Cl **143** *SC* **143.3.3.6.1** *P* **140** *L* **12** # 553

Remein, Duane Futurewei Technologie

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

YASIP (Yet Another Self Implementing Process).

SuggestedRemedy

Change:
"The MCRS Input Process shall implement the state diagram as depicted in Figure 143–12." to
"The MCRS shall implement the Input Process as depicted in Figure 143–12."

Response *Response Status* **C**

ACCEPT.

Update PICS

Cl **143** *SC* **143.3.3.6.2** *P* **140** *L* **25** # 554

Remein, Duane Futurewei Technologie

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

YASIP (Yet Another Self Implementing Process).

SuggestedRemedy

Change:
"The MCRS Transmit Process shall implement the state diagram as depicted in Figure 143–13." to
"The MCRS shall implement the Transmit Process as depicted in Figure 143–13."

Response *Response Status* **C**

ACCEPT.

Update PICS

Cl **143** *SC* **143.3.4.3** *P* **144** *L* **12** # 555

Remein, Duane Futurewei Technologie

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

The is no "application-specific EnvRx definition in 143.3.3.2" to see in 143.3.3.2. Change the ref to

SuggestedRemedy

Strike the parenthetical.

Response *Response Status* **C**

ACCEPT.

Cl **143** *SC* **143.3.4.3** *P* **144** *L* **25** # 556

Remein, Duane Futurewei Technologie

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

If OutClk is set True on each positive edge of TX_CLK this cannot be true; "and runs at half the frequency of TX_CLK"

SuggestedRemedy

Strike the erroneous phrase

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

"The OutClk clear on read variable is set to True on each rising edge of TX_CLK and runs at half the frequency of TX_CLK."

to

"The OutClk clear on read variable is set to true on each rising edge of TX_CLK."

Cl **143** *SC* **143.3.4.3** *P* **144** *L* **51** # 557

Remein, Duane Futurewei Technologie

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

"from a xMII"

SuggestedRemedy

change to "from an xMII"

Response *Response Status* **C**

ACCEPT.

Cl **143** *SC* **143.3.4.4** *P* **145** *L* **28** # 558

Remein, Duane Futurewei Technologie

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

In IsHeader we note what "0xFB" is, here we do not.

SuggestedRemedy

Add comment to line so it reads:
"return (eq<7:0> == 0xF8 AND // Start Control Code /S/"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Just because a value happen to be 0xFB, it does not mean in this particular context it is the Start Control Code. These are TXC bits and the value 0xFB means that the following 8 octets consist of 5 control codes and 3 data octets, which is what one would expect if we have a misaligned header.

Add "// Control bits" to the first line of code

Cl **143** *SC* **143.3.4.5.1** *P* **146** *L* **16** # 559

Remein, Duane Futurewei Technologie

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

YASIP (Yet Another Self Implementing Process).

SuggestedRemedy

Change:
"The MCRS Receive Process shall implement the state diagram as depicted in Figure 143–15." to
"The MCRS shall implement the Receive Process as depicted in Figure 143–15."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change:
"The MCRS Receive Process shall implement the state diagram as depicted in Figure 143–15." to
"The ONU and OLT MCRS shall implement the Receive Process as depicted in Figure 143–15."

Update PICS

Cl **143** *SC* **143.3.4.5.2** *P* **146** *L* **27** # 560

Remein, Duane Futurewei Technologie

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

YASIP (Yet Another Self Implementing Process).

SuggestedRemedy

Change:
"The MCRS Output Process shall implement the state diagram as depicted in Figure 143–16." to
"The shall implement the MCRS Output Process as depicted in Figure 143–16."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change:
"The MCRS Output Process shall implement the state diagram as depicted in Figure 143–16." to
"The ONU and OLT MCRS shall implement the MCRS Output Process as depicted in Figure 143–16."

Update PICS

Cl **143** *SC* **143.3.4.5.2** *P* **147** *L* **30** # 420

Hajduczenia, Marek Charter Communicatio

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

Figure 143–15 caption "MCRS Receive Function, Receive Process state diagram" seems wrong - it is in output section

SuggestedRemedy

Change Figure 143–15 caption to read "MCRS Receive Function, Output Process state diagram"

Response *Response Status* **C**

REJECT.

Caption is correct as is

Cl **143** *SC* **143.4.1** *P* **150** *L* **11** # 561

Remein, Duane Futurewei Technologie

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

What does item b) mean? "The data and delimiters are synchronous to clock reference." Which "clock reference", 25.7..G or 25G or something else.

SuggestedRemedy

Strike b)

Response *Response Status* **C**

ACCEPT.

Cl **143** *SC* **143.4.1.1** *P* **150** *L* **26** # 621

Kramer, Glen Broadcom

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

New line character is missing before "The 50/50G-EPON architecture…" and before "When two channels…"

SuggestedRemedy

Add two new line characters. Also move the paragraph on lines 31-34 to be after the Table 143-7.

Response *Response Status* **C**

ACCEPT.

Cl **143** *SC* **143.4.1.1** *P* **150** *L* **44** # 562

Remein, Duane Futurewei Technologie

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

We need not mention that UC0 can be used for ONU discovery (so can every other US channel)

SuggestedRemedy

Strike ", ONU discovery"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Per comment + the same channel for DC0

Cl **143** *SC* **143.4.1.2** *P* **151** *L* **7** # 563

Remein, Duane Futurewei Technologie

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

Give the para is discussing 25/10 and 50/25 systems this statement is deceiving "In 50/25G-EPON systems, the asymmetric data rate is achieved via the MCRS channel number asymmetry, where two MCRS channels are active in the downstream direction (DC0 and DC1), but only a single MCRS channel UC0 is active in the upstream direction. Note that every upstream and downstream MCRS channels operate at the data line rate of 25 Gb/s."

SuggestedRemedy

Change to: "In 50/25G-EPON systems, the asymmetric data rate is achieved via the MCRS channel number asymmetry, where two MCRS channels are active in the downstream direction (DC0 and
DC1), but only a single MCRS channel UC0 is active in the upstream direction. In 50/25G-EPON systems, upstream and downstream MCRS channel operates at the data line rate of 25 Gb/s."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change to: "In 50/25G-EPON systems, the asymmetric data rate is achieved via the MCRS channel number asymmetry, where two MCRS channels are active in the downstream direction (DC0 and DC1), but only a single MCRS channel UC0 is active in the upstream direction. In 50/25G-EPON systems, upstream and downstream MCRS >>>channels operate<<< at the data rate of 25 Gb/s."

Cl **143** *SC* **143.4.2** *P* **151** *L* **43** # 564

Remein, Duane Futurewei Technologie

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

What is so special about "Time" in "MCRS Time synchronization"?

SuggestedRemedy

use lower case

Response *Response Status* **C**

ACCEPT.

Line is 43, not 41 (fixed)

Cl **143** *SC* **143.4.2** *P* **151** *L* **45** # 565

Remein, Duane Futurewei Technologie

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

Read and write pointers are not just set at ONU registration. "Such delay margin is established at the ONU registration time by proper setting of MCRS EnvRx read and write pointers at the OLT and the ONU."

SuggestedRemedy

Change to:
"Such delay margin is established at the ONU registration time and by proper setting of MCRS EnvRx read and write pointers at the OLT and the ONU at the start of a burst transmission."

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

The rest of this subclause explains that there are special steps taken only on unregistered ONUs (see ONU step 2.b and OLT step 1.b on page 152). These steps establish the initial delay margin. After the ONU is registered, the delay margin is maintained automatically, because it is already part of RTT.

Cl **143** *SC* **143.4.2** *P* **151** *L* **51** # 617

Remein, Duane Futurewei Technologie

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

AI #20 MCRS Time Sync line 30 & 50. There is no real need to discuss FEC delay in Cl 143 (RS).

SuggestedRemedy

Strike the phrase ", which introduces a near-constant (± {TBD} EQT) delay" in 2 places.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Strike "(± {TBD} EQT)" in on page 151, line 50 and page 152, line 15

Cl **143** *SC* **143.4.2** *P* **151** *L* **52** # 566

Remein, Duane Futurewei Technologie

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

This sentence doesn't seem to flow with the para. "The following are the ONU rules for setting the EnvRx write and read pointers:"

SuggestedRemedy

Start it on a new para.

Response *Response Status* **C**

ACCEPT.

Cl **143** *SC* **143.4.2** *P* **152** *L* **28** # 618

Remein, Duane Futurewei Technologie

Comment Type **E** *Comment Status* **A** *631*

AI #20 MCRS Time Sync line 10

SuggestedRemedy

Strike "see (TBD))"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This TBD has nothing to do with the AI to MCRS timing delay. This TBD was simply intended to be a reference to subclause that described the discovery windows. That subclause did not exist at the time of the MCRS writing, but it does exist now.

Replace TBD with 144.1.1.3

Cl **143** *SC* **143.4.2** *P* **152** *L* **37** # 643

Kramer, Glen Broadcom

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

The following sentence on lines 37-38 is duplication of the sentence on lines 8-9:
"In an unregistered ONU, upon every update of a write pointer associated with the receive channel with the lowest index, the read pointer is also updated according to the following equation:"

The second sentence was not present in the accepted contribution.

SuggestedRemedy

Delete the sentence on lines 37-38.

Response *Response Status* **C**

ACCEPT.

Cl **143** *SC* **143.4.2** *P* **152** *L* **38** # 567

Remein, Duane Futurewei Technologie

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

Stray para "In an unregistered transmitting, upon every update of a write pointer associated with the receive channel with the lowest index, the read pointer is also updated according to the following equation:"

SuggestedRemedy

This is in the first 2) ReadPointer item above. Strike the statement.

Response *Response Status* **C**

ACCEPT.

Cl **143** *SC* **143.4.2** *P* **152** *L* **40** # 568

Remein, Duane Futurewei Technologie

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

In the last para it is claimed that "The above set of rules ensures that a delay of 32 EQT is built into the ONU MCRS receive path and a similar delay of 32 EQT is built into the OLT MCRS receive path." which is hardly true as the number 32 is never mentioned in the "above rules", furthermore EPAM can clearly assume a value of 64 so if a device is designed with a larger EnvRx there will be more than 32 EQ delay.
Later in the para it is stated "built-in margin of 64 EQT" is also incorrect

SuggestedRemedy

Change to:
"The EnvRx buffer combined with the above rules ensure there is a constant delay (determined by the size of the EnvRx buffer, typically 32 EQ) built into the MCRS receive path."
and "built-in margin of up to 128 EQT (typically 64 EQT)"

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

COMMENT: In the last para it is claimed that "The above set of rules ensures that a delay of 32 EQT is built into the ONU MCRS receive path and a similar delay of 32 EQT is built into the OLT MCRS receive path." which is hardly true as the number 32 is never mentioned in the "above rules",

REBUTTAL: The number is mentioned twice, in the equations in ONU step 2.b and OLT step 1.b (0x20 = 32)

COMMENT: furthermore EPAM can clearly assume a value of 64 so if a device is designed with a larger EnvRx there will be more than 32 EQ delay.

REBUTTAL: The nominal delay through EnvRx is established to be exactly half the buffer size. If the buffer has 64 entries (row) the delay is 32, which is what we have now. The nominal delay is half the buffer, so that we can correct both positive and negative skews. A skew outside of range [-32EQT, 32EQT] cannot be corrected with 64-entry buffers.

COMMENT: Later in the para it is stated "built-in margin of 64 EQT" is also incorrect

REBUTTAL: The sentence talks about the total nominal MCRS delay built into the round-trip, which includes 32 EQT in the ONU EnvRx and 32 EQTs in the OLT EnvRx. See the previous sentence in the draft.

Cl **143** *SC* **143.4.2** *P* **152** *L* **44** # 569

Remein, Duane Futurewei Technologie

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

"the delay any EQ experience" should be "the delay any EQ experiences"
and
"that this EQ encountered" should be "that this EQ encounters"
and
"two delays remain constant" should be "two delays remains constant"

SuggestedRemedy

per comment

Response *Response Status* **C**

ACCEPT.

Cl **143** *SC* **143.4.3** *P* **153** *L* **1** # 570

Remein, Duane Futurewei Technologie

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

Strike "Editor's Note (to be removed prior to publication): in the above paragraph derived from Cl 76.1.2, "1
TQ" was changed to "TBD EQ". In Cl 76.1.2 this applied to the combined MCRS, PCS, & PMA. A
revised value is needed." it has served it purpose.

SuggestedRemedy

per comment

Response *Response Status* **C**

ACCEPT.

Cl **143** *SC* **143.5** *P* **154** *L* **1** # 424

Hajduczenia, Marek Charter Communicatio

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

PICS needed and missing

SuggestedRemedy

Use hajduczenia_3ca_3_0319.pdf

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144** *P* **156** *L* **1** # 571

Remein, Duane Futurewei Technologie

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

If we insist on defining TLAs (or FLAs) then we should insist they be used.

SuggestedRemedy

In Cl 144 replace "Multipoint MAC Control" or "Multipoint MAC Control (MPMC)" with "MPMC" except in first use, figures and titles.
In titles use "Multipoint MAC Control (MPMC)" consistently.

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.1** *P* **156** *L* **21** # 572

Remein, Duane Futurewei Technologie

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

If we insist on defining TLAs (or FLAs) then we should insist they be used.

SuggestedRemedy

In Cl 144 after pg 156 line 19 replace "Multipoint control protocol" or "Multipoint control protocol (MPCP)" with "MPCP" except in figures and subclause titles.
In titles use "Multipoint control protocol (MPCP)" consistently.

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.1** *P* **156** *L* **23** # 573

Remein, Duane Futurewei Technologie

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

CCP in defined multiple time in different ways.

SuggestedRemedy

At this location change "Channel control protocol (CCP)" to "Channel Control Protocol (CCP)"
Everywhere else in Cl 144 replace any variant of channel control protocol with CCP except for the title of 144.4 which can remain as is.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Per comment + change page 156/21, "Multipoint control protocol (MPCP)" to "Multipoint Control Protocol (MPCP)"

Cl **144** SC **144.1** P **156** L **27** # 574
Remein, Duane Futurewei Technologie

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

Clause 141 does not define a PHY "Physical Layer devices defined in Clause 141"

SuggestedRemedy

Change to "Physical Layer devices defined in Clause 141 and Clause 142"

Response *Response Status* **C**

ACCEPT.

Cl **144** SC **144.1.1** P **156** L **30** # 516
Remein, Duane Futurewei Technologie

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

If we insist on defining TLAs (or FLAs) then we should insist they be used.

SuggestedRemedy

Move the acrimonious definition of "(P2MP)" to line 27. Thereafter In Cl 144 replace "Point-to multipoint", "point-to multipoint", "point-to-multipoint" (or any other stray variants) with "P2MP" except in figures and subclause titles and remove an parenthesis around "P2MP". In figures and title use "Point-to multipoint" consistently.

Response *Response Status* **C**

ACCEPT.

Cl **144** SC **144.1.1.1** P **156** L **42** # 517
Remein, Duane Futurewei Technologie

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

This statement is not quite correct "To avoid upstream data collisions, only a single ONU is allowed to transmit at a time."

SuggestedRemedy

Change to "To avoid upstream data collisions, transmission windows (grants) for all ONUs are controlled such that only a single ONUs transmission reaches the OLT at a given instant."
Strike "(grant)" later in the para.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change to "To avoid upstream data collisions, transmission windows (grants) for all ONUs are controlled in such a way that only a single ONU's transmission reaches the OLT at any given time."

Cl **144** SC **144.1.1.2** P **157** L **26** # 518
Remein, Duane Futurewei Technologie

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

MCRS has not yet been defined in this clause

SuggestedRemedy

change "MCRS (below the MAC)" to "Multi-Channel Reconciliation Sublayer (MCRS, below the MAC)"

Response *Response Status* **C**

ACCEPT.

Cl **144** SC **144.1.1.3** P **157** L **49** # 631
Kramer, Glen Broadcom

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

Action item to provide "ONU Discovery and Regsitration" introduction text (144.1.1.3)

SuggestedRemedy

Use the text for subclause 144.1.1.3 as shown in kramer_3ca_2_0319.pdf. Notice subclause title capitalization.

Response *Response Status* **C**

ACCEPT.

Cl **144** SC **144.1.3** P **159** L **7** # 633
Kramer, Glen Broadcom

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

The MAC Control block diagram shows MPCP, but doesn't show CPP. This comment addresses two action items to show both MPCP and CPP on Figures 144-3 and 144-4.

SuggestedRemedy

The proposed solution is to present block diagrams in hierarchical manner. Figures 144-3 and 144-4 will show CCP and MPCP as just two boxes, without any internal details. A two new figures showing just the MPCP (OLT and ONU) block diagrams are to be added to the MPCP subclause. A two more new figures, showing just the CCP (OLT and ONU) block diagrams are to be added to the CCP subclause.

All the proposed changes and the new figures are shown in the kramer_3ca_8_0319.pdf. This contribution also provides solutions for action items 26 (missing text in "Principles on MPCP") and 27 (TBD in MAC delay variability).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Use kramer_3ca_8a_0319.pdf, except for "Delay variability requirements"

Cl **144** *SC* **144.1.4** *P* **159** *L* **50** # 519

Remein, Duane Futurewei Technologie

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

Is this statement correct? Per Fig 144-1 it is not. "The Multipoint MAC Control does not interface with any MAC Clients."

SuggestedRemedy

Strike the statement.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In Figure 144–1/2, change "MAC CLIENT" sitting above OAM to "MPMC CLIENT". Same change in Clause 143, 142, and 141

Cl **144** *SC* **144.1.4** *P* **159** *L* **52** # 520

Remein, Duane Futurewei Technologie

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

Change "using service" to "using the service"

SuggestedRemedy

per comment

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.1.4.1** *P* **160** *L* **38** # 521

Remein, Duane Futurewei Technologie

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

MAC Control Service (MCS) Interface or
MAC Control Service (MCS) interface

SuggestedRemedy

Pick one and be consistent.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Use "MAC Control Service (MCS) interface"

Cl **144** *SC* **144.1.4.1** *P* **160** *L* **40** # 522

Remein, Duane Futurewei Technologie

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

Missing articles.

SuggestedRemedy

Change:
"MCS interface is an interface between MAC Control sublayer and MAC Control Client above it (see Figure 144–3 and Figure 144–4). The definition and behavior of MAC Control Client is outside the scope of this standard." to:
The MCS interface is an interface between the MAC Control sublayer and the MAC Control Client above it (see Figure 144–3 and Figure 144–4). The definition and behavior of the MAC Control Client is outside the scope of this standard.

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.1.4.1** *P* **160** *L* **44** # 523

Remein, Duane Futurewei Technologie

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

In several places in Clause 144 the term "MAC Control Client" is used to refer to the OLT MPMC Client or ONU MPMC Client. It would be better is we used the full and proper name. MAC Control Client appears 32x in the Clause.

SuggestedRemedy

Use "OLT MPMC Client" and "ONU MPMC Client" as appropriate. Where OLT/ONU is clear based on context in the paragraph this _may_ be shortened to "MPMC Client".

There are several locations in the text where "MAC Control Client" is correct and should not be changed: (Pg/Ln) 159/3, 159/52, and 160/40-46.

Additional notes:
pg 198 line 18 change "local MAC Control Client" to "OLT MPMC Client"
pg 198 line 29 change "local MAC Control Client" to "its MPMC Client"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace "MAC Control Client" with "MPMC Client"

Cl **144** *SC* **144.1.4.1** *P* **160** *L* **49** # 524

Remein, Duane Futurewei Technologie

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

Neither MCS:MA_CONTROL.indication(opcode, indication_operand_list) nor MCS:MA_CONTROL.request(destination_address, opcode, request_operand_list)are defined anywhere in 31

SuggestedRemedy

Strike the "MCS:"

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

What is defined is MA_CONTROL, MCS is jst an instance indication. Text is correct as is.

Cl **144** *SC* **144.1.4.2** *P* **161** *L* **10** # 525

Remein, Duane Futurewei Technologie

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

Neither MCI:MA_CONTROL.indication(opcode, indication_operand_list) nor MCI:MA_CONTROL.request(destination_address, opcode, request_operand_list) are defined anywhere in 31

SuggestedRemedy

Strike the "MCI:"

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

What is defined is MA_CONTROL, MCI is jst an instance indication. Text is correct as is.

Cl **144** *SC* **144.1.4.3** *P* **161** *L* **23** # 526

Remein, Duane Futurewei Technologie

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

Neither MAC:MA_DATA.indication(destination_address, source_address, mac_service_data_unit, frame_check_sequence, reception_status) nor MAC:MA_DATA.request(destination_address, source_address, mac_service_data_unit, frame_check_sequence)) are defined anywhere in Cl 2.

SuggestedRemedy

Strike the "MAC:"

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

What is defined is MA_CONTROL, MAC is jst an instance indication. Text is correct as is.

Cl **144** *SC* **144.2** *P* **162** *L* **1** # 527

Remein, Duane Futurewei Technologie

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

Assuming we consider received frames can also be forwarded it would be more precise to use transmitted here.

SuggestedRemedy

Change "source of the forwarded frames" to "source of the transmitted frames"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "the source of the forwarded frames." to "the source of the frames to be transmitted."

Cl **144** *SC* **144.2** *P* **162** *L* **2** # 528

Remein, Duane Futurewei Technologie

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

What exactly does this mean "This block is responsible for handling the MPCP in the context of the MAC."?

SuggestedRemedy

Change to "This block is responsible for bringing ONUs on-line.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Strike c), d), and e)

Cl **144** *SC* **144.2..3** *P* **163** *L* **8** # 634

Kramer, Glen Broadcom

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

Typo in the definition of RttCurrent

SuggestedRemedy

Replace "QEQT" with "EQT"

Response *Response Status* **C**

ACCEPT.

Fixed clause and subclause (144, not 1454)

Cl **144** *SC* **144.2.1** *P* **162** *L* **12** # 529

Remein, Duane Futurewei Technologie

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

Missing "the" or "The" in the following location s(pg/line/following text)
162/12 "Control Parser"
162/13 "Timestamp field"
162/17 "Control Multiplexor"
162.14 "timestamp drift"
166/13 "REGISTER_REQ MPCPDU"
166/13 "timestamp value"
166/14 "MCRS_CTRL.request primitive"
166/15 "Envelope Activation Process"
174/2 "REPORT MPCPDU transmission"
175/6 "LLID equal"
187/27 "maximum delay the ONU"
189/9 "DISC_PLID value."
191/37 "unicast PLID and BCAST_PLID values,"
193/29 "MsgEnvGroup is generated"
200/29Change this:
"MAC Control Client may monitor and react to the changes in the state of the downstream and/or upstream channels, allowing ONU notify the OLT of observed or expected channel state changes. For example, MAC Control Client may have ability to detect failure of one of channel receivers.
To notify MAC Control Client at the OLT about a local channel state change, the Channel Control Protocol performs the following sequence of steps:" to this:
"The MAC Control Client may monitor and react to the changes in the state of the downstream and/or upstream channels, allowing the ONU notify the OLT of observed or expected channel state changes. For example, the MAC Control Client may have ability to detect a failure of one of the channel receivers.
To notify the MAC Control Client at the OLT about a local channel state change, the Channel Control Protocol performs the following sequence of steps:"
200/37 "MAC Control Client at the ONU"
200/40 "MAC Control Client in the OLT"
200/42 "MAC Control Client in the OLT"

SuggestedRemedy

Add missing "the" or "The" as appropriate.

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.2.1** *P* **162** *L* **20** # 636

Kramer, Glen Broadcom

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

Action item #24 to address TBD values for DRIFT_THOLD.
Further review of the given text revealed that there are also issues in the MPCP Control Multiplexor and Control Parser state diagrams.

Currently, these state diagrams are not showing that the MPCP interfaces with multiple MAC instances and they use RTT[PLID] without any indication of whether the PLID value came from.

Also, the timestamp processing is not quite right. While the text somewhere else says that a large timestamp jump is expected when we receive a new PLID MPCPDU, the state diagrams did not allow that.

SuggestedRemedy

I am proposing the make the maximum timestamp drift 2 EQT for 25G receive channels and 3 EQT for 10G receive channels. Normally, at 25G, we should expect zero drift and at 10G we can expect a drift of +- 1, since some upstream EQs (6.4 ns @ 10G) can land in the middle of an EQT (always 2.56 ns). A small safety margin is added, since a timestamp drift causes immediate ONU deregistration.

Use updated definitions of DRIFT_THOLD constant, ProcessTimestamp() function, and Control Multiplexor/Parser state diagrams as shown in kramer_3ca_9_0319.pdf.

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.2.1.2** *P* **162** *L* **37** # 530

Remein, Duane Futurewei Technologie

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

An evil red highlighted statement says "{TBD reference to Clause 142 needed}."

SuggestedRemedy

Replace the evil red highlighted text with "142.4.3"

In Cl 142 add:
142.4.3 Loop-timing specifications for ONUs
ONUs shall operate at the same time basis as the OLT, i.e., the ONU transmit clock tracks the ONU receive clock. Jitter transfer masks are defined in 141.6.2.
For the ONUs supporting 10G transmission in the upstream direction, the PMA received clock is 25.78125 GHz, however, the PMA transmit clock is 10.3125 GHz. The loop timing is achieved by dividing the PMA received clock by 2.5.

Update PICS.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #635

Cl **144** *SC* **144.2.1.3** *P* **162** *L* **43** # 531

Remein, Duane Futurewei Technologie

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

Per our agreed style this should be Msdu

SuggestedRemedy

Globally replace with proper style

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Is it really a technical comment?

Cl **144** *SC* **144.2.1.3** *P* **162** *L* **46** # 532
Remein, Duane Futurewei Technologie

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

Per our agreed style this should be Opcode

SuggestedRemedy

Replace variable opcode with Opcode *i.e., with proper style) use care as there are lots of instances (46 or so) of the word opcode in the draft.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Is it really a technical comment?

Cl **144** *SC* **144.2.1.3** *P* **163** *L* **7** # 533
Remein, Duane Futurewei Technologie

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

Unit: QEQT?

SuggestedRemedy

Change to Unit: EQT

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.2.1.3** *P* **163** *L* **16** # 534
Remein, Duane Futurewei Technologie

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

Per our agreed style this should be SupportedOpcode

SuggestedRemedy

Globally replace with proper style

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Is it really a technical comment?

Changing supported_opcode to SupportedOpcodes + make changes in state diagrams.
Similar change from timestamp_opcode to TimestampOpcodes

Cl **144** *SC* **144.2.1.3** *P* **163** *L* **20** # 535
Remein, Duane Futurewei Technologie

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

Per our agreed style this should be TimestampOpcode

SuggestedRemedy

Globally replace with proper style

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Is it really a technical comment?

See comment #534

Cl **144** *SC* **144.2.1.3** *P* **163** *L* **24** # 536
Remein, Duane Futurewei Technologie

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

Per our agreed style this should be TimestampDrift

SuggestedRemedy

Globally replace with proper style

Response *Response Status* **C**

ACCEPT.

Is it really a technical comment?

Cl **144** *SC* **144.3.1.1** *P* **165** *L* **36** # 537
Remein, Duane Futurewei Technologie

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

see 143.3.3.3 should be see 143.3.3.4 (2x in this para)

SuggestedRemedy

per comment

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.3.1.1** *P* **165** *L* **41** # 538

Remein, Duane Futurewei Technologie

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

Won't this cause false timestamp drift errors? "The time reference point for the timestamp value is the transmission time of the Envelope Start Header (ESH) of the envelope that includes the MPCPDU (see 143.3.2). In situations where multiple MPCPDUs are transmitted within a single envelope, all these MPCPDUs shall have the same timestamp value, referencing the transmission time of ESH."
Each MPCPDU will be off by 8 EQTs from the previous MPCPDU when processed. assuming DRIFT_THOLD is reasonably small this will cause an error if to many (3?) PMCPDUs are included in the same burst. The error will be even more pronounced (2.5x) in 10G US links.

SuggestedRemedy

Reconsider this statements

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Reconsidered, no changes needed.

Cl **144** *SC* **144.3.1.1** *P* **166** *L* **20** # 448

Knittle, Curtis CableLabs

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

"movement" should be "moment"

SuggestedRemedy

Replace "movement" with "moment"

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.3.1.1** *P* **166** *L* **50** # 539

Remein, Duane Futurewei Technologie

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

This maybe true if physics is non-deterministic. "this delay may be different on different channels"

SuggestedRemedy

Use a more deterministic statement:
"this delay is different on different channels"

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

If you're 10 feet from the OLT, the delay difference is below the precision threshold. Current statement is correct as is.

Cl **144** *SC* **144.3.1.1** *P* **167** *L* **20** # 575

Remein, Duane Futurewei Technologie

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

When did FTTH become a movement? "the movement when"

SuggestedRemedy

Change "movement to "moment"

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.3.1.1** *P* **167** *L* **21** # 449

Knittle, Curtis CableLabs

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

"movement" should be "moment"

SuggestedRemedy

Replace "movement" with "moment"

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.3.1.1** *P* **167** *L* **24** # 576

Remein, Duane Futurewei Technologie

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

Why is this para indented? Why are equations interspersed with text?
There appear to be dots after TUP and t1 on lines 30 & 32.

SuggestedRemedy

For lines 23 - 33 use unindented text (Style T,Text in FM) for all plain text and unnumbered equation (Style EU,EquationUnnumbered in FM) for each equation (anything with the form of x = …). All equations should be on a separate line. Try to remove the stray dots

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Lines 24 - 33 to be formatted into numbered list

Cl **144** *SC* **144.3.1.1** *P* **167** *L* **34** # 577

Remein, Duane Futurewei Technologie

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

"GATE generation Process" should be "GATE Generation process" There is no "GATE Generation Process"

SuggestedRemedy

per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

"GATE generation Process" should be "GATE Generation Process"

Cl **144** *SC* **144.3.1.1** *P* **167** *L* **35** # 578

Remein, Duane Futurewei Technologie

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

"All MPCPDUs send by the
OLT on unicast PLID have the"

SuggestedRemedy

change to "All MPCPDUs sent by the
OLT on unicast PLIDs have the"

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.3.1.1** *P* **167** *L* **35** # 450

Knittle, Curtis CableLabs

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

"send" should be "sent"

SuggestedRemedy

Replace "send" with "sent"

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.3.1.1** *P* **168** *L* **38** # 579

Remein, Duane Futurewei Technologie

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

"This large difference detected" missing is

SuggestedRemedy

change to "This large is difference detected"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

change to "This large difference is detected" (wrogn place for "is" was suggested)

Cl **144** *SC* **144.3.1.2** *P* **168** *L* **45** # 620

Remein, Duane Futurewei Technologie

Comment Type **TR** *Comment Status* **A** *Delay; PICS*

AI #27 Delay variability

SuggestedRemedy

Change:
"The actual delay is implementation dependent; however, a complying implementation shall maintain a delay variation of no more than <TBD EQs> through the MAC." to
"The actual delay is implementation dependent; however, a complying implementation is expected to maintain a delay variation of no more than ± two EQT when operating at 25 Gbps and ± three EQT when operating at 10 Gbps through the MAC.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace conent of 144.3.1.2 with: "The MPCP protocol relies on strict timing based on distribution of timestamps. A compliant implementation needs to guarantee a constant delay through the MAC and PHY in order to maintain the correctness of the timestamping mechanism. The actual delay is implementation dependent; however, a complying implementation shall maintain the combined delay variation through the MAC and PHY of less than one EQT for channels operating at 25.78125 GBd and less than two EQTs for channels operating at 10.3125 GBd."

Update PICS

Cl **144** *SC* **144.3.2** *P* **169** *L* **1** # 580

Remein, Duane Futurewei Technologie

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

This explanation of LLID type should come earlier in the clause, we've already mention PLID and MLID several time.
(I can bring this comment into WG ballot Draft 2.0 if desired).

SuggestedRemedy

Move sections 144.3.2.1 through 144.3.2.4 under 144.1.1.2 where we explain the entire concept of LLID (so they become 144.1.1.2.1 .. 144.1.1.2.4). Remove 144.3.2.

Response *Response Status* **C**

REJECT.

It was discussed before.

Cl **144** *SC* **144.3.2.3** *P* **169** *L* **19** # 581

Remein, Duane Futurewei Technologie

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

"an ONUs using" should be either "an ONU using" or "ONUs using"

SuggestedRemedy

change ONUs to ONU

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.3.2.3** *P* **169** *L* **20** # 451

Knittle, Curtis CableLabs

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

Extraneous 's' in "ONUs"

SuggestedRemedy

Remove the 's'

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.3.2.3** *P* **169** *L* **21** # 452

Knittle, Curtis CableLabs

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

"An" should be "A"

SuggestedRemedy

Replace "An ULID…" with "A ULID…"

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.3.3** *P* **170** *L* **16** # 653

Kramer, Glen Broadcom

Comment Type **TR** *Comment Status* **A** *postdeadline; PICS*

Generally, when the NMS provisions an ULID into an ONU, that provisioning will come with a set of corresponding rules that tells the ONU how to handle traffic on that ULID (what UNI for forward to, what filtering to apply, etc.). If an ONU is required to accept traffic on BCAST_ULID by default, but there are no rules provisioned for BCAST_ULID, the ONU won't know what to do.

So, having predefined BCAST_ULID is not helpful. A broadcast ULID can simply be terated as a special case of multicast ULID and be provisioned when needed (together with its specific rules).

SuggestedRemedy

Remove BCAST_ULID row from Table 144-1.
Remove Broadcast ULID bullet item on line 28.
Update PICS accordingly.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Update PICS

Change

0x10-00
to
0xFF-FE

to

0x10-00
to
0xFF-FF

Cl **144** *SC* **144.3.3** *P* **170** *L* **20** # 418

Hajduczenia, Marek Charter Communicatio

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

"All unregistered ONUs shall only accept envelopes with DISC_PLID values. Upon successful registration, an ONU shall no longer accept envelopes with DISC_PLID." - this text contains requirements repeated from the Table 144–1.

SuggestedRemedy

To avoid unnecessary repetition, rewrite the text into a statement and leave PICS in the table: "All unregistered ONUs only accept envelopes with DISC_PLID values. Upon successful registration, an ONU does no longer accept envelopes with DISC_PLID."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

To avoid unnecessary repetition, rewrite the text into a statement and leave PICS in the table: "All unregistered ONUs only accept envelopes with DISC_PLID values. Upon successful registration, an ONU no longer accepts envelopes with DISC_PLID."

Cl **144** *SC* **144.3.4** *P* **170** *L* **36** # 419

Hajduczenia, Marek Charter Communicatio

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

No shall for the generic MPCPDU structure and needed

SuggestedRemedy

Change "The MPCPDU structure is shown in Figure 144–9, and is further defined as follows:" to "The MPCPDU structure shall be as shown in Figure 144–9, and is further defined as follows:"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

All specific MPCPDUs already have requirements covering generic format of MPCPDU. No new shall needed.

Remove PICS

Cl **144** *SC* **144.3.4** *P* **170** *L* **38** # 582

Remein, Duane Futurewei Technologie

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

"Length/Type:" and "Opcode:" should be italicized as all other fields are. Alternatively in all either field definitions we could use non-italics.

SuggestedRemedy

Use Italics style.

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.3.4.1** *P* **171** *L* **39** # 583

Remein, Duane Futurewei Technologie

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

"envelope allocations with non-zero value of the LLID field"

SuggestedRemedy

change to "envelope allocations with a non-zero value for the LLID field"

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.3.4.1** *P* **172** *L* **28** # 584

Remein, Duane Futurewei Technologie

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

We should be more specific that "for the Envelope Header"

SuggestedRemedy

Change to "for the ESH"

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.3.4.1** *P* **172** *L* **34** # 585

Remein, Duane Futurewei Technologie

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

We can be more precise "this old fragment is transmitted first"

SuggestedRemedy

change to "some or all of this old fragment is transmitted first"

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

The Suggested Remedy increases ambiguity, as it appears that it is ok to transmit a little piece of the queued fragment and then transmit other frames, while some of that fragment still remains queued.

Cl **144** *SC* **144.3.4.3** *P* **175** *L* **10** # 586

Remein, Duane Futurewei Technologie

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

The following field name should be in italics (pg/line name)
175/10 "Opcode"
180/50 "LLID"

SuggestedRemedy

per comment

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.3.4.3** *P* **176** *L* **10** # 587

Remein, Duane Futurewei Technologie

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

Apparently LaserOffTime units are much more important than LaserOnTime units.

SuggestedRemedy

Under "LaserOnTime:" change
"The value of LaserOffTime is expressed in the units of EQT." to
"The value of LaserOnTime is expressed in the units of EQT."

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.3.4.6** *P* **179** *L* **48** # 630

Kramer, Glen Broadcom

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

DiscoveryInfo needs to have additional flags to control access based on G/X coexistence. The DISCOVERY MPCPDU definition needs to explain the expected ONU behavior for different settings of DiscoveryInfo flags.

SuggestedRemedy

Update the DISCOVERY MPCPDU definition as shown in kramer_3ca_3_0319.pdf (changes are tracked)

Response *Response Status* **C**

ACCEPT.

Update PICS

Cl **144** *SC* **144.3.4.7** *P* **182** *L* **3** # 588

Remein, Duane Futurewei Technologie

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

This statement implies there is only one value for Sync Pat, delivered before Discovery and it never changes. "Generally, the SYNC_PATTERN MPCPDUs are transmitted in envelopes with LLID equal to DISC_PLID (see 144.3.3)." Yet we have stated multiple times that the SP can be freely changed by the OLT. Note that registered ONUs are forbidden from receiving DISC_PLID envelopes.

SuggestedRemedy

Change as follows:
"The OLT announces the synchronization pattern to unregistered ONUs in envelopes with the LLID equal to DISC_PLID (see 144.3.3) before issuing a DISCOVERY message.
Italicize LLID in the above
Add to the end o the last sentence in this para "until changed by the OLT"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change

An ONU that received all the required synchronization patterns and subsequently registered with the OLT, continues to use the same synchronization patterns after the registration.

To

An ONU that received all the required synchronization patterns and subsequently registered with the OLT, continues to use the same synchronization patterns after the registration (unless changed by the OLT).

Cl **144** *SC* **144.3.5** *P* **183** *L* **34** # 589

Remein, Duane Futurewei Technologie

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

This is a poor cross reference "see 144.3.4.7" given the previous explanation of SP1/2/3 and FEC unprotected areas of US burst.

SuggestedRemedy

Change xRef to 143.1.3.

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.3.5** *P* **183** *L* **38** # 590

Remein, Duane Futurewei Technologie

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

Does this apply to any SP MPCPDU or only those sent to DISC_PLID? "If a SYNC_PATTERN MPCPDU is received"
Given that a unregistered ONU doesn't listen to other PLIDS I would guess this only applied to DISC_PLID.

SuggestedRemedy

Change to "a SYNC_PATTERN MPCPDU sent to the DISC_PLID is received"

Response *Response Status* **C**

REJECT.

Context is clear. No changes needed.

Cl **144** *SC* **144.3.5** *P* **185** *L* **1** # 642

Kramer, Glen Broadcom

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

In Figure 144-17, the use of the "+" sign is confusing, as it may imply addition of multiple fiueld values.

The footnote 1 is wrong. Discovery process uses DISC_PLID, not BCAST_PLID.

SuggestedRemedy

1) Change footnote 1 to "Messages sent on disocvery PLID (DISC_PLID)"
2) Use "|" (concatenation) instead of "+"
3) Show MPCPDU field names exactly as defined in 144.3.4
4) Also, the boxes representing the messages may easily be narrowed, so that arrows are more visible.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

1) Change footnote 1 to "Messages sent on discovery PLID (DISC_PLID)"
2) Use "|" (concatenation) instead of "+"
3) Show MPCPDU field names exactly as defined in 144.3.4
4) The boxes representing the messages may easily be narrowed, so that arrows are more visible.

Cl **144** *SC* **144.3.5** *P* **185** *L* **15** # 421

Hajduczenia, Marek Charter Communicatio

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

Figure 144–17 indicates that DISCOVERY MPCPDU is transmitted on a broadcast PLID - looking at Table 144-1, we have BCAST_PLID and DISC_PLID. Based on description in Table 144-1, it seems that DISC_PLID would be more appropriate for DISCOVERY MPCPDU than BCAST_PLID.

SuggestedRemedy

In Figure 144-17, in box for DISCOVERY MPCPDU, change footnote 1 to 4. Add a new footnote 4 with the following text: "Messages send on a discovery PLID (DISC_PLID, see Table 144-1)"
Also, change "Messages sent on a broadcast PLID" to read "Messages sent on a broadcast PLID (BCAST_PLID, see Table 144-1)"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #642

Cl **144** *SC* **144.3.5.1** *P* **186** *L* **11** # 429

Hajduczenia, Marek Charter Communicatio

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

A "should" statement that is not intended to be an optional requirement: " … extra margin that should be reserved at the end of a discovery …"

SuggestedRemedy

Change to read "extra margin reserved at the end of a discovery"

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.3.5.3** *P* **187** *L* **17** # 591

Remein, Duane Futurewei Technologie

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

While this is true where there are FEC CWs GrantMargin has none. "per each FEC codeword"

SuggestedRemedy

Strike "per each FEC codeword"

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.3.5.3** *P* **187** *L* **21** # 592

Remein, Duane Futurewei Technologie

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

Is this receipt of DISCOVERY or REGISTER message "Value: Determined at the time of ONU discovery"?

SuggestedRemedy

Change to "Value: Determined at the time of ONU receipt of REGISET message.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Use the following Value defintion:

GrantMargin is calculated first time when the ONU receives DISCOVERY MPCPDU with Sp1Length, Sp2Length, and Sp3Length. Then, it is recalculated when the ONU receives REGISTER MPCPDU, which may have the same Sp1Length, Sp2Length, and Sp3Length values or different.

Cl **144** *SC* **144.3.5.3** *P* **187** *L* **23** # 593

Remein, Duane Futurewei Technologie

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

This note is some what confusing. What is meant by "Separate" grants? And Also "latter" grant?

SuggestedRemedy

Reword as follows: "If an ONU receives a grant whose start time is less than GrantMargin, that grant is discarded."
italicize GrantMargin

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change

NOTE—if ONU is scheduled separate grants whose start times are less than GrantMargin apart, the latter grant is discarded.

to

NOTE—if an ONU receives a grant with a StartTime within the GrantMargin from the end of the previous grant, then the ONU ignores such a grant.

Cl **144** *SC* **144.3.5.3** *P* **187** *L* **38** # 594

Remein, Duane Futurewei Technologie

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

Wording

SuggestedRemedy

Change:
"This variable indicates the local time at the ONU, at which it REGISTER_REQ MPCPDU is to be transmitted." to
"This variable indicates the local time at which the ONU should transmit the REGISTER_REQ MPCPDU."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change:
"This variable indicates the local time at the ONU, at which it REGISTER_REQ MPCPDU is to be transmitted."
to
"This variable indicates the local time at which the REGISTER_REQ MPCPDU is to be transmitted by the ONU."

Cl **144** *SC* **144.3.5.5** *P* **188** *L* **24** # 595

Remein, Duane Futurewei Technologie

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

Italicize MsgBurstSync.Count

SuggestedRemedy

per comment

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.3.5.5** *P* **188** *L* **32** # 428

Hajduczenia, Marek Charter Communicatio

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

A "should" statement that is not intended to be an optional requirement: " … synchronization pattern should be balanced or not …"

SuggestedRemedy

Change to read "synchronization pattern is balanced or not"

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.3.5.6** *P* **189** *L* **6** # 596

Remein, Duane Futurewei Technologie

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

YASIP (Yet Another Self Implementing Process).

SuggestedRemedy

Change:
"The Discovery Process in the OLT shall implement a single instance of the Discovery Initiation state diagram shown in Figure 144–18." to
"The OLT shall implement a single instance of the OLT Discovery Process shown in Figure 144–18."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Update PICS

Change:
"The Discovery Process in the OLT shall implement a single instance of the Discovery Initiation state diagram shown in Figure 144–18." to
"The OLT MPCP shall implement a single instance of the OLT Discovery Process shown in Figure 144–18."

Cl **144** *SC* **144.3.5.7** *P* **189** *L* **47** # 597

Remein, Duane Futurewei Technologie

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

YASIP (Yet Another Self Implementing Process).

SuggestedRemedy

Change:
"The Discovery Process in the OLT shall implement multiple instances of the Registration Completion state diagram shown in Figure 144–19 where each instance is associated with a unicast PLID being registered." to
"The OLT shall implement multiple instances of the OLT Registration Completion state diagram shown in Figure 144–19 where each instance is associated with a unicast PLID being registered."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Update PICS

Change:
"The Discovery Process in the OLT shall implement multiple instances of the Registration Completion state diagram shown in Figure 144–19 where each instance is associated with a unicast PLID being registered." to
"The OLT MPCP shall implement multiple instances of the OLT Registration Completion state diagram shown in Figure 144–19 where each instance is associated with a unicast PLID being registered."

Cl **144** *SC* **144.3.5.8** *P* **190** *L* **35** # 598

Remein, Duane Futurewei Technologie

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

YASIP (Yet Another Self Implementing Process).

SuggestedRemedy

Change:
"The Discovery Process in the ONU shall implement a single instance of the ONU Registration state diagram shown in F figure 144–20." to
"The ONU shall implement a single instance of the ONU Registration state diagram as shown in Figure 144–20."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Update PICS

Change:
"The Discovery Process in the ONU shall implement a single instance of the ONU Registration state diagram shown in F figure 144–20." to
"The ONU MPCP shall implement a single instance of the ONU Registration state diagram as shown in Figure 144–20."

Cl **144** *SC* **144.3.5.8** *P* **191** *L* **1** # 626

Kramer, Glen Broadcom

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

ONU Registration state diagram needs to check whether the ONU is allowed to register in the given discovery window. This check should be based on granted upstream channels, Rssi limits, X/G coexistence options, and allowed line rates.

SuggestedRemedy

Modify the ONU Registration state diagram (Fig 144-20) and add the necessary variable definitions as shown in kramer_3ca_4_0319.pdf.

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.3.6** *P* **191** *L* **41** # 599

Remein, Duane Futurewei Technologie

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

It must be later by now "<subclause introduction text to be supplied later>"

SuggestedRemedy

Replace the evil red highlighted text with the text from remein_3ca_2_0319.pdf

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Use remein_3ca_2_0319.pdf with the following changes:

- Change "for this standard but may be based" to "for this standard, but may be based"

- change "The upstream granting process begins when the OLT MPMC Client defines a transmission opportunity for an ONU and compiles a GATE message using the MsgGate (see 144.3.4.1) which is sent to the MPMC layer via the MSCR. This generates a GATE message using the process defined in the GATE Generation state diagram (see 144.3.6.7) which is transmitted to the subtended ONUs." to "The upstream granting process begins when the OLT MPMC Client defines a transmission opportunity for an ONU and compiles a GATE message using the MsgGate structure (see 144.3.4.1), which is sent to the MPMC sublayer via the MCSR interface. This generates a GATE MPCPDU using the process defined in the GATE Generation state diagram (see 144.3.6.7). The GATE MPCPDU is transmitted to an ONU."

- change "as defined in the GATE reception" to "as defined in the GATE Reception"

- change all instances of MSCI to MCSI and MSCR to MCSR

- change "This will result in an envelope" to "This results in an envelope"

- change "CTRL[ch].request begin generated in" to "CTRL[ch].request being generated in"

- change "in the DS direction." to "in the downstream direction."

- change "does use the envelope descriptor" to "does use the envelope descriptors"

- change "similar to complementary state diagrams" to "similar to respective state diagrams"

Cl **144** *SC* **144.3.6.3** *P* **192** *L* **40** # 600

Remein, Duane Futurewei Technologie

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

Wording

SuggestedRemedy

Change
"LLID: LLID value of a an envelope descriptor
StartTime: Start time of given envelope. Within a single burst, all envelope descriptions have
the same EnvStartTime value. The StartTime is expressed in units of EQT.
Length: The length of the envelope, including the envelope header. The Length value is expressed in units of EQ." to
"LLID: The LLID value of the envelope.
StartTime: The Start time of the envelope. Within a single burst, all envelopes have the same EnvStartTime value. The StartTime is expressed in units of EQT.
Length: The length of the envelope, including the envelope header. The Length value is expressed in units of EQ."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "LLID value of a an envelope descriptor" to "LLID value of an envelope descriptor"

Change all text instances of EnvStartTime to StartTime and check state diagrams in Clause 144.

Change "Start time of given envelope." to "Start time of the given envelope."

Cl **144** *SC* **144.3.6.3** *P* **192** *L* **51** # 601

Remein, Duane Futurewei Technologie

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

"EnvList[]" should be "EnvList[ch]" (as is used in Description.

SuggestedRemedy

per comment

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **144** *SC* **144.3.6.5** *P* **193** *L* **20** # 602

Remein, Duane Futurewei Technologie

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

GATE messages are required for each ONU not just on an OLT basis.

SuggestedRemedy

Change:
"The OLT is required to generate GATE MPCPDUs with a periodicity of less than GATE_TIMEOUT." to
"The OLT is required to generate GATE MPCPDUs for each active ONU with a periodicity of less than GATE_TIMEOUT."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change

The OLT is required to generate GATE MPCPDUs with a periodicity of less than GATE_TIMEOUT. This timer counts down time remaining before a forced generation of a GATE message in the OLT.

To

Each instance of the OLT Gate Generation state diagram generates GATE MPCPDUs with a periodicity of less than GATE_TIMEOUT. This timer counts down time remaining before a forced generation of a GATE MPCPDU by the given instance of this state diagram.

Cl **144** *SC* **144.3.6.6** *P* **193** *L* **45** # 603

Remein, Duane Futurewei Technologie

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

xRef to an xRef to an … 144.3.6.6 points to 144.3.5.5 which points to 144.3.4.1.

SuggestedRemedy

Change xRef in 144.3.6.6 to 144.3.4.4

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change definition in this location to read:

A set of parameters (operand_list) carried in the GATE MPCPDU, as defined in 144.3.4.1.

Cl **144** *SC* **144.3.6.7** *P* **193** *L* **46** # 604

Remein, Duane Futurewei Technologie

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

In most all cases we refer to GATE not Gate

SuggestedRemedy

Scrub the draft and change the word "Gate" to "GATE" (or even worse gate to GATE) where it refers to a GATE message.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Scrub the draft and change the word "Gate" to "GATE" (or even worse gate to GATE)

Cl **144** *SC* **144.3.6.8** *P* **194** *L* **39** # 605

Remein, Duane Futurewei Technologie

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

No such variable/field as MsgGate.ChMap.

SuggestedRemedy

Change to MsgGate.ChannelMap (3x)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Per comment, also make change on line 17 (Fig 144-21, KEEP_ALIVE_GATE state)

Cl **144** *SC* **144.3.7** *P* **197** *L* **37** # 426

Hajduczenia, Marek Charter Communicatio

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

Text on Discovery process in multi-rate systems is needed and missing

SuggestedRemedy

Use hajduczenia_3ca_5_0319.pdf + add new PICS to address the new "shall" and "should" requirements

Response *Response Status* **C**

ACCEPT.

Update PICS

Cl **144** *SC* **144.4.1** *P* **198** *L* **6** # 632

Kramer, Glen Broadcom

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

Section 144.4.1 uses "unicast CC_REQUEST" 4 times and "unicast CC_RESPONSE" once. Emphasizing that these are unicast messages is confusing because no such emphasis is made for other messages. Is the intention here to require the CCPDUs to use unicast MAC address instead of a well-known MAC Control address? I don't think so. All these messages use the globally-assigned DA 01-80-C2-00-00-01.

SuggestedRemedy

Explain what is meant by "unicast" in CCPDU context (unicast MAC address or unicast logical link) or simply remove the word "unicast"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove the word "unicast" in each references instance

Cl **144** *SC* **144.4.1** *P* **198** *L* **7** # 606

Remein, Duane Futurewei Technologie

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

What is meant here by the term "channel lineup"? Channel capability (which I would define as synonymous with channel lineup) is known through the Discovery process.

SuggestedRemedy

in 7 places change:
"channel lineup" to
"channel status"
Locations (line): 7, 11, 14, 17, 20, 30, 33 (all pg 198)

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.4.1** *P* **198** *L* **8** # 607

Remein, Duane Futurewei Technologie

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

What is this "CCPDU"?

SuggestedRemedy

Defined this FLA before using it: "Channel Control PDU (CCPDU)"

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.4.1.1** *P* **198** *L* **46** # 609

Remein, Duane Futurewei Technologie

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

This statement is almost implying the OLT shuts down a DS channel when there are no ONUs left on that channel. This would make it difficult to bring up a PON. "The OLT data path and transmitter for the given channel may remain active if there are other ONUs configured to receive the data transmitted on this downstream channel."

SuggestedRemedy

Change to:
"The OLT data path and transmitter for the given channel remains active based solely on OLT provisioning."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove "The OLT data path and transmitter for the given channel may remain active if there are other ONUs configured to receive the data transmitted on this downstream channel."

Cl **144** *SC* **144.4.1.3** *P* **199** *L* **41** # 608

Remein, Duane Futurewei Technologie

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

This statement is almost implying the OLT shuts down an US channel when there are no ONUs left on that channel. This would make it difficult to bring up a PON. "The OLT data path and receiver for the given channel may remain active if there are other ONUs configured to transmit data on this upstream channel."

SuggestedRemedy

Change to:
"The OLT data path and receiver for the given channel remains active based solely on OLT provisioning."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove "The OLT data path and receiver for the given channel may remain active if there are other ONUs configured to transmit data on this upstream channel"

Cl **144** *SC* **144.4.1.3** *P* **199** *L* **48** # 610

Remein, Duane Futurewei Technologie

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

Why enable a channel to disable it??

SuggestedRemedy

Change: "enable" to "disable"

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.4.1.3** *P* **199** *L* **52** # 611

Remein, Duane Futurewei Technologie

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

Steps 2 & 4 create a window of uncertainty where the ONU may have disabled an US channel but is still receiving grants for it.

SuggestedRemedy

Change 2) from:
"2) MAC Control Client in the OLT continues to grant the upstream channel UCn on the target ONU." to
"2) MAC Control Client in the OLT may continue to grant the upstream channel UCn on the target ONU."
Change the last sentence of 3) from
"ONU also purges any pending upstream transmission envelopes scheduled for the now disabled upstream channel." to
"The ONU also purges any pending upstream transmission envelopes scheduled for the now disabled upstream channel and ignore any subsequent grants received."
and change 4) from:
"4) MAC Control Client in the OLT stops granting the upstream channel UCn on the target ONU only when the given upstream channel is confirmed to have been disabled on the ONU." to
"4) MAC Control Client in the OLT shall stop granting the upstream channel UCn on the target ONU when the given upstream channel is confirmed to have been disabled on the ONU."

Update PICS and format variables in the above appropriately.

Response *Response Status* **C**

REJECT.

Since the channel is disabled, any transmission will not obviously leave on the disabled channel. No uncertainty is present. Any grants for channels not enabled on the ONU are simply discarded by the ONU.

Cl **144** *SC* **144.4.1.5** *P* **200** *L* **30** # 612

Remein, Duane Futurewei Technologie

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

Wording

SuggestedRemedy

Change:
"allowing ONU notify the OLT" to
"allowing the ONU to notify the OLT"

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.4.2** *P* **200** *L* **45** # 629

Kramer, Glen Broadcom

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

Action item "to rewrite the definitions of CCPDUs using template from MPCPDUs (see 144.3.4)."

SuggestedRemedy

Replace subclause 144.4.2 with the text and drawings provided in kramer_3ca_7_0319.pdf.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Use kramer_3ca_7_0319.pdf with the additional changes, as follows:

In 144.1.1.2 change
“Several single-copy broadcast (SCB) logical links are instantiated automatically. Such links are used to broadcast MPCPDUs, OAMPDUs, or user traffic.”
To
“Several single-copy broadcast logical links are pre-set. Such links may be used to broadcast MPCPDUs, CCPDUs, or OAMPDUs.”

Insert the following text at the end of SSC 144.1.1.2:

Although the OLT and ONUs instantiate multiple MAC entities, each device may use a single MAC address. Within the EPON Network, MAC instances are uniquely identified by their LLID. Some LLID values are pre-set, while other values are dynamically assigned by the Discovery Process (144.3.5).

In 144.3.4, in this sentence “These MACs may all share a single unicast address, as explained in {TBD}.”, replace {TBD} with 144.1.1.2.

In 144.4.2, in this sentence “These MACs may all share a single unicast address, as explained in {TBD}.”, replace {TBD} with 144.1.1.2.

Cl **144** *SC* **144.4.3.5** *P* **207** *L* **7** # 613

Remein, Duane Futurewei Technologie

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

MsgChRequest not defined in "CC_REQUEST CCPDU, as defined in 144.4.2.1" or anywhere else I could search for.
Same issue for MsgChResponse.

SuggestedRemedy

Add a suitable definitions

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

MsgChRequest is just a macro for all parameters in CC_REQUEST CCPDU, as defined in 144.4.2.1

Cl **144** *SC* **144.4.3.5** *P* **207** *L* **18** # 427

Hajduczenia, Marek Charter Communicatio

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

Text makes references to "CCPDU Processing State Diagram" in ONU and OLT, matching state diagrams. However, there are also references to "CCP Processing state diagram" in 144.4.3.6 - these terms should be aligned

SuggestedRemedy

Change all instances of "CCP Processing state diagram" to "CCPDU Processing state diagram" (2 in total, both in 144.4.3.6)

Response *Response Status* **C**

ACCEPT.

Cl **144** *SC* **144.4.3.6** *P* **207** *L* **20** # 654

Kramer, Glen Broadcom

Comment Type **TR** *Comment Status* **A** *postdeadline; PICS*

Comment #625 made it clear that we had an architectureal issue with the channel Control protocol. On one side, we wanted CCP to specify timer-based automatic retransmission. On the other side, we need CCP to support multicast and broadcast operation, where such automatic retransmission is not possible. Comment #625 had to resort to an implementation escape clause, which is not good for interoperability.

Another problem is that the retransmission of frames due to loss/corruption is not in scope for 802.3 (apart from CSMA/CD-MAC-specific mechanisms).

SuggestedRemedy

The proposal is to remove the cc_timer and associated states from CC_REQUEST Processing SD in the OLT. In effect, the decision to retransmit or not, how soon, and how many times will be deferred to CCP Client. The client can also decide whether CC_REQUEST goes on unicast or multicast MLID and how to handle missed response(s) in multicast such case.

New OLT state diagram is shown in kramer_3ca_12_0319.pdf
These changes are also reflected in the updated block diagrams in kramer_3ca_8a_0319.pdf

Response *Response Status* **C**

ACCEPT.

Update PICS

Cl **144** *SC* **144.4.3.6** *P* **207** *L* **22** # 625

Kramer, Glen Broadcom

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

"The CCP Process in the OLT shall implement multiple instances of the CCP Processing state diagram shown in Figure 144–29 where each instance is associated with a MLID being registered."

MLID "being registered" does not mean that it was successfully registered. Alos, we may want to allow operators to switch channles in mutiple ONUs at once, using broadcast or multicals MLID.

SuggestedRemedy

1) Replace "with a MLID being registered." with "with each registered MLID."
2) Add the following text after the "with each registered MLID.":
"Implementations may also allow instances of CCP Processing state diagrams to be associated with broadcast or multicast MLIDs, if any are defined. In such instances, handling of ccp_timer expiration events is out-of-scope of this standard."
3) Make the following sentence ("The ONU shall...") a separate paragraph.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #654

Cl **144** *SC* **144.4.3.6** *P* **208** *L* **26** # 614

Remein, Duane Futurewei Technologie

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

No definition for ActionResponseCode (should this be ActionResultCode?)

SuggestedRemedy

Add a suitable definition

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change ActionResponseCode to ActionResultCode to match name in Table 144–10

Cl **144** *SC* **144.5** *P* **209** *L* **1** # 425

Hajduczenia, Marek Charter Communicatio

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

PICS needed and missing

SuggestedRemedy

Use hajduczenia_3ca_4_0319.pdf

Response *Response Status* **C**

ACCEPT.