Cl **1** *SC* **1.4.245a**   *P* **22**   *L* **33**   # 481
Remein, Duane   Futurewei Technologie

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

 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."

Proposed Response *Response Status* **W**

 PROPOSED ACCEPT IN PRINCIPLE.

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

Cl **45** *SC* **45.2.3.11ad**   *P* **40**   *L* **44**   # 484
Remein, Duane   Futurewei Technologie

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

 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"

Proposed Response *Response Status* **W**

 PROPOSED ACCEPT.

Cl **56** *SC* **56.1.2**   *P* **47**   *L* **2**   # 486
Remein, Duane   Futurewei Technologie

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

 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."

Proposed Response *Response Status* **W**

 PROPOSED 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 **141** *SC* **141.2.7**   *P* **58**   *L* **29**   # 491
Remein, Duane   Futurewei Technologie

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

 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"

Proposed Response *Response Status* **W**

 PROPOSED ACCEPT IN PRINCIPLE.

 Change "(a power budget is a characteristic of a link and depends on PMDs in the function transmitter launch power and receiver sensitivity)" to "(a power budget is a characteristic of a link and depends on PMDs in the function >>>of<< transmitter launch power and receiver sensitivity)"

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **141** Page 1 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed Z/withdrawn *SC* **141.2.7** 3/7/2019 1:36:20 PM
SORT ORDER: Clause, Subclause, page, line

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* **W**

PROPOSED REJECT.

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* **W**

PROPOSED REJECT.

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* **W**

PROPOSED REJECT.

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* **D**   *delay*

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)."

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

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 small (less than ± 0.25 EQT)."

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

Remein, Duane   Futurewei Technologie

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

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."

Proposed Response   *Response Status* **W**

PROPOSED REJECT.

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

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **141**
SC **141.3.1.2**

Page 2 of 38
3/7/2019 1:36:20 PM

Cl **141**   *SC* **141.3.1.3**   *P* **61**   *L* **20**   # 496
Remein, Duane   Futurewei Technologie

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

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."

Proposed Response   *Response Status* **W**

PROPOSED REJECT.

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

Cl **141**   *SC* **141.3.5.3**   *P* **63**   *L* **30**   # 498
Remein, Duane   Futurewei Technologie

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

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."

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **141**   *SC* **141.5.2**   *P* **65**   *L* **36**   # 433
Johnson, John   Broadcom

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

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.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

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

Cl **141**   *SC* **141.5.2**   *P* **67**   *L* **1**   # 453
Harstead, Ed   Nokia

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

Proposed Response   *Response Status* **W**

PROPOSED 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

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **141**   Page 3 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **141.5.2**   3/7/2019 1:36:20 PM
SORT ORDER: Clause, Subclause, page, line

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

Kramer, Glen   Broadcom

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

 Signal Detect Threshold is measured in dBm, not GHz

SuggestedRemedy

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

Proposed Response *Response Status* **W**

 PROPOSED ACCEPT IN PRINCIPLE.

 See comment #434

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

Knittle, Curtis   CableLabs

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

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

SuggestedRemedy

 Replace TBD with -40, replace GHz with dBm

Proposed Response *Response Status* **W**

 PROPOSED ACCEPT.

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

Knittle, Curtis   CableLabs

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

 Missing parameter for Receiver settling time (max)

SuggestedRemedy

 Replace TBD with 800

Proposed Response *Response Status* **W**

 PROPOSED ACCEPT.

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

Knittle, Curtis   CableLabs

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

 Missing parameter for Stressed eye J2 Jitter, each channel

SuggestedRemedy

 Replace TBD w/ 0.3

Proposed Response *Response Status* **W**

 PROPOSED ACCEPT.

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

Knittle, Curtis   CableLabs

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

 Missing parameter for Stressed eye J9 Jitter, each channel

SuggestedRemedy

 Replace TBD w/ 0.47

Proposed Response *Response Status* **W**

 PROPOSED ACCEPT.

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

Knittle, Curtis   CableLabs

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

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

SuggestedRemedy

 Replace TBD with -40, replace GHz with dBm

Proposed Response *Response Status* **W**

 PROPOSED ACCEPT.

Cl **141** *SC* **141.5.2**   *P* **68**   *L* **30** # 439

Knittle, Curtis   CableLabs

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

 Missing parameter for Receiver settling time (max)

SuggestedRemedy

 Replace TBD with 800

Proposed Response *Response Status* **W**

 PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **141** Page 4 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed Z/withdrawn *SC* **141.5.2** 3/7/2019 1:36:20 PM
SORT ORDER: Clause, Subclause, page, line

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

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

SuggestedRemedy
  Replace each TBD w/ 0.3

Proposed Response   *Response Status* **W**
  PROPOSED ACCEPT.

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

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

SuggestedRemedy
  Replace each TBD w/ 0.47

Proposed Response   *Response Status* **W**
  PROPOSED ACCEPT.

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

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

Proposed Response   *Response Status* **W**
  PROPOSED ACCEPT.

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

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

SuggestedRemedy
  Replace TBD w/ -40

Proposed Response   *Response Status* **W**
  PROPOSED ACCEPT.

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

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

SuggestedRemedy
  Replace TBD w/ 0.3

Proposed Response   *Response Status* **W**
  PROPOSED ACCEPT.

Cl **141**   *SC* **141.6.2**   *P* **72**   *L* **36**   # 444
Knittle, Curtis   CableLabs

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

SuggestedRemedy
  Replace TBD w/ 0.47

Proposed Response   *Response Status* **W**
  PROPOSED ACCEPT.

Cl **141**   *SC* **141.6.2**   *P* **73**   *L* **23**   # 445
Knittle, Curtis   CableLabs

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

SuggestedRemedy
  Replace TBD w/ -40

Proposed Response   *Response Status* **W**
  PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **141**   Page 5 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **141.6.2**   3/7/2019 1:36:20 PM
SORT ORDER: Clause, Subclause, page, line

Cl **141**   *SC* **141.6.2**   *P* **73**   *L* **30**   # 446
Knittle, Curtis   CableLabs

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

SuggestedRemedy
    Replace TBD w/ 0.3

Proposed Response   *Response Status* **W**
    PROPOSED ACCEPT.

Cl **141**   *SC* **141.6.2**   *P* **73**   *L* **31**   # 447
Knittle, Curtis   CableLabs

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

SuggestedRemedy
    Replace TBD w/ 0.47

Proposed Response   *Response Status* **W**
    PROPOSED ACCEPT.

Cl **141**   *SC* **141.7**   *P* **74**   *L* **4**   # 431
Hajduczenia, Marek   Charter Communicatio

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

Proposed Response   *Response Status* **W**
    PROPOSED ACCEPT.

Cl **141**   *SC* **141.7.2**   *P* **74**   *L* **16**   # 500
Remein, Duane   Futurewei Technologie

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

Proposed Response   *Response Status* **W**
    PROPOSED REJECT.

    Discussion is needed to understand exactly what the issue with the current text is.

Cl **141**   *SC* **141.7.10**   *P* **75**   *L* **46**   # 646
Powell, William   Nokia

Comment Type **T**   *Comment Status* **D**   *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."

Proposed Response   *Response Status* **W**
    PROPOSED ACCEPT IN PRINCIPLE.

    Update PICS

    Reconcile with #454

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **141**
SC **141.7.10**

Page 6 of 38
3/7/2019 1:36:21 PM

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

Umeda, Daisuke   Sumitomo

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

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Page and line information was missing, added.

Update PICS

Reconcile with #646

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

Umeda, Daisuke   Sumitomo

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

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Update PICS

Reconcile with #647

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **141**   Page 7 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **141.7.11**   3/7/2019 1:36:21 PM
SORT ORDER: Clause, Subclause, page, line

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

Powell, William   Nokia

Comment Type **T**   *Comment Status* **D**   *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."

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Update PICS

Reconcile with #455

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

Powell, William   Nokia

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

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).

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

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

Remein, Duane   Futurewei Technologie

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

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."

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change "The data transmitted may be any valid 256B/257B symbols." to "The data
transmitted is EBD257 (see 142.3.5.1)."

>>>editorial changes only<<<

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **141**   Page 8 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **141.7.13.1**   3/7/2019 1:36:21 PM
SORT ORDER: Clause, Subclause, page, line

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

Kramer, Glen   Broadcom

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

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

Updated subclause (was 141.7.13.1, should be 141.7.14)

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

Powell, William   Nokia

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

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.

See comment #623

Cl **141**   *SC* **141.7.14.2**   *P* **79**   *L* **4**   *#* 432

Hajduczenia, Marek   Charter Communicatio

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

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"

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

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

Powell, William   Nokia

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

Currrent text in this line has a TBD.

SuggestedRemedy

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

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

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

Remein, Duane   Futurewei Technologie

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

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

SuggestedRemedy

Make the reference non-breaking.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

Likely an editorial comment, no?

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **141**   Page 9 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **141.9.1**   3/7/2019 1:36:21 PM
SORT ORDER: Clause, Subclause, page, line

Cl **141**   *SC* **141.9.3**   *P* **81**   *L* **34**   # 503
Remein, Duane   Futurewei Technologie

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

Proposed Response   *Response Status*   **W**
PROPOSED 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*   **D**
PICS needed and missing

SuggestedRemedy
Use hajduczenia_3ca_1_0319.pdf

Proposed Response   *Response Status*   **W**
PROPOSED ACCEPT.

Cl **142**   *SC* **142.1.1.3**   *P* **86**   *L* **1**   # 504
Remein, Duane   Futurewei Technologie

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

Proposed Response   *Response Status*   **W**
PROPOSED ACCEPT.

Cl **142**   *SC* **142.1.1.4**   *P* **86**   *L* **42**   # 628
Kramer, Glen   Broadcom

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

Proposed Response   *Response Status*   **W**
PROPOSED ACCEPT IN PRINCIPLE.

Apply changes per kramer_3ca_6_0319.pdf

Cl **142**   *SC* **142.1.1.4**   *P* **87**   *L* **39**   # 505
Remein, Duane   Futurewei Technologie

Comment Type   **T**   *Comment Status*   **D**
Stray period between parenthesis in Table 142-1 for "Indicates precedence or a set of
function arguments"

SuggestedRemedy
Strike the stray period

Proposed Response   *Response Status*   **W**
PROPOSED ACCEPT.

Likely an editorial comment, no?

Cl **142**   *SC* **142.1.1.4**   *P* **87**   *L* **43**   # 506
Remein, Duane   Futurewei Technologie

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

Proposed Response   *Response Status*   **W**
PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **142**
SC **142.1.1.4**

Page 10 of 38
3/7/2019 1:36:21 PM

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

Remein, Duane   Futurewei Technologie

Comment Type **TR**   *Comment Status* **D**   *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).

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

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 small (less than ± one EQT for 25 Gbps and less than ± two EQTs for 10 Gbps).

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

Remein, Duane   Futurewei Technologie

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

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

SuggestedRemedy

Strike the wayward "(SP)"

Proposed Response   *Response Status* **W**

PROPOSED REJECT.

Explained on page 88, like 22: synchronization pattern (SP) zones

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

Remein, Duane   Futurewei Technologie

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

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).

Proposed Response   *Response Status* **W**

PROPOSED 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* **W**

PROPOSED REJECT.

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* **D**

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"

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

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

Remein, Duane   Futurewei Technologie

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

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.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **142**   Page 11 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **142.2.4.2**   3/7/2019 1:36:21 PM
SORT ORDER: Clause, Subclause, page, line

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

Kramer, Glen   Broadcom

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

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

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

Remein, Duane   Futurewei Technologie

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

Proposed Response   *Response Status* **W**

PROPOSED 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* **D**   *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"

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

See comment #640

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

Kramer, Glen   Broadcom

Comment Type **TR**   *Comment Status* **D**   *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: $0x0-(0A)_{32}$

Proposed Response   *Response Status* **W**

PROPOSED 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* **D**   *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)

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See comment #639

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **142**   Page 12 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **142.2.5.1**   3/7/2019 1:36:21 PM
SORT ORDER: Clause, Subclause, page, line

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* **W**

PROPOSED REJECT.

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* **D**   *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.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **142**   *SC* **142.2.5.2**   *P* **102**   *L* **34**   # 458
Remein, Duane   Futurewei Technologie

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

Proposed Response   *Response Status* **W**

PROPOSED 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* **D**

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

SuggestedRemedy

Change MCRS to PCS

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **142**   *SC* **142.2.5.2**   *P* **103**   *L* **34**   # 430
Hajduczenia, Marek   Charter Communicatio

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

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"

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **142**   Page 13 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **142.2.5.2**   3/7/2019 1:36:21 PM
SORT ORDER: Clause, Subclause, page, line

Cl **142**   *SC* **142.2.5.3**   *P***104**   *L***44**   *#* 624
Kramer, Glen   Broadcom

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

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 <i>blk</i> 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.

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT.

Cl **142**   *SC* **142.2.5.4.1**   *P***106**   *L***20**   *#* 644
Kramer, Glen   Broadcom

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

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)

Proposed Response   *Response Status* **W**
PROPOSED 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* **W**
PROPOSED REJECT.

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* **D**

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"

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT.

Cl **142**   *SC* **142.3.4**   *P***109**   *L***40**   *#* 467
Remein, Duane   Futurewei Technologie

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

Need Figure 142-14 PCS receive bit ordering.

SuggestedRemedy

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

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line   *Cl* **142** *SC* **142.3.4**   Page 14 of 38   3/7/2019 1:36:21 PM

Cl **142**   *SC* **142.3.5.1**   *P* **110**   *L* **28**   # 468
Remein, Duane   Futurewei Technologie

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

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)."

Proposed Response   *Response Status* **W**

PROPOSED REJECT.

Current definition already addresses that: Once provisioned, this value does not change and is treated as constant by the state diagram.

Cl **142**   *SC* **142.3.5.2**   *P* **111**   *L* **18**   # 469
Remein, Duane   Futurewei Technologie

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

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."

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **142**   *SC* **142.3.5.2**   *P* **111**   *L* **30**   # 470
Remein, Duane   Futurewei Technologie

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

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 ."

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **142**   *SC* **142.3.5.2**   *P* **111**   *L* **36**   # 471
Remein, Duane   Futurewei Technologie

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

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."

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

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

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **142**
SC **142.3.5.2**

Page 15 of 38
3/7/2019 1:36:21 PM

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

Remein, Duane   Futurewei Technologie

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

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.

Proposed Response   *Response Status* **W**

PROPOSED 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* **D**   *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."

Proposed Response   *Response Status* **W**

PROPOSED 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* **D**   *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."

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Update PICS accordingly.

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

Laubach, Mark   Broadcom

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

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Update PICS

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

Remein, Duane   Futurewei Technologie

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

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"

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change to "56 of 257-bit blocks"

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **142**   Page 16 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **142.3.5.7**   3/7/2019 1:36:21 PM
SORT ORDER: Clause, Subclause, page, line

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

Remein, Duane   Futurewei Technologie

Comment Type **TR**   *Comment Status* **D**   *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."

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Update PICS

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

Powell, William   Nokia

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

PMA control register for CL45

SuggestedRemedy

Proposal to be available before the meeting starts.

Proposed Response   *Response Status* **W**

PROPOSED REJECT.

No material available

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

Remein, Duane   Futurewei Technologie

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

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.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

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

Hajduczenia, Marek   Charter Communicatio

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

PICS needed and missing

SuggestedRemedy

Use hajduczenia_3ca_2_0319.pdf

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **142**   Page 17 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **142.5**   3/7/2019 1:36:21 PM
SORT ORDER: Clause, Subclause, page, line

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* **W**

PROPOSED REJECT.

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

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

Remein, Duane   Futurewei Technologie

Comment Type **TR**   *Comment Status* **D**   *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."

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

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. An implementation is expected to maintain a delay variation through the MCRS of no more than ± two EQTs when operating at 25 Gbps and ± three EQTs when operating at 10 Gbps."

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

Remein, Duane   Futurewei Technologie

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

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."

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

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

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **143**   Page 18 of 38
SC **143.2.5.3**   3/7/2019 1:36:21 PM

Cl **143**   *SC* **143.3.1.1.1**   *P* **130**   *L* **1**   # 622
Kramer, Glen   Broadcom

Comment Type   **T**   *Comment Status*   **D**
    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)."

Proposed Response   *Response Status*   **W**
    PROPOSED 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**
    PROPOSED 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* **143.3.2.1**   *P* **133**   *L* **50**   # 544
Remein, Duane   Futurewei Technologie

Comment Type   **T**   *Comment Status*   **D**
    Table 143–4 to 6, what is the meaning of the offensive highlighting?

SuggestedRemedy
    Remove the offensive highlighting.

Proposed Response   *Response Status*   **W**
    PROPOSED REJECT.

    Offensive is rather subjective. The highlight was in the original contribution accepted for
    inclusion in the draft. It is expected to highlight the CRC8 portion reflected in different
    representations of the bit stream.

Cl **143**   *SC* **143.3.3.2**   *P* **135**   *L* **42**   # 638
Kramer, Glen   Broadcom

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

Proposed Response   *Response Status*   **W**
    PROPOSED ACCEPT.

Cl **143**   *SC* **143.3.3.3**   *P* **136**   *L* **7**   # 547
Remein, Duane   Futurewei Technologie

Comment Type   **T**   *Comment Status*   **D**
    Apparently IEI_EQ mean Inter-Envelope Idle somewhere, but not here.

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

Proposed Response   *Response Status*   **W**
    PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **143**   Page 19 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **143.3.3.3**   3/7/2019 1:36:21 PM
SORT ORDER: Clause, Subclause, page, line

Cl **143**   *SC* **143.3.3.3**   *P***136**   *L***32**   # 548
Remein, Duane   Futurewei Technologie

Comment Type   **TR**   *Comment Status* **D**
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>"

Proposed Response   *Response Status* **W**
PROPOSED REJECT.

Instantenous is a dangerous term to use (means at this moment of time). The current definition is correct. A better question to discuss is whether we really need to specify what the effective MAC rate is to being with (could likely strike the definition altogether).

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* **W**
PROPOSED ACCEPT IN PRINCIPLE.

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

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* **W**
PROPOSED REJECT.

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

SuggestedRemedy
Strike "for channel c"

Proposed Response   *Response Status* **W**
PROPOSED 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).

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **143**   Page 20 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **143.3.3.4**   3/7/2019 1:36:21 PM
SORT ORDER: Clause, Subclause, page, line

Cl **143**   *SC* **143.3.3.6.1**   *P***140**   *L***12**   # 553
Remein, Duane   Futurewei Technologie

Comment Type **TR**   *Comment Status* **D**   *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."

Proposed Response   *Response Status* **W**
PROPOSED 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* **D**   *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."

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT.

Update PICS

Cl **143**   *SC* **143.3.4.3**   *P***144**   *L***12**   # 555
Remein, Duane   Futurewei Technologie

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

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT.

Cl **143**   *SC* **143.3.4.3**   *P***144**   *L***25**   # 556
Remein, Duane   Futurewei Technologie

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

Proposed Response   *Response Status* **W**
PROPOSED REJECT.

Unclear what is wrong

Cl **143**   *SC* **143.3.4.4**   *P***145**   *L***28**   # 558
Remein, Duane   Futurewei Technologie

Comment Type **E**   *Comment Status* **D**
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/"

Proposed Response   *Response Status* **W**
PROPOSED REJECT.

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.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **143**   Page 21 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **143.3.4.4**   3/7/2019 1:36:21 PM
SORT ORDER: Clause, Subclause, page, line

Cl **143**   *SC* **143.3.4.5.1**   *P***146**   *L***16**   # 559
Remein, Duane   Futurewei Technologie

Comment Type   **TR**   *Comment Status* **D**   *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."

Proposed Response   *Response Status* **W**
PROPOSED 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* **D**   *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."

Proposed Response   *Response Status* **W**
PROPOSED 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* **D**
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"

Proposed Response   *Response Status* **W**
PROPOSED 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* **D**
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)

Proposed Response   *Response Status* **W**
PROPOSED REJECT.

TX_CLK in transmit direction and xMII specific clock in receive direction.

Cl **143**   *SC* **143.4.1.1**   *P***150**   *L***44**   # 562
Remein, Duane   Futurewei Technologie

Comment Type   **TR**   *Comment Status* **D**
We need not mention that UC0 can be used for ONU discovery (so can every other US
channel)

SuggestedRemedy
Strike ", ONU discovery"

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **143**   Page 22 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **143.4.1.1**   3/7/2019 1:36:21 PM
SORT ORDER: Clause, Subclause, page, line

Cl **143**   *SC* **143.4.1.2**   *P* **151**   *L* **7**   # 563
Remein, Duane   Futurewei Technologie

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

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."

Proposed Response   *Response Status* **W**
PROPOSED 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* **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* **W**
PROPOSED REJECT.

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* **D**

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.

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT.

Cl **143**   *SC* **143.4.2**   *P* **152**   *L* **28**   # 618
Remein, Duane   Futurewei Technologie

Comment Type   **E**   *Comment Status* **D**   631
AI #20 MCRS Time Sync line 10

SuggestedRemedy

Strike "see (TBD))"

Proposed Response   *Response Status* **W**
PROPOSED 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 (contingent on comment #631)

Cl **143**   *SC* **143.4.2**   *P* **152**   *L* **38**   # 567
Remein, Duane   Futurewei Technologie

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

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.

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **143**   Page 23 of 38
SC **143.4.2**   3/7/2019 1:36:21 PM

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* **W**

PROPOSED REJECT.

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* **143.4.3**   *P* **153** *L* **1**   # 570

Remein, Duane   Futurewei Technologie

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

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

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

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

Hajduczenia, Marek   Charter Communicatio

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

PICS needed and missing

SuggestedRemedy

Use hajduczenia_3ca_3_0319.pdf

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

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

Remein, Duane   Futurewei Technologie

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

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.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **144**
SC **144**

Page 24 of 38
3/7/2019 1:36:21 PM

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

Remein, Duane   Futurewei Technologie

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

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.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

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

Remein, Duane   Futurewei Technologie

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

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.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **144**   *SC* **144.1.1**   *P* **156**   *L* **30**   *#* 516

Remein, Duane   Futurewei Technologie

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

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.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **144**   *SC* **144.1.1.1**   *P* **156**   *L* **42**   *#* 517

Remein, Duane   Futurewei Technologie

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

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.

Proposed Response   *Response Status* **W**

PROPOSED REJECT.

Current text is correct as is.

Cl **144**   *SC* **144.1.1.3**   *P* **157**   *L* **49**   *#* 631

Kramer, Glen   Broadcom

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

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.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line   *Cl* **144**   Page 25 of 38
                                                                       SC **144.1.1.3**   3/7/2019 1:36:21 PM

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

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

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).

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT.

Cl **144**   *SC* **144.1.4**   *P***159**   *L***50**   # 519
Remein, Duane   Futurewei Technologie

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

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.

Proposed Response   *Response Status* **W**
PROPOSED REJECT.

Figure 144-1 shows OAM layer in between

Cl **144**   *SC* **144.1.4.1**   *P***160**   *L***44**   # 523
Remein, Duane   Futurewei Technologie

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

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"

Proposed Response   *Response Status* **W**
PROPOSED REJECT.

Lots of detailed work for very low benefit. Please make your case what this change is supposed to improve upon.

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* **W**
PROPOSED REJECT.

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

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **144**   Page 26 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **144.1.4.1**   3/7/2019 1:36:21 PM
SORT ORDER: Clause, Subclause, page, line

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* **W**

PROPOSED REJECT.

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* **W**

PROPOSED REJECT.

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* **D**

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"

Proposed Response   *Response Status* **W**

PROPOSED REJECT.

I fail to see the distinction.

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

Remein, Duane   Futurewei Technologie

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

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.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change to "This block is responsible for handling the MPCP" - it is sufficiently clear what MPCP is for.

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

Kramer, Glen   Broadcom

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

Typo in the definition of RttCurrent

SuggestedRemedy

Replace "QEQT" with "EQT"

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Fixed clause and subclause (144, not 1454)

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **144**   Page 27 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **144.2..3**   3/7/2019 1:36:22 PM
SORT ORDER: Clause, Subclause, page, line

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

Kramer, Glen   Broadcom

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

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.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

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

Remein, Duane   Futurewei Technologie

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

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.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

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* **W**

PROPOSED ACCEPT.

Is it really a technical comment?

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **144**   Page 28 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **144.2.1.3**   3/7/2019 1:36:22 PM
SORT ORDER: Clause, Subclause, page, line

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* **W**
> PROPOSED ACCEPT.
>
> 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* **D**
> Unit: QEQT?

SuggestedRemedy
> Change to Unit: EQT

Proposed Response   *Response Status* **W**
> PROPOSED ACCEPT.

Cl **144**   *SC* **144.2.1.3**   *P* **163**   *L* **46**   # 536

Remein, Duane   Futurewei Technologie

Comment Type   **T**   *Comment Status* **D**
> Per our agreed style this should be TimestampDrift

SuggestedRemedy
> Globally replace with proper style

Proposed Response   *Response Status* **W**
> PROPOSED ACCEPT.
>
> Is it really a technical comment?

Cl **144**   *SC* **144.2.1.3**   *P* **163**   *L* **46**   # 535

Remein, Duane   Futurewei Technologie

Comment Type   **T**   *Comment Status* **D**
> Per our agreed style this should be TimestampOpcode

SuggestedRemedy
> Globally replace with proper style

Proposed Response   *Response Status* **W**
> PROPOSED ACCEPT.
>
> Is it really a technical comment?

Cl **144**   *SC* **144.2.1.3**   *P* **163**   *L* **46**   # 534

Remein, Duane   Futurewei Technologie

Comment Type   **T**   *Comment Status* **D**
> Per our agreed style this should be SupportedOpcode

SuggestedRemedy
> Globally replace with proper style

Proposed Response   *Response Status* **W**
> PROPOSED ACCEPT.
>
> Is it really a technical comment?

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* **W**
> PROPOSED REJECT.
>
> Reconsidered, no changes needed.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **144**   Page 29 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **144.3.1.1**   3/7/2019 1:36:22 PM
SORT ORDER: Clause, Subclause, page, line

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* **W**
PROPOSED REJECT.

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* **24**   # 576
Remein, Duane   Futurewei Technologie

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

Proposed Response   *Response Status* **W**
PROPOSED REJECT.

Discussion is needed. Note that text in line 22 ends with ":" implying an explanation block follows.

Cl **144**   *SC* **144.3.1.1**   *P* **167**   *L* **34**   # 577
Remein, Duane   Futurewei Technologie

Comment Type **E**   *Comment Status* **D**
"GATE generation Process" should be "GATE Generation process" There is no "GATE Generation Process"

SuggestedRemedy
per comment

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT.

Cl **144**   *SC* **144.3.1.2**   *P* **168**   *L* **45**   # 620
Remein, Duane   Futurewei Technologie

Comment Type **TR**   *Comment Status* **D**   *Delay*
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.

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

"The actual delay is implementation-dependent. A compliant implementation is expected to maintain a delay variation of no more than ± two EQTs when operating at 25 Gbps and ± three EQTs when operating at 10 Gbps through the MAC."

Need also to agree on how we define operating speed: 25 Gbps, 25 GBd, 25G etc. Various styles are used.

Also, how exactly the delay variation through the MAC is defined? What if MAC accepted a frame at time T, sent the first half of the frame on one burst at time T+x and sent the remainder of the frame in another burst at time T+y? How do we define/measure the delay in this case?

Cl **144**   *SC* **144.3.2**   *P* **169**   *L* **1**   # 580
Remein, Duane   Futurewei Technologie

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

Proposed Response   *Response Status* **W**
PROPOSED REJECT.

It was discussed before.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line   *Cl* **144**   Page 30 of 38
                                                                        SC **144.3.2**   3/7/2019 1:36:22 PM

Cl **144**   *SC* **144.3.2.3**   *P* **169**   *L* **21**   # 452
Knittle, Curtis   CableLabs

Comment Type **ER**   *Comment Status* **D**
"An" should be "A"

SuggestedRemedy
Replace "An ULID…" with "A ULID…"

Proposed Response   *Response Status* **W**
PROPOSED REJECT.

Cl **144**   *SC* **144.3.3**   *P* **170**   *L* **20**   # 418
Hajduczenia, Marek   Charter Communicatio

Comment Type **TR**   *Comment Status* **D**
"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."

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT.

Cl **144**   *SC* **144.3.4**   *P* **170**   *L* **36**   # 419
Hajduczenia, Marek   Charter Communicatio

Comment Type **TR**   *Comment Status* **D**
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:"

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT.

Cl **144**   *SC* **144.3.4.1**   *P* **172**   *L* **28**   # 584
Remein, Duane   Futurewei Technologie

Comment Type **T**   *Comment Status* **D**
We should be more specific that "for the Envelope Header"

SuggestedRemedy
Change to "for the ESH"

Proposed Response   *Response Status* **W**
PROPOSED 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* **W**
PROPOSED REJECT.

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* **176**   *L* **10**   # 587
Remein, Duane   Futurewei Technologie

Comment Type **TR**   *Comment Status* **D**
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."

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **144**   Page 31 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **144.3.4.3**   3/7/2019 1:36:22 PM
SORT ORDER: Clause, Subclause, page, line

Cl **144**   *SC* **144.3.4.6**   *P* **179**   *L* **48**   # 630
Kramer, Glen   Broadcom

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

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)

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **144**   *SC* **144.3.4.7**   *P* **182**   *L* **3**   # 588
Remein, Duane   Futurewei Technologie

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

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"

Proposed Response   *Response Status* **W**

PROPOSED REJECT.

Text states clearly, in general case, pattern is set at discovery time. However, lines 8
onwards describe how pattern may be changed later on.

Cl **144**   *SC* **144.3.5**   *P* **183**   *L* **38**   # 590
Remein, Duane   Futurewei Technologie

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

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"

Proposed Response   *Response Status* **W**

PROPOSED 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* **D**

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.

Proposed Response   *Response Status* **W**

PROPOSED 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.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **144**   Page 32 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **144.3.5**   3/7/2019 1:36:22 PM
SORT ORDER: Clause, Subclause, page, line

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

Hajduczenia, Marek   Charter Communicatio

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

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)"

Proposed Response   *Response Status* **W**

PROPOSED 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* **D**

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"

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

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

Remein, Duane   Futurewei Technologie

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

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

SuggestedRemedy

Strike "per each FEC codeword"

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

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

Remein, Duane   Futurewei Technologie

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

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.

Proposed Response   *Response Status* **W**

PROPOSED REJECT.

GrantMargin is calculated first time when the ONU receives DISCOVERY MPCPDU with Sp1Length, Sp2Length, and Sp3Length. Then, it is recalculated when the ONU receives REGSITER 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* **D**

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

Proposed Response   *Response Status* **W**

PROPOSED REJECT.

Change in intent - the note covers overlapping grants.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **144**
SC **144.3.5.3**

Page 33 of 38
3/7/2019 1:36:22 PM

Cl **144**   *SC* **144.3.5.3**   *P* **187**   *L* **38**   # 594

Remein, Duane   Futurewei Technologie

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

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."

Proposed Response   *Response Status* **W**

PROPOSED REJECT.

No explanation is provided of what is wrong with the existing text. The variable ReqStart
represents a time in the future. The existing text ("to be transmitted") is better than what is
proposed in the comment.

Cl **144**   *SC* **144.3.5.5**   *P* **188**   *L* **32**   # 428

Hajduczenia, Marek   Charter Communicatio

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

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"

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **144**   *SC* **144.3.5.6**   *P* **189**   *L* **6**   # 596

Remein, Duane   Futurewei Technologie

Comment Type **TR**   *Comment Status* **D**   *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."

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Update PICS

Cl **144**   *SC* **144.3.5.7**   *P* **189**   *L* **47**   # 597

Remein, Duane   Futurewei Technologie

Comment Type **TR**   *Comment Status* **D**   *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."

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Update PICS

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **144**
SC **144.3.5.7**

Page 34 of 38
3/7/2019 1:36:22 PM

Cl **144**   *SC* **144.3.5.8**   *P* **190**   *L* **35**   # 598
Remein, Duane   Futurewei Technologie

Comment Type **TR**   *Comment Status* **D**   *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."

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT.

Update PICS

Cl **144**   *SC* **144.3.5.8**   *P* **191**   *L* **1**   # 626
Kramer, Glen   Broadcom

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

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT.

Cl **144**   *SC* **144.3.6**   *P* **191**   *L* **41**   # 599
Remein, Duane   Futurewei Technologie

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

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT.

Cl **144**   *SC* **144.3.6.3**   *P* **192**   *L* **40**   # 600
Remein, Duane   Futurewei Technologie

Comment Type **E**   *Comment Status* **D**
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."

Proposed Response   *Response Status* **W**
PROPOSED REJECT.

Unclear what changes are made and why they are made to begin with.

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* **W**
PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **144**   Page 35 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **144.3.6.3**   3/7/2019 1:36:22 PM
SORT ORDER: Clause, Subclause, page, line

Cl **144**   *SC* **144.3.6.5**   *P* **193**   *L* **20**   # 602

Remein, Duane   Futurewei Technologie

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

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."

Proposed Response   *Response Status* **W**

PROPOSED REJECT.

Unclear what problem the proposed change addresses.

Cl **144**   *SC* **144.3.6.6**   *P* **193**   *L* **45**   # 603

Remein, Duane   Futurewei Technologie

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

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

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **144**   *SC* **144.3.6.7**   *P* **193**   *L* **46**   # 604

Remein, Duane   Futurewei Technologie

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

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.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **144**   *SC* **144.3.6.8**   *P* **194**   *L* **39**   # 605

Remein, Duane   Futurewei Technologie

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

No such variable/field as MsgGate.ChMap.

SuggestedRemedy

Change to MsgGate.ChannelMap (3x)

Proposed Response   *Response Status* **W**

PROPOSED 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* **D**

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

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **144**   *SC* **144.4.1**   *P* **198**   *L* **6**   # 632

Kramer, Glen   Broadcom

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

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"

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Remove the word "unicast" in each references instance

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **144**   Page 36 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **144.4.1**   3/7/2019 1:36:22 PM
SORT ORDER: Clause, Subclause, page, line

Cl **144**   *SC* **144.4.1.1**   *P* **199**   *L* **46**   # 609
Remein, Duane   Futurewei Technologie

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

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."

Proposed Response   *Response Status* **W**
PROPOSED REJECT.

Current text is correct as is.

Cl **144**   *SC* **144.4.1.3**   *P* **199**   *L* **41**   # 608
Remein, Duane   Futurewei Technologie

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

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."

Proposed Response   *Response Status* **W**
PROPOSED REJECT.

Current text is correct as is.

Cl **144**   *SC* **144.4.1.3**   *P* **199**   *L* **48**   # 610
Remein, Duane   Futurewei Technologie

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

Why enable a channel to disable it??

SuggestedRemedy

Change: "enable" to "disable"

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT.

Cl **144**   *SC* **144.4.1.3**   *P* **199**   *L* **52**   # 611
Remein, Duane   Futurewei Technologie

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

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.

Proposed Response   *Response Status* **W**
PROPOSED REJECT.

Since the channel is disabled, any transmission will not obviously leave on the disabled channel. No uncertainty.

Cl **144**   *SC* **144.4.2**   *P* **200**   *L* **45**   # 629
Kramer, Glen   Broadcom

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

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.

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **144**   Page 37 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **144.4.2**   3/7/2019 1:36:22 PM
SORT ORDER: Clause, Subclause, page, line

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* **W**

PROPOSED REJECT.

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* **D**

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)

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **144**   *SC* **144.4.3.6**   *P* **207**   *L* **22**   # 625
Kramer, Glen   Broadcom

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

"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.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **144**   *SC* **144.4.3.6**   *P* **208**   *L* **26**   # 614
Remein, Duane   Futurewei Technologie

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

No definition for ActionResponseCode (should this be ActionResultCode?)

SuggestedRemedy

Add a suitable definition

Proposed Response   *Response Status* **W**

PROPOSED 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* **D**

PICS needed and missing

SuggestedRemedy

Use hajduczenia_3ca_4_0319.pdf

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **144**   Page 38 of 38
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **144.5**   3/7/2019 1:36:22 PM
SORT ORDER: Clause, Subclause, page, line