Cl **FM** *SC* **FM** *P* **3** *L* **4** # 287

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

We have agree to use "PQ" rather than "PR"

SuggestedRemedy

Globally replace "PR" with "PQ" (22x)

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **10** *L* **35** # 288

Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**

Capitalization; service interface, Service interface, or Service Interfaces? Pick one.

SuggestedRemedy

I recommend "service interface" except where it appears at the beginning of a sentence and pg 11 line 43.

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **1** *L* **17** # 387

Powell, Bill Nokia

Comment Type **TR** *Comment Status* **X**

Draft standard title includes "25 Gb/s, 50 Gb/s, and 100 Gb/s." Now that the TF has dropped 100 Gb/s from this standard, the standard title needs to be corrected.

SuggestedRemedy

Change title to read:
Draft Standard for Ethernet
Amendment:
Physical Layer Specifications and Management Parameters for 25 Gb/s and 50 Gb/s Passive Optical Networks

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **10** *L* **4** # 388

Powell, Bill Nokia

Comment Type **TR** *Comment Status* **X**

Text in text block between Lines 3-6 still includes 100 Gb/s

SuggestedRemedy

Change text to read:
"This introduction is not part of IEEE P802.3ca, IEEE Draft Standard for Ethernet. Amendment: Physical Layer Specifications and Management Parameters for 25 Gb/s and 50 Gb/s Passive Optical Networks."

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **16** *L* **1** # 389

Powell, Bill Nokia

Comment Type **TR** *Comment Status* **X**

Title of CL 143.2.2 in ToC still includes 100 Gb/s

SuggestedRemedy

Change title of CL 143.2.2 to:
"25 Gb/s and 50 Gb/s operation over P2MP media"

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **19** *L* **11** # 221

Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **X**

Title includes "100 Gb/s"

SuggestedRemedy

remove "100 Gb/s"

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4** *P* **20** *L* **14** # 289

Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**

If the next revision editor is to 'Insert the following definitions in alphabetic order:' we should at least provide a good hint at what that is.

SuggestedRemedy

Reorder and renumber 1.4.314a through 1.4.327a to reflect the editing instruction

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4.278** *P* **20** *L* **16** # 290

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

This definition is overly detailed and thus incorrect. The phrase "There is one-to-one correspondence between the grants issued to an ONU and upstream bursts transmitted by that ONU, i.e., a grant issued to an ONU results in a single upstream burst transmitted by that ONU." is incorrect. There may not be a 1-1 correspondence if different GATES have the same start time. We could just as easily say that multiple grants issued to an ONU may result in a single upstream burst transmitted by that ONU.

SuggestedRemedy

Strike "There is one-to-one correspondence between the grants issued to an ONU and upstream bursts transmitted by that ONU, i.e., a grant issued to an ONU results in a single upstream burst transmitted by that ONU."

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4.313** *P* **20** *L* **25** # 291

Remein, Duane Huawei

Comment Type **TR** *Comment Status* **X**

The addition of "function of the Reconciliation Sublayer" changes the meaning of the original sentence.

SuggestedRemedy

Strike "function of the Reconciliation Sublayer" and return to original sentence which reads "A numeric identifier assigned to a P2MP association between an
OLT and ONU established through the Point-to-Point Emulation sublayer."

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4.324a** *P* **21** *L* **14** # 292

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

This phrase is correct but incomplete and can be simplified "This term collectively refers to 25/10G-EPON, 25/25G-EPON, 50/10G-EPON, 50/25G-EPON, and 50/50G-EPON architectures."
It also refers to 25G-EPON and 50G-EPON.

SuggestedRemedy

Change to "This term collectively refers to all 25G-EPON 50G-EPON architectures."

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4.325a** *P* **21** *L* **17** # 293

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Duplicate but different definition of Envelope

SuggestedRemedy

Strike this one and change 1.4.316a from:
"an upstream transmission that corresponds to an envelope allocation received from the OLT. ..." to read:
"an upstream transmission that corresponds to one or more envelope allocations received from the OLT. ..."

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4.326a** *P* **21** *L* **21** # 294

Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**

I question the need for this definition of Envelope Descriptor which is then only used one other time (pg 135 line 10) in the definition of ChIndex, which is also never used in the draft. Note a separate comment to remove ChIndex exists.

SuggestedRemedy

Strike the definition.

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.5** *P* **21** *L* **34** # 295

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Missing abbreviations (much as I dislike abbreviations we should at least be consistent)

SuggestedRemedy

Add in alpha order: "ECH envelope continuation header"

Proposed Response *Response Status* **O**

Cl **31A** *SC* **31A** *P* **23** *L* **33** # 185

Hajduczenia, Marek Charter Communicatio

Comment Type **TR** *Comment Status* **X**

Tables 31A-10/15 are missing content

SuggestedRemedy

Use the content per hajduczenia_3ca_1_0718.pdf.
NOTE 1: operand definitions are aligned with target primitive structure after updates proposed in multiple separate comments (comments are tagged MH_PRIMITIVES for cross referencing). Right now, we have major misalignment between primitive definitions, message structure, and operands.
NOTE 2: operand list for DISCOVERY_GATE MPCPDU is currently predicated on resolution of comment tagged MH_DISCOVERY and aligned with the proposed list of operands there

Proposed Response *Response Status* **O**

Cl **56** *SC* **56** *P* **26** *L* **3** # 184

Hajduczenia, Marek Charter Communicatio

Comment Type **TR** *Comment Status* **X**

Clause 56 requires many more changes to accommodate for the new Nx25G-EPON in the EFM architecture.

SuggestedRemedy

Add all the changes as shown in hajduczenia_3ca_2_0718.pdf. The existing set of changes to Table 56-1 already present in draft D1.1 to be moved into subclause 56.1.3

Proposed Response *Response Status* **O**

Cl **56** *SC* **56** *P* **27** *L* **31** # 297

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Footnote also applies to Nx25 EPON.

SuggestedRemedy

Change footnote from:
"For 10/1G-EPON Physical Layer signaling systems ..." to:
"For 10/1G-EPON and Nx25G-EPON Physical Layer signaling systems …"

Proposed Response *Response Status* **O**

Cl **56** *SC* **56** *P* **27** *L* **31** # 296

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

The table footnote appears to be applicable to all asymmetric PON signaling systems.

SuggestedRemedy

Change from:
"aFor 10/1G-EPON Physical Layer signaling systems …" to
"aFor asymmetric EPON Physical Layer signaling systems …"

Proposed Response *Response Status* **O**

Cl **56** *SC* **56** *P* **27** *L* **31** # 255

Lee, HH ETRI

Comment Type **ER** *Comment Status* **X**

10G/1G is out of scope. Footnote should be fixed.

SuggestedRemedy

change "10/1G-EPON" to EPON or Nx25G EPON.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.1** *P* **28** *L* **6** # 298
Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**

I find an active link to the current clause somewhat odd (here elsewhere) not to mention frustrating if accidentally clicked on.

SuggestedRemedy

Replace the following instance of "Clause 141" with "this clause" (or "This clause" as appropriate).
Pg/Line 28/6, 28/20, 28/40, 29/1, 31/3, 34/50, 35/3, 35/25, 35/44

Replace "Clause 141 PMD" with "Nx25G-EPON PMD" at 32/ 33, 35/30, 35/32 (table 141-4 title), 44/50

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.1** *P* **29** *L* **47** # 302
Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**

The text in sections 141.1 and 141.2 are somewhat disjointed and mostly incorrect now.

SuggestedRemedy

Replace with text shown in remein_3ca_1_0718.pdf (ms word version available upon request).

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.1.3** *P* **28** *L* **30** # 299
Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

We no longer have PR PHYS

SuggestedRemedy

Change 5 instances of PR-S to PQ-S and 5 instances of PR-A to PQ-A

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.1.3** *P* **28** *L* **34** # 257
Lee, HH ETRI

Comment Type **ER** *Comment Status* **X**

Period is missing.

SuggestedRemedy

add period after "over a single SMF"

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.1.3** *P* **28** *L* **36** # 300
Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Does "and 10 Gb/s and above" include 25 Gb/s and 50 Gb/s also (which would then overlap with symmetric power budgets)?

If remein_3ca_1_0718.pdf is accepted this comment can be withdrawn.

SuggestedRemedy

Change from:
"and 10 Gb/s and above" to
"and a lesser rate (typically 10 Gb/s or 25 Gb/s)"

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.1.3** *P* **28** *L* **36** # 258
Lee, HH ETRI

Comment Type **ER** *Comment Status* **X**

Period is missing.

SuggestedRemedy

add period after "over a single SMF"

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.1.3** *P* **28** *L* **42** # 256

Lee, HH ETRI

Comment Type **ER** *Comment Status* **X**

Remove the coma.

SuggestedRemedy

PR-S20: symmetric-rate, medium power budget.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.1.3** *P* **28** *L* **48** # 400

Kramer, Glen Broadcom

Comment Type **TR** *Comment Status* **X**

Editorial note and an action item to provide a consistent way to reference power budgets

SuggestedRemedy

Do the following:
1) Adopt the naming convention as shown in kramer_3ca_4_0718.pdf
2) Replace Table 141-1 with Tables 141-1 through 141-5 from kramer_3ca_3_0718.pdf
3) Replace Tables 141-2 and 141-3 with Tables 141-6 and 141-7 from kramer_3ca_3_0718.pdf.
4) Change 141.2.1 title to "Supported Combinations of OLT and ONU PMDs"
5) Change 141.2.1.1 title to "PHY Links supporting medium power budget"
6) Change 141.2.1.2 title to "PHY Links supporting high power budget"
7) Add definition of GPON to subclause 1.4
8) Add reference to G.983 to subclause 1.3
9) Scrub the entire clause 141 and replace the "power budget" with "PHY link" where appropriate. Use proper PHY link type designation.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.1.4** *P* **29** *L* **41** # 301

Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**

"symmetric-rate… and asymmetric-rate … PMD sublayer" constitute more than one (layers should be plural)

If remein_3ca_1_0718.pdf is accepted this comment can be withdrawn.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.2** *P* **29** *L* **46** # 401

Kramer, Glen Broadcom

Comment Type **T** *Comment Status* **X**

Need to show a list of all supported PMDs.

SuggestedRemedy

In section 141.2, after an introductory text that shows how PMD names are constructed, add the table shown in kramer_3ca_1_0718.pdf listing all supported PMD types. Later clauses use these types to show which PMDs can be paired together.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.2** *P* **31** *L* **8** # 303

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

A PMD transmitting at 25 Gb/s in both US and DS as allowed by this sentence is not asymmetric.

If remein_3ca_1_0718.pdf is accepted this comment can be withdrawn.

SuggestedRemedy

Change:
"and receiving at 25 GBd (or more) burst mode:" to
"and receiving at a lesser rate (typically 10 GBd or 25 GBd) burst mode:"

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.2** *P* **31** *L* **12** # 304

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

{TBD} replacement

If remein_3ca_1_0718.pdf is accepted this comment can be withdrawn.

SuggestedRemedy

Change:
"… transmitting at {TBD} GBd continuous mode and receiving at {TBD} GBd burst mode:" to
"… operating at 25 GBd or 50 GBd, transmitting using continuous mode and receiving using burst mode:"

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.2** *P* **31** *L* **18** # 305

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

We do not define 10/1GBASE–PRX–U.

If remein_3ca_1_0718.pdf is accepted this comment can be withdrawn.

SuggestedRemedy

Change:
"... 10/1GBASE–PRX–U), transmitting at 1.25 GBd burst mode and receiving at 10.3125 GBd continuous mode:" to
"... PQ-A-U), transmitting at 10 GBd or 25 GBd burst mode and receiving at a higher rate (typically 25 GBd or 50 GBd) continuous mode:"

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.2** *P* **31** *L* **21** # 306

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

We do not define 10GBASE–PR–U

If remein_3ca_1_0718.pdf is accepted this comment can be withdrawn.

SuggestedRemedy

Change:
"... 10GBASE–PR–U), transmitting at 10.3125 GBd burst mode and receiving at 10.3125 GBd continuous mode:" to
"... {PQ-S-U}), operating at 25 GBd or 50 GBd, transmitting using burst mode and receiving using continuous mode:"

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.3.1** *P* **32** *L* **33** # 307

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

An interface does not a service make "The following specifies the services provided by Clause 141 PMDs."

SuggestedRemedy

Change to "The following paragraphs specify the service interfaces to Nx25G-EPON PMDs."

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.3.1.2** *P* **33** *L* **1** # 308

Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**

We have renamed these interfaces to PMD_UNITDATA[i].request, PMD_UNITDATA[i].indication, PMD_SIGNAL[i].request, and PMD_SIGNAL[i].indication. This should be reflected in the subclause titles in 141.3.1.2-141.3.1.5

SuggestedRemedy

Retitle sections to PMD_UNITDATA[i].request, PMD_UNITDATA[i].indication, PMD_SIGNAL[i].request, and PMD_SIGNAL[i].indication

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.3.1.2** *P* **33** *L* **2** # 309

Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**

"Clause 142 PMA" does nothing to orient the reader.

SuggestedRemedy

Change to: "Nx25G-EPON PMA" (7x)

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.3.1.2** *P* **33** *L* **7** # 310

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Given the Nx25G-EPON includes 25/10G-EPON this statement is incorrect "The Clause 142 PMA 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 Clause 142 PMA 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."
Perhaps it would be better to simply take about what the interface does and skip the informative part about it's rate.

SuggestedRemedy

Change to: ""The Nx25G-EPON PMA continuously sends a stream of bits to the PMD for transmission on the medium."

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.3.1.5** *P* **33** *L* **39** # 311

Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**

Signal name "SIGNAL_-
DETECT" breaks line (several times)

SuggestedRemedy

disable hyphenation on all signal names (Esc n s in frame).

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.3.2** *P* **34** *L* **1** # 199

Hajduczenia, Marek Charter Communicatio

Comment Type **T** *Comment Status* **X**

Figure 141-2 was updated to use [i] indication where per-wavelength test points are defined. The text was not updated accordingly, though

SuggestedRemedy

Remove the editorial note from Figure 141-2 (updates were already made)
Replace references to TP1, TP4, TP5, and TP8 with versions with [i] added
Change "points for use by implementers." to "points for use by implementers, defined on per channel basis."

Similarly, in 141.7, mark TP1 and TP5 instances with [i] indexes

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.3.2** *P* **34** *L* **1** # 312

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

TP1, TP4, TP5, and TP8 do not exist.

SuggestedRemedy

Change to TP1[i], TP4[i], TP5[i], and TP8[i] throughout this section and in 141.7, 141.7.14.1, 141.7.14.2 and in Figure 141-3

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.4** *P* **35** *L* **50** # 200

Hajduczenia, Marek Charter Communicatio

Comment Type **E** *Comment Status* **X**

No need to build one sentence paragraphs

SuggestedRemedy

Merge sentences in line 50 and 52 into a single paragraph.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.4** *P* **36** *L* **10** # 313

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Table 141-6 would be more useful if it included information about which wavelength goes with which PMD coexistence case (G or X).

SuggestedRemedy

Add a column labeled "Coexistence Class" with the following row entries:
row 1 (UW0) "G"
row 2 (UW1) "X"
row 3 (UW2) "G or X"

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.4.1** *P* **38** *L* **37** # 188

Hajduczenia, Marek Charter Communicatio

Comment Type **E** *Comment Status* **X**

Stranded TBD

SuggestedRemedy

Remove {TBD} in line 38, page 38

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.5** *P* **36** *L* **27** # 315

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

This sentence, which is structured as found in Cl 75.4, seems to be pointing to an odd place "A {XXX} compliant transceiver operates over the media types listed in Table 141–15 according to the specifications described in 141.10." The sentence in 75.4 points to 75.9 "Characteristics of the fiber optic cabling" while here we point to 141.10 (PICS).
Also need to replace the {XXX}.

Same issues exit in 141.6 pg 38 line 49.

SuggestedRemedy

Change ref from "141.10" to "141.9"
Change "{XXX}" to "PQ"
in both locations

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.5.1** *P* **36** *L* **23** # 314

Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**

if we're talk of both 25G-EPON and 50G-EPON we should use Nx25G-EPON. Same issue in 141.6 pg 38 line 45

SuggestedRemedy

Change from
"25G-EPON and 50G-EPON OLT PMDs" to
"Nx25G-EPON OLT PMDs"
in both locations

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.5.1** *P* **36** *L* **33** # 192

Hajduczenia, Marek Charter Communicatio

Comment Type **TR** *Comment Status* **X**

All transmit tables for ONU and OLT need to include Ton and Toff values of 128 ns as decided in May 2018

SuggestedRemedy

Add values of 128 ns to Ton/Toff rows where they are already present. Where not present, add row with these values into respective tables. Tables affected: 141-7, 141-8, 141-11, and 141-12.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.5.1** *P* **36** *L* **40** # 261

Johnson, John Broadcom

Comment Type **T** *Comment Status* **X**

Table 141-7, OLT PR20 Transmit Characteristics, requires populating.

SuggestedRemedy

Accept the values in the table shown in johnson_3ca_2_0718.pdf, slide x, to populate Table 141-7.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.5.1** *P* **36** *L* **41** # 316

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

In Table 141-7 what is a 25GBASE-PR20-D, 50GBASE-PR20-D, and 50/25GBASE-PR20-D?
Similar issue exists in Table 141-13 pg 43 line 19.

SuggestedRemedy

In Table 141-7 change from
"25GBASE-PR20-D,
"25GBASE-PQ11G-D2 25GBASE-PQ11X-D2" and from
" 50GBASE-PR20-D 50/25GBASE-PR20-D" to
"50GBASE-PQ22G-D2 50GBASE-PQ22X-D2 50/25GBASE-PQ21G-D2 50/25GBASE-PQ21X-D2"

Make the same change in Table 141-13 replacing "D" with "U"

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.5.1** *P* **36** *L* **47** # 259

Lee, HH ETRI

Comment Type **ER** *Comment Status* **X**

Remove the coma.

SuggestedRemedy

remove the coma in "Signaling rate (range)"

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.5.1** *P* **36** *L* **48** # 260

Lee, HH ETRI

Comment Type **ER** *Comment Status* **X**

Remove the coma.

SuggestedRemedy

remove the coma in "Side-mode suppression ratio (SMSR) (min)"

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.5.1** *P* **36** *L* **52** # 384

Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **X**

In Table 141–7, per harstead_3ca_1_0718 correct the value of Average launch power, each channela (min).

SuggestedRemedy

Replace 2.5 dBm with 2 dBm. (In a separate comment, it will be proposed to move this value from the table and be put into a footnote).

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.5.1** *P* **36** *L* **52** # 386

Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **X**

Table 141–7 shows Average launch power, each channel (min). This is dangerpous. There will be confusion with the legacy method of specification if this is included in the table-- that the value would be enough for min ER and max TDP.

SuggestedRemedy

Delete Average launch power, each channel (min) from the table. Add, in a footnote, the Average launch power, each channel (min) based on legacy specification methods. Specifically "Average launch power, each channel (min) = 2 dBm at Extinction ratio (min) and Transmitter and dispersion penalty (TDP). This will give module vendors a reference point to legacy specification methods, without causing any confusion.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.5.1** *P* **36** *L* **53** # 271

Johnson, John Broadcom

Comment Type **T** *Comment Status* **X**

The inclusion of an informative spec on minimum average launch power doesn't serve any purpose to specify a compliant TX. A TX that meets the requirements of minimum OMA minus TDP and minimum OMA is compliant, even for very low values of AVP associated with very high ER. This line should be removed from Table 141-7.

SuggestedRemedy

Delete the line for "Average launch power, each channel (min)" in Table 141-7.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.5.1** *P* **37** *L* **9** # 265

Johnson, John Broadcom

Comment Type **T** *Comment Status* **X**

APD RX sensitivity depends on ER due to avalanche multiplication noise in the one and zero rails. The currently accepted baseline APD receiver sensitivities assume that all TX have worst-case ER. By allowing TX with higher than minimum ER to launch slightly lower OMA, significant laser power savings is possible.

SuggestedRemedy

Create two separate spec lines for minimum OMA minus TDP, one for ER ≥ 9dB with min. value of 2.0dBm, and one for ER < 9dB with min. value of 2.1dBm, as shown in johnson_3ca_1_0718.pdf, slide 9.

Proposed Response *Response Status* **O**

Cl **141** SC **141.5.1** P **37** L **10** # 272

Johnson, John Broadcom

Comment Type **T** *Comment Status* **X**

As a reference value for comparison with legacy power specification methods, a footnote should be added to the line for Launch power in OMA minus TDP (min) giving the informative minimum average launch power for the specific worst case of minimum ER and maximum TDP.

SuggestedRemedy

Add footnote to "Launch power in OMA minus TDP, each channel (min) in Table 141-7 which reads, "For reference, this implies that the minimum average launch power per channel at minimum extinction ratio and maximum TDP is 2 dBm. This value is informative only."

Proposed Response *Response Status* **O**

Cl **141** SC **141.5.1** P **37** L **29** # 201

Hajduczenia, Marek Charter Communicatio

Comment Type **T** *Comment Status* **X**

Table 141-8 title does not match new PMD names.

SuggestedRemedy

Change "OLT PR30" to "OLT PQ11, PQ21, and PQ22". Similar change to Table 141-10

Proposed Response *Response Status* **O**

Cl **141** SC **141.5.1** P **37** L **37** # 385

Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **X**

Table 141–8 shows Average launch power, each channel (min). This corresponds to our new method of specification--2.8 dBm at reference ER and TDP. This is dangerpous. There will be confusion with the legacy method of specification if this is included in the table-- that 2.8 dBm would be enough for min ER and max TDP.

SuggestedRemedy

Delete Average launch power, each channel (min) from the table. Add, in a footnote, the Average launch power, each channel (min) based on legacy specification methods. Specifically "Average launch power, each channel (min) = 4.8 dBm at Extinction ratio (min) and Transmitter and dispersion penalty (TDP). This will give module vendors a reference point to legacy specification methods, without causing any confusion.

Proposed Response *Response Status* **O**

Cl **141** SC **141.5.1** P **37** L **43** # 242

Lee, HH ETRI

Comment Type **ER** *Comment Status* **X**

Remove the coma.

SuggestedRemedy

remove the coma in "Side-mode suppression ratio (SMSR) (min)"

Proposed Response *Response Status* **O**

Cl **141** SC **141.5.1** P **37** L **45** # 189

Hajduczenia, Marek Charter Communicatio

Comment Type **TR** *Comment Status* **X**

What does it mean to have "-" in Table 141-8, Total average launch power column for PQ11 column? The given channel is not active? Does not transmit?

SuggestedRemedy

Replace "-" with "NA" if the column is not applicable, in this case more likely TBD should be used to provide specific value to be used.
For page 38, line 12 (difference in launch power …), use "NA" since it is a single channel PMD
Similar changes in Table 141–12

Proposed Response *Response Status* **O**

Cl **141** SC **141.5.1** P **37** L **48** # 273

Johnson, John Broadcom

Comment Type **T** *Comment Status* **X**

The inclusion of an informative spec on minimum average launch power doesn't serve any purpose to specify a compliant TX. A TX that meets the requirements of minimum OMA minus TDP and minimum OMA is compliant, even for very low values of AVP associated with very high ER. This line should be removed from Table 141-8.

SuggestedRemedy

Delete the line for "Average launch power, each channel (min)" in Table 141-8.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.5.1** *P* **38** *L* **14** # 266

Johnson, John Broadcom

Comment Type **T** *Comment Status* **X**

APD RX sensitivity depends on ER due to avalanche multiplication noise in the one and zero rails. The currently accepted baseline APD receiver sensitivities assume that all TX have worst-case ER. By allowing TX with higher than minimum ER to launch slightly lower OMA, significant laser power savings is possible.

SuggestedRemedy

Create two separate spec lines for minimum OMA minus TDP, one for ER ≥ 9dB with min. value of 4.8dBm, and one for ER < 9dB with min. value of 4.9dBm, as shown in johnson_3ca_1_0718.pdf, slide 8.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.5.1** *P* **38** *L* **14** # 274

Johnson, John Broadcom

Comment Type **T** *Comment Status* **X**

As a reference value for comparison with legacy power specification methods, a footnote should be added to the line for Launch power in OMA minus TDP (min) giving the informative minimum average launch power for the specific worst case of minimum ER and maximum TDP.

SuggestedRemedy

Add footnote to "Launch power in OMA minus TDP, each channel (min) in Table 141-8 which reads, "For reference, this implies that the minimum average launch power per channel at minimum extinction ratio and maximum TDP is 4.8 dBm. This value is informative only."

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.5.1** *P* **39** *L* **6** # 243

Lee, HH ETRI

Comment Type **ER** *Comment Status* **X**

There is a unnecessary empty column in "Channel wavelength ranges".

SuggestedRemedy

combine both columns.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.5.1** *P* **39** *L* **36** # 244

Lee, HH ETRI

Comment Type **TR** *Comment Status* **X**

BER is better than or equal to 10^-12.

SuggestedRemedy

The BER of 10^–12 is achieved by the utilization of FEC as described in 142.2.2.9.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.5.1** *P* **42** *L* **1** # 190

Hajduczenia, Marek Charter Communicatio

Comment Type **TR** *Comment Status* **X**

No entry for 25/10 and 50/10 PMDs

SuggestedRemedy

Insert an editorial note indicating these PMDs are missing

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.5.2** *P* **38** *L* **39** # 245

Lee, HH ETRI

Comment Type **ER** *Comment Status* **X**

The section title and content are separated.

SuggestedRemedy

move the table 141–10—OLT PR20 Receive Characteristics after the section title of 141.5.2. Receiver optical specifications.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.5.2** *P* **39** *L* **1** # 262

Johnson, John Broadcom

Comment Type **T** *Comment Status* **X**

Table 141-9, OLT PR20 Receive Characteristics, requires populating.

SuggestedRemedy

Accept the values in the table shown in johnson_3ca_2_0718.pdf, slide x, to populate Table 141-9.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.5.2** *P* **39** *L* **14** # 279

Johnson, John Broadcom

Comment Type **T** *Comment Status* **X**

The inclusion of an informative spec on minimum average receive power doesn't serve any purpose to specify a compliant RX. An RX that meets the requirements of maximum receiver sensitivity (OMA) and maximum stressed receiver sensitivity (OMA) is compliant, even for very low values of AVP associated with very high ER signals. This line should be removed from Table 141-9.

SuggestedRemedy

Delete the line for "Average receive power, each channel (min)" in Table 141-9.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.5.2** *P* **39** *L* **30** # 280

Johnson, John Broadcom

Comment Type **T** *Comment Status* **X**

As a reference value for comparison with legacy power specification methods, a footnote should be added to the line for Receiver sensitivity (OMA), each channel (max) giving the informative maximum unstressed average power receiver sensitivity for the specific worst case of minimum ER.

SuggestedRemedy

Add to the footnote to "Receiver sensitivity (OMA), each channel (max)" in Table 141-9, "For reference, this implies that the maximum average power unstressed receiver sensitivity measured with an ideal transmitter signal at minimum extinction ratio is -22 dBm. This value is informative only."

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.5.2** *P* **40** *L* **20** # 281

Johnson, John Broadcom

Comment Type **T** *Comment Status* **X**

The inclusion of an informative spec on minimum average receive power doesn't serve any purpose to specify a compliant RX. An RX that meets the requirements of maximum receiver sensitivity (OMA) and maximum stressed receiver sensitivity (OMA) is compliant, even for very low values of AVP associated with very high ER signals. This line should be removed from Table 141-10.

SuggestedRemedy

Delete the line for "Average receive power, each channel (min)" in Table 141-10.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.5.2** *P* **40** *L* **26** # 282

Johnson, John Broadcom

Comment Type **T** *Comment Status* **X**

As a reference value for comparison with legacy power specification methods, a footnote should be added to the line for Receiver sensitivity (OMA), each channel (max) giving the informative maximum unstressed average power receiver sensitivity for the specific worst case of minimum ER.

SuggestedRemedy

Add to the footnote to "Receiver sensitivity (OMA), each channel (max)" in Table 141-9, "For reference, this implies that the maximum average power unstressed receiver sensitivity measured with an ideal transmitter signal at minimum extinction ratio is -25 dBm. This value is informative only."

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.5.2** *P* **42** *L* **1** # 187

Hajduczenia, Marek Charter Communicatio

Comment Type **T** *Comment Status* **X**

Table 141-12 title does not match new PMD names.

SuggestedRemedy

Change "ONU PR30" to "ONU PQ11, PQ21, and PQ22". Similar change to Table 141-14

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.6** *P* **39** *L* **2** # 317

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

In Table 141-9 what are "25GBASE-PR20-D 50/25GBASE-PR20-D 50GBASE-PR20-D
25/10GBASE-PR20-D 50/10GBASE-PR20-D"?

SuggestedRemedy

Change from
"25GBASE-PR20-D 50/25GBASE-PR20-D" to
"25GBASE-PQ11G-U2 25GBASE-PQ11X-U2 50/25GBASE-PQ21G-U2 50/25GBASE-PQ21X-U2" and from
"50GBASE-PR20-D" to
"50GBASE-PQ22G-D2 50GBASE-PQ22X-D2" and from
"25/10GBASE-PR20-D 50/10GBASE-PR20-D" to
"25/10GBASE-PQ11G-D2 25/10GBASE-PQ11X-D2 50/10GBASE-PQ21G-D2 50/10GBASE-PQ21X-D2"

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.6** *P* **39** *L* **35** # 318

Remein, Duane Huawei

Comment Type **TR** *Comment Status* **X**

Footnote "a" does not need any TBDs, we have objectives covering BER.
Same issue exists in Table 141-13 pg 43 line 45

SuggestedRemedy

Change "TBD" to "12" and "XX.X" to proper xref (142.2.2.4 in D1.1) in both tables

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.6.** *P* **41** *L* **41** # 246

Lee, HH ETRI

Comment Type **TR** *Comment Status* **X**

Motion#5 in Pittsburgh meeting:
- Change Ton and Toff maximum values from 512 ns to 128 ns.

SuggestedRemedy

Turn-on time (max) is 128 ns.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.6.** *P* **41** *L* **43** # 247

Lee, HH ETRI

Comment Type **TR** *Comment Status* **X**

Motion#5 in Pittsburgh meeting:
- Change Ton and Toff maximum values from 512 ns to 128 ns.

SuggestedRemedy

Turn-off time (max) is 128 ns.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.6.** *P* **43** *L* **46** # 248

Lee, HH ETRI

Comment Type **TR** *Comment Status* **X**

BER is better than or equal to 10^-12.

SuggestedRemedy

The BER of 10^–12 is achieved by the utilization of FEC as described in 142.2.2.9.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.6.1** *P* **40** *L* **12** # 269

Johnson, John Broadcom

Comment Type **E** *Comment Status* **X**

The second upstream wavelength range for 50GBASE-PQ22X-D3 in Table 141-10 is incorrect. This was propagated from a typo in johnson_3ca_4_0518, so this should be considered an editorial change.

SuggestedRemedy

Change the second wavelength range from 1340 to 1344nm to 1318 to 1322nm.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.6.1** *P* **41** *L* **1** # 263

Johnson, John Broadcom

Comment Type **T** *Comment Status* **X**

Table 141-11, ONU PR20 Transmit Characteristics, requires populating.

SuggestedRemedy

Accept the values in the table shown in johnson_3ca_2_0718.pdf, slide x, to populate Table 141-11.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.6.1** *P* **41** *L* **14** # 275

Johnson, John Broadcom

Comment Type **T** *Comment Status* **X**

The inclusion of an informative spec on minimum average launch power doesn't serve any purpose to specify a compliant TX. A TX that meets the requirements of minimum OMA minus TDP and minimum OMA is compliant, even for very low values of AVP associated with very high ER. This line should be removed from Table 141-11.

SuggestedRemedy

Delete the line for "Average launch power, each channel (min)" in Table 141-11.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.6.1** *P* **41** *L* **27** # 267

Johnson, John Broadcom

Comment Type **T** *Comment Status* **X**

APD RX sensitivity depends on ER due to avalanche multiplication noise in the one and zero rails. The currently accepted baseline APD receiver sensitivities assume that all TX have worst-case ER. By allowing TX with higher than minimum ER to launch slightly lower OMA, significant laser power savings is possible.

SuggestedRemedy

Create two separate spec lines for minimum OMA minus TDP, one for ER ≥ 4.5dB with min. value of 0.5dBm, and one for ER < 4.5dB with min. value of 0.8dBm, as shown in johnson_3ca_1_0718.pdf, slide 7.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.6.1** *P* **41** *L* **27** # 276

Johnson, John Broadcom

Comment Type **T** *Comment Status* **X**

As a reference value for comparison with legacy power specification methods, a footnote should be added to the line for Launch power in OMA minus TDP (min) giving the informative minimum average launch power for the specific worst case of minimum ER and maximum TDP.

SuggestedRemedy

Add footnote to "Launch power in OMA minus TDP, each channel (min) in Table 141-11 which reads, "For reference, this implies that the minimum average launch power per channel at minimum extinction ratio and maximum TDP is 4 dBm. This value is informative only."

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.6.1** *P* **42** *L* **21** # 277

Johnson, John Broadcom

Comment Type **T** *Comment Status* **X**

The inclusion of an informative spec on minimum average launch power doesn't serve any purpose to specify a compliant TX. A TX that meets the requirements of minimum OMA minus TDP and minimum OMA is compliant, even for very low values of AVP associated with very high ER. This line should be removed from Table 141-12.

SuggestedRemedy

Delete the line for "Average launch power, each channel (min)" in Table 141-12.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.6.1** *P* **42** *L* **30** # 278

Johnson, John Broadcom

Comment Type **T** *Comment Status* **X**

As a reference value for comparison with legacy power specification methods, a footnote should be added to the line for Launch power in OMA minus TDP (min) giving the informative minimum average launch power for the specific worst case of minimum ER and maximum TDP.

SuggestedRemedy

Add footnote to "Launch power in OMA minus TDP, each channel (min) in Table 141-12 which reads, "For reference, this implies that the minimum average launch power per channel at minimum extinction ratio and maximum TDP is 6 dBm. This value is informative only."

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.6.1** *P* **42** *L* **30** # 268

Johnson, John Broadcom

Comment Type **T** *Comment Status* **X**

APD RX sensitivity depends on ER due to avalanche multiplication noise in the one and zero rails. The currently accepted baseline APD receiver sensitivities assume that all TX have worst-case ER. By allowing TX with higher than minimum ER to launch slightly lower OMA, significant laser power savings is possible.

SuggestedRemedy

Create two separate spec lines for minimum OMA minus TDP, one for ER ≥ 6dB with min. value of 4.0dBm, and one for ER < 6dB with min. value of 4.2dBm, as shown in johnson_3ca_1_0718.pdf, slide 6.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.6.1** *P* **44** *L* **12** # 270

Johnson, John Broadcom

Comment Type **E** *Comment Status* **X**

The second upstream wavelength range for 50GBASE-PQ22X-D3 in Table 141-12 is incorrect. This was propagated from a typo in johnson_3ca_4_0518, so this should be considered an editorial change.

SuggestedRemedy

Change the second wavelength range from 1340 to 1344nm to 1318 to 1322nm.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.6.2** *P* **43** *L* **18** # 264

Johnson, John Broadcom

Comment Type **T** *Comment Status* **X**

Table 141-13, OLT PR20 Receive Characteristics, requires populating.

SuggestedRemedy

Accept the values in the table shown in johnson_3ca_2_0718.pdf, slide x, to populate Table 141-13.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.6.2** *P* **43** *L* **30** # 283

Johnson, John Broadcom

Comment Type **T** *Comment Status* **X**

The inclusion of an informative spec on minimum average receive power doesn't serve any purpose to specify a compliant RX. An RX that meets the requirements of maximum receiver sensitivity (OMA) and maximum stressed receiver sensitivity (OMA) is compliant, even for very low values of AVP associated with very high ER signals. This line should be removed from Table 141-13.

SuggestedRemedy

Delete the line for "Average receive power, each channel (min)" in Table 141-13.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.6.2** *P* **43** *L* **35** # 284

Johnson, John Broadcom

Comment Type **T** *Comment Status* **X**

As a reference value for comparison with legacy power specification methods, a footnote should be added to the line for Receiver sensitivity (OMA), each channel (max) giving the informative maximum unstressed average power receiver sensitivity for the specific worst case of minimum ER.

SuggestedRemedy

Add to the footnote to "Receiver sensitivity (OMA), each channel (max)" in Table 141-13, "For reference, this implies that the maximum average power unstressed receiver sensitivity measured with an ideal transmitter signal at minimum extinction ratio is -23.5 dBm. This value is informative only."

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.6.2** *P* **43** *L* **50** # 253

Lee, HH ETRI

Comment Type **TR** *Comment Status* **X**

PR30 and PR20 should have same BER specification.

SuggestedRemedy

Measured with conformance test signal at TP3 (see 141.7.11) for BER = 10^–2.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.6.2** *P* **44** *L* **19** # 285

Johnson, John Broadcom

Comment Type **T** *Comment Status* **X**

The inclusion of an informative spec on minimum average receive power doesn't serve any purpose to specify a compliant RX. An RX that meets the requirements of maximum receiver sensitivity (OMA) and maximum stressed receiver sensitivity (OMA) is compliant, even for very low values of AVP associated with very high ER signals. This line should be removed from Table 141-14.

SuggestedRemedy

Delete the line for "Average receive power, each channel (min)" in Table 141-14.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.6.2** *P* **44** *L* **24** # 286

Johnson, John Broadcom

Comment Type **T** *Comment Status* **X**

As a reference value for comparison with legacy power specification methods, a footnote should be added to the line for Receiver sensitivity (OMA), each channel (max) giving the informative maximum unstressed average power receiver sensitivity for the specific worst case of minimum ER.

SuggestedRemedy

Add to the footnote to "Receiver sensitivity (OMA), each channel (max)" in Table 141-14, "For reference, this implies that the maximum average power unstressed receiver sensitivity measured with an ideal transmitter signal at minimum extinction ratio is -25.7 dBm. This value is informative only."

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.7.1** *P* **45** *L* **3** # 319

Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**

The use of the parenthetical "(channel)" here is superfluous (and makes for good comment bait)

SuggestedRemedy

Strike

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.7.9** *P* **46** *L* **2** # 249

Lee, HH ETRI

Comment Type **ER** *Comment Status* **X**

missing 25 Gb/s PHYs.

SuggestedRemedy

For 10 Gb/s PHYs and 25 Gb/s PHYs

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.7.13** *P* **46** *L* **21** # 191

Hajduczenia, Marek Charter Communicatio

Comment Type **TR** *Comment Status* **X**

Laser on/off timing measurement was defined for 10G-EPON in 75.7.14 via reference to 60.9.13.1 with updates to 10G-EPON specific values for particular parameters. The measurement procedure described in 60.9.13.1 is heavily referencing individual 1G-EPON reference tables and specific line code.
To avoid interpretation issues and because of multi-lane operation of Nx25G-EPON, rather than taking the approach used in 10G-EPON, it is suggested that content in 141.7.13 be filled in based off the description included in 60.9.13.1, with all necessary updates to make this text applicable to Nx25G-EPON.

SuggestedRemedy

Replace content in 141.7.13 with content from hajduczenia_3ca_7_0718.pdf

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.7.13** *P* **46** *L* **22** # 320

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Laser Ton Toff definitions non-existent.

SuggestedRemedy

For 10G-EPON & 1G-EPON Ton & Toff are defined in 60.9.13.1.1. Copy that text to a new section, 141.7.13.1, making changes so it reads:

Ton is denoted as the time beginning from the falling edge of the Tx_Enable line to the ONU PMD and ending at the time that the optical signal at TP2 of the ONU PMD is within 15% of its steady state parameters (average launched power, wavelength, RMS spectral width, transmitter and dispersion penalty, optical return loss tolerance, jitter, RIN{TBD}, extinction ratio and eye mask opening) as defined in Table 141-11 or Table 141-12 as appropriate. Ton is presented in Figure{TBD}. The data transmitted may be any valid 256B/257B symbols.

Toff is denoted as the time beginning from the rising edge of the Tx_Enable line to the ONU PMD and ending at the time that the optical signal at TP2 of the ONU PMD reaches the specified average launch power of off transmitter as defined in Table 141-11 or Table 141-12 as appropriate. Toff is presented in Figure{TBD}. The data transmitted may be any valid 256B/257B symbols.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.7.13** *P* **46** *L* **26** # 321

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Motion #5 from the Pittsburgh meeting changed Ton and Toff to 128 ns. Ton & Toff are defined in Tables 141–11 and 141–12 although they is never referred to as "Ton" or Toff until here.

SuggestedRemedy

Change from
"a) Ton is defined in 141.TBD, and its value is less than 512 ns (defined in T able 141-TBD)." to
"a) Ton is defined in Table 141–11 and Table 141–12, and its value is less than 128 ns.
and change from
"e) Toff is defined in 141.TBD, and its value is less than 512 ns (defined in T able 141-TBD)." to
"e) Toff is defined in Table 141–11 and Table 141–12, and its value is less than 128ns."

observe subscripting

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.7.13** *P* **46** *L* **27** # 222

Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **X**

Wrong value for Ton.

SuggestedRemedy

Per May 2018 Motion 5, Ton value is less than 128 ns

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.7.13** *P* **46** *L* **27** # 250

Lee, HH ETRI

Comment Type **TR** *Comment Status* **X**

Motion#5 in Pittsburgh meeting:
- Change Ton and Toff maximum values from 512 ns to 128 ns.

SuggestedRemedy

change 521 ns to 128 ns.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.7.13** *P* **46** *L* **32** # 251

Lee, HH ETRI

Comment Type **TR** *Comment Status* **X**

Motion#5 in Pittsburgh meeting:
- Change Ton and Toff maximum values from 512 ns to 128 ns.

SuggestedRemedy

change 521 ns to 128 ns.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.7.13** *P* **46** *L* **32** # 241

Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **X**

Max values for Ton, Toff, Tcdr and Treceiver_settling are indicated, but upstream bandwidth efficiency will be improved if vendors do more than just meet the max values, and signfic antly reduce them. Encouragement should be provided with an explanation of why.

SuggestedRemedy

Add informative note: “Vendors are encouraged to not only meet the maximum specified values for Ton, Toff, Tcdr and Treceiver_settling, but to minimize these values as far as possible without adding significant cost. This will improve upstream bandwidth efficiency”.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.7.13** *P* **46** *L* **32** # 223

Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **X**

Wrong value for Toff.

SuggestedRemedy

Per May 2018 Motion 5, Toff value is less than 128 ns

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.7.14.2** *P* **47** *L* **3** # 322

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

There are several issues with this figure.
1) the method of introducing the variable link loss is unspecified and should be done via a optical attenuator to eliminate excessive delays due to fiber, which are not accounted for in the description.
2) there are no limits place on the fiber length, which could adversely affect the measurement given the description which assumes that TP6 and TP7 are relatively close.
3) there is a stray double sided arrow at ~line 19.

SuggestedRemedy

1) change "Variable link loss" to "variable optical attenuator"
2) Add a note "All fiber segments are patch cords between 1 and 5 meters in length"
3) strike the stray arrowed line.

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.7.14.2** *P* **47** *L* **33** # 323

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

The figure is the test setup for measuring the parameter, not something else "Figure 141–3 illustrates the test setup for the OLT PMD receiver (upstream) Treceiver_settling time"

SuggestedRemedy

Change:
"Figure 141–3 illustrates the test setup for the OLT PMD receiver (upstream) Treceiver_settling time" to
"Figure 141–3 illustrates the test setup for measuring the OLT PMD receiver (upstream) Treceiver_settling time"

Proposed Response *Response Status* **O**

Cl **141** *SC* **141.9.3.** *P* **50** *L* **32** # 252

Lee, HH ETRI

Comment Type **ER** *Comment Status* **X**

ITU-T G.671. am1 is superseded to ITU-T G.671 (2/12).

SuggestedRemedy

change ITU-T G.671. am1 to ITU-T G.671 (02/12).

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.1** *P* **54** *L* **8** # 193

Hajduczenia, Marek Charter Communicatio

Comment Type **T** *Comment Status* **X**

"used with {NG-EPON type} point-to-multipoint (P2MP) networks" - we need proper replacement after PMD naming discussion in May 2018

SuggestedRemedy

Change "used with {NG-EPON type} point-to-multipoint (P2MP) networks" to "used with Nx25G-EPON point-to-multipoint (P2MP) networks"

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.1** *P* **54** *L* **8** # 324

Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**

Replace {NG-EPON type}

SuggestedRemedy

change to: Nx25G-EPON

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2** *P* **54** *L* **11** # 325

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Dual Rate PCS
Rather than create two PCS clauses for Nx25G-EPON, one for 25G and another, nearly identical at 10G we should structure this clause to handle both rates.
Numerous comments submitted will be towards that end, all begin with the tag "Dual Rate PCS" for easy identification.

SuggestedRemedy

Add the following text to the end of this section:
"In this clause the term xGMII is used to refer to both the 25GMII and the XGMII interfaces."

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.1** *P* **54** *L* **31** # 326

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Dual Rate PCS
Change :
"This subclause defines the PCS {NG-EPON type} supporting burst mode operation over the P2MP medium. The {NG-EPON type, symmetric} PCS is specified to support {NG-EPON types}, where both the receive and transmit paths operate at multiples of 25.78125 Gb/s rate. The {NG-EPON type, asymmetric} PCS supports {NG-EPON types}, in which OLT transmit path and ONU receive path operate at 25.78125 Gb/s, while the ONU transmit path and the OLT receive path operate at 10.3125 Gb/s rate. Figure XXX and Figure XXX show the relationship between the PCS sublayer and the ISO/IEC OSI reference model.
The PCS functional block diagram is shown in 0."

SuggestedRemedy

To :
"This subclause defines the Nx25G-EPON PCS supporting continuous or burst mode operation over the P2MP medium. For symmetric versions of Nx25G-EPON the PCS is specified to support receive and transmit paths both operating at the same number and type of xGMIIs. For asymmetric versions of Nx25G-EPON the PCS supports channel rate asymmetry, channel number asymmetry or a combination of both channel rate and channel number asymmetry. The PCS supports xGMII rates of 25.78125 Gb/s and 10.3125 Gb/s. Figure 142–1 shows the relationship between the PCS sublayer and the ISO/IEC OSI reference model.
The PCS functional block diagram is shown in Figure 142-2."

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.1** *P* **54** *L* **32** # 194

Hajduczenia, Marek Charter Communicatio

Comment Type **T** *Comment Status* **X**

Text of overview needs an update

SuggestedRemedy

Use the following text:

This subclause defines the Nx25G-EPON PCS supporting burst mode operation over the P2MP medium. The Nx25G-EPON PCS is specified to support PQ-type PMDs, where
- both the receive and transmit paths operate at the multiples of 25.78125 Gb/s rate (25/25G-EPON, 50/25G-EPON, and 50/50G-EPON), or
- the receive path operates at the multiples of 25.78125 Gb/s rate and the transmit path operates at 10.3125 Gb/s (25/10G-EPON and 50/10G-EPON ONU), or
- the transmit path operates at the multiples of 25.78125 Gb/s rate and the receive path operates at 10.3125 Gb/s (25/10G-EPON and 50/10G-EPON OLT).
This subclause also specifies a FEC mechanism to increase the optical link budget or the fiber distance. Figure 142-1 show the relationship between the PCS sublayer and the ISO/IEC OSI reference model. The PCS functional block diagram is shown in 142-2.

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2** *P* **54** *L* **52** # 195

Hajduczenia, Marek Charter Communicatio

Comment Type **T** *Comment Status* **X**

Text of PCS transmit function needs an update

SuggestedRemedy

Use the following text:

This subclause defines the transmit direction of the Nx25G-EPON PCS. In the OLT, the PCS transmit function operates in a continuous mode at the multiples of 25.78125 Gb/s rate. In the ONU, the PCS transmit function operates in burst mode at the multiples of 25.78125 Gb/s rate (25/25G-EPON, 50/25G-EPON, and 50/50G-EPON) or at 10.3125 Gb/s rate (25/10G-EPON and 50/10G-EPON). The PCS transmit function includes a mandatory LDPC FEC encoder. The functional block diagram for the PCS transmit function is shown in 141-2. The PCS transmit function consists of the following functional blocks:

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2** *P* **54** *L* **53** # 327

Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**

remove {NG-EPON type}

SuggestedRemedy

Change from :
"This subclause defines the transmit direction of the PCS for {NG-EPON type}." to:
"This subclause defines the transmit direction of the Nx25G-EPON PCS.

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2** *P* **55** *L* **1** # 328

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Dual Rate PCS
Remove {NG-EPON type, symmetric} and {NG-EPON type, asymmetric}

SuggestedRemedy

Change from:
"This subclause defines the transmit direction of the Nx25G-EPON PCS. In the OLT, the PCS transmit function operates at a 25.78125 Gb/s rate, as specified herein ({NG-EPON type, symmetric}), or at a {TBD} Gb/s rate, as specified in {TBD} ({NG-EPON type, asymmetric}). For all {NG-EPON type}, the ONU PCS operates in a burst mode in the transmit direction. The PCS includes a mandatory LDPC FEC encoder. The functional block diagram for the PCS transmit function is shown in 0. The transmit function consists of the following functional blocks." to:
"This subclause defines the transmit direction of the Nx25G-EPON PCS. In the OLT, the PCS transmit function operates at a 25.78125 Gb/s rate in a continuous mode. In the ONU, the PCS transmit function operates in a burst mode at a rate of either 25.78125 Gb/s or 10.3125 Gb/s rate depending on the type of PMD. The PCS includes an LDPC FEC encoder which is mandatory for operation at the 25.78125 Gb/s rate."

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2** *P* **56** *L* **6** # 329

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Fix this (there is not Tx/Enc block, Data Det block or scrambler):
"— Transmit/Encode block (see 142.2.2.1),
— Data Detect block (ONU only, see 142.2.2.7),
— 64B/66B to 256B/257B Transcoder (see 142.2.2.1.3),
— Scrambler (see 142.2.2.8),
— FEC Encoder (see 142.2.2.9), and
— Gear Box (see 142.2.2.10)."

SuggestedRemedy

Change to:
"The transmit function consists of the following functional blocks. A PCS Input block (see 142.2.2.1) which includes the 64B/66B encoder, 64B/66B to 256B/257B Transcoder functions. The PCS Input block also feeds data to the FEC Encoder function. A PCS Framer block (see 142.2.2.2) which identifies and adds framing information to the data stream. A PCS Transmit block (see 142.2.2.3) which multiplexes the FEC Parity into the data stream. Lastly the PCS includes a Gearbox block (see 142.2.2.10) which converts the data stream to the format expected by the PMA sublayer."

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2** *P* **85** *L* **1** # 390

Powell, Bill Nokia

Comment Type **TR** *Comment Status* **X**

Title of CL 143.2.2 still includes 100 Gb/s

SuggestedRemedy

Change title of CL 143.2.2 to:
"25 Gb/s and 50 Gb/s operation over P2MP media"

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.1** *P* **56** *L* **51** # 330

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Dual Rate PCS
Corrected wording for the para beginning "The Transmit/Encode functional block, which no longer exists.

SuggestedRemedy

Replace paragraph with:
The PCS Input functional block accepts two consecutive 36-bit transfers from the 25GMII (or XGMII in the case of a 10 Gb/s) interface and converts them into a single 72-bit tx_raw vector. The Input block discards all RATE_ADJ_EQs to allow for insertion of FEC parity block by the Output process (See 142.x.x). IBI_EQs not required to complete a 256B/257B block at the end of a transmission are also discarded at the Input block. All other 72-bit vectors are encoded into a single 64B/66B block. Four 64B/66B blocks are accumulated and transcoded into a single scrambled 256B/257B block and copied to the FEC Encoder. A single bit indicating the accompanying 256B/257B vector has been scrambled is appended to the vector which is then stored in the INPUT_FIFO.

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.1.1** *P* **57** *L* **5** # 331

Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**

What is a 25BGASE?

SuggestedRemedy

Change "25BGASE-PR" to "Nx25G-EPON"

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.1.1** *P* **57** *L* **7** # 196

Hajduczenia, Marek Charter Communicatio

Comment Type **E** *Comment Status* **X**

HEX representation: a-f symbols are written now in lower caps or upper caps, with no consistency

SuggestedRemedy

Suggest to use all upper caps in hex numbers, less :"0x" designator indicating hex value Base standard seems to be inconsistent in thus respect today

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.1.2** *P* **57** *L* **13** # 198

Hajduczenia, Marek Charter Communicatio

Comment Type **T** *Comment Status* **X**

Multiple references to "25GBASE-PR PCS"

SuggestedRemedy

Change globally to "Nx25G-EPON PCS" to designate PCS defined in Clause 142

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.1.2** *P* **57** *L* **13** # 197

Hajduczenia, Marek Charter Communicatio

Comment Type **T** *Comment Status* **X**

Multiple references to "25GBASE-PR"

SuggestedRemedy

Change globally to "25GBASE-PQ" since PQ is the proper designator for new 256/257 bit coding, less all occurrences of "25GBASE-PR PCS"

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.1.2** *P* **57** *L* **14** # 332

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Dual Rate PCS
Why is this statement pertinent? "The 10GBASE-R PCS encodes each of the other control characters into a 7-bit C code."
The two para in this section which both ref to Table 142-1 can be combined and applied to both 25GMII and 10GMII.

SuggestedRemedy

Change the section to read:
"The control characters and their mappings to Nx25G-EPON control codes are specified in Table 142–1. The representations of the control characters are the control codes. Control characters are transferred over the xGMII as an 8-bit value. The Nx25G-EPON PCS encodes the start and terminate control characters implicitly using the block type field. The Nx25G-EPON PCS does not encode the ordered set control codes. All control code values that do not appear in the table shall not be transmitted and are treated as an error if received."

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.1.2** *P* **57** *L* **14** # 202

Hajduczenia, Marek Charter Communicatio

Comment Type **T** *Comment Status* **X**

Information out of context "The 10GBASE-R PCS encodes each of the other control characters into a 7-bit C code."

SuggestedRemedy

Strike this sentence, we do not reuse anything from 10GBASE-R

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.1.2** *P* **57** *L* **22** # 333

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Table 142-1 need several updates.

SuggestedRemedy

Replace "Parity Placeholder" and "/P/" with "Rate Adjust" and "/RA/' on row 3 resp.
Add new row 4 to read: "InterBurst Idle", "/IBI/", "0x09", "0x09"

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.1.2** *P* **57** *L* **22** # 334

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Dual Rate PCS
The table should apply to both 25G and 10G MIIs

SuggestedRemedy

Change headers from "25GMII …" to "xGMII …"

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.1.3** *P* **57** *L* **36** # 335

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

The transcoder no longer passed anything to the scrambler block which no longer exists.

SuggestedRemedy

Change the section to read:
"The 64B/66B to 256B/257B transcoder converts four consecutive 64B/66B blocks the into one scrambled 256B/257B block as described in 91.5.2.5."

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.2** *P* **57** *L* **1** # 408

Hajduczenia, Marek Charter Communicatio

Comment Type **TR** *Comment Status* **X**

No definition of upstream burst structure

SuggestedRemedy

Use hajduczenia_3ca_3_0718.pdf for text and drawing of the upstream burst structure

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.2** *P* **57** *L* **40** # 336

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Text to replace 142.2.2.2

SuggestedRemedy

142.2.2.2 PCS Framer
The PCS Framer process monitors data from the INPUT_FIFO and transfers it to the TX_FIFO, inserting inter-burst idle (IBI), start of burst synchronization pattern (SP), parity placeholders (PAR_PLACEHLDR), and end of burst delimiter (EBD) as appropriate. While the INPUT_FIFO is empty the PCS Framer process appends IBI to the TX_FIFO. When the INPUR_FIFO first becomes not empty, indicating the beginning of a burst, the SP is appended to the TX_FIFO. Once the complete SP is appended to the TX_FIFO the input process begins transferring data from the INPUT_FIFO to the TX_FIFO. When sufficient data for a full FEC information codeword has been transferred to the TX_FIFO, or the end of the burst is detected as indicated by and empty INPUT_FIFO, the PCS Framer process appends sufficient PAR_PLACEHLDR blocks to the TX_FIFO to allow insertion of the FEC parity codeword into the data stream by the PCS Transmit process. Additional FEC codewords are allowed for until the end of the transmission is indicated by an empty INPUT_FIFO, at which point the PCS Framer appends the EDB to the TX_FIFO followed by IBI.

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.2** *P* **57** *L* **40** # 203

Hajduczenia, Marek Charter Communicatio

Comment Type **E** *Comment Status* **X**

Empty sections

SuggestedRemedy

Add {TBD} statements to the following sections: 142.2.2.2, 142.2.2.3, 142.2.2.4, 142.2.2.5

Proposed Response *Response Status* **O**

Cl **142** SC **142.2.2.2** P **57** L **42** # 337

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Text to replace 142.2.2.3

SuggestedRemedy

The PCS Transmit process transfers data from the TX_FIFO or FEC Encoder to the Gearbox functional block.
On each transition of the CLK_OUT to true the Transmit process retrieves one 258-bit block of data from the TX-FIFO. If the retrieved 258-bit block is SP[0] and Transmitting is false, indicating the beginning of a transmission, the PMA_SIGNAL.request is set to true indicating that the laser should be turned on, and the lower 257-bits of the 258-bit block are sent to the Gearbox. If the retrieved 258-bit block is EDB and Transmitting is true, indicating the end of a transmission, the PMA_SIGNAL.request is set to false indicating that the laser should be turned off, and the lower 257-bits of the 258-bit block are sent to the Gearbox. If the retrieved 258-bit block is PAR_PLACEHLDR, indicating a FEC parity codeword should be inserted in the data stream, 257-bits of the parity are retrieved from the FEC engine and sent to the Gearbox. In all other cases, i.e., normal transmission data, the lower 257-bits of the 258-bit block retrieved from the TX_FIFO are sent to the Gearbox.

Proposed Response *Response Status* **O**

Cl **142** SC **142.2.2.4** P **57** L **44** # 338

Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**

Remove 142.2.2.4 FEC Encoding and 142.2.2.5 Gearbox as these are duplicates of 142.2.2.9 & 142.2.2.10

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **142** SC **142.2.2.6** P **57** L **48** # 339

Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**

Change "142.2.2.6 PCS Transmit" to "142.2.2.6 PCS Transmission path" to avoid confusion with 142.2.2.3

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **142** SC **142.2.2.6.1** P **48** L **4** # 410

Laubach, Mark Broadcom

Comment Type **T** *Comment Status* **X**

Modify to refelect PCS state diagrams adopted at the last meeting.

SuggestedRemedy

Insert new constant into 142.2.2.6.1 Constants in alphabetical order:

"CD
TYPE: 10-bit integer
Value: 0x3CA
The CD is used for code word alignment synchronization."

Proposed Response *Response Status* **O**

Cl **142** SC **142.2.2.6.1** P **58** L **35** # 340

Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**

There are numerous references to "Transmit Process" in the draft, some refer to MPRS others to PCS. We should be specific.

SuggestedRemedy

"PCS Input Process" at: 58 line 35 is correct. Use "MPRS Input Process" everywhere else.

Proposed Response *Response Status* **O**

Cl **142** SC **142.2.2.6.1** P **58** L **37** # 341

Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**

Remove the Editors note

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.6.2** *P* **58** *L* **45** # 411

Laubach, Mark Broadcom

Comment Type **T** *Comment Status* **X**

Modify to refelect PCS state diagrams adopted at the last meeting.

SuggestedRemedy

Insert new variable into 142.2.2.6.2 Variables in alphabetical order:

"PARITY_STAGING_BUFFER[]
TYPE: array of 2570 bits.
The PARITY_STAGING_BUFFER holds the 2560-bit calculated parity value along with the 10-bit CD value (see 142.2.2.9.1). The total size of 2570 bits aligns represents the same size as ten 257-bit line encoding blocks."

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.6.2** *P* **58** *L* **49** # 342

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Dual Rate PCS
Change "25GMII clock" to "xGMII clock"

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.6.2** *P* **60** *L* **18** # 343

Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**

There are numerous references to "Input Process" in the draft, some refer to MPRS others to PCS. We should be specific.

SuggestedRemedy

Use "PCS Input Process" at: pg/line, 60/18 and "MPRS Input Process" everywhere else (as is done at pg 102 line 4).

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.6.3** *P* **60** *L* **31** # 412

Laubach, Mark Broadcom

Comment Type **T** *Comment Status* **X**

Modify to refelect PCS state diagrams adopted at the last meeting.

SuggestedRemedy

Insert new function into 142.2.2.6.3 Functions in alphabetical order:

"FecParity()
The first call to this function returns a vector containing the first 257 bits from the PARITY_STAGING_BUFFER, i.e. PARITY_STAGING_BUFFER<256:0>. Each subsequent call increments the indexes by 257 and returning a vector with the next 257 bits in the buffer. On the 10th call the last 257 bits are returned, i.e. PARITY_STAGING_BUFFER<2569:2312>, and the function resets to return PARITY_STAGING_BUFFER<256:0> on the next call. This emulates a circular buffer of size 10 by 257-bits."

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.6.3** *P* **60** *L* **33** # 344

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

What is "FIFO F"?

SuggestedRemedy

Change Append(v), Fill(v), GetHead(), and IsEmpty() to F.Append(v), F.Fill(v), F.GetHead(), and F.IsEmpty().

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.6.4** *P* **61** *L* **20** # 345

Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**

Reorder the PCS transmission path state diagrams into their logical order (Input, Framer, Transmit). Update references.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.6.4** *P* **61** *L* **48** # 413

Laubach, Mark Broadcom

Comment Type **T** *Comment Status* **X**

Modify to refelect PCS state diagrams adopted at the last meeting.

SuggestedRemedy

Change "FecParity<256:0>" to "FecParity()".

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.6.4** *P* **62** *L* **10** # 346

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Figure 142–3 Exit conditions out of NEXT_VECTOR confusing.

SuggestedRemedy

Unrotate and place below NEXT_VECTOR not in a joint line with other defined exits (UCT, else).

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.7** *P* **62** *L* **43** # 347

Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**

Strike 142.2.2.7 Data detector {TBD}, 142.2.2.7.1 Burst Mode operation (ONU only) {TBD}, and 142.2.2.8 Scrambler See 49.2.6.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.9** *P* **64** *L* **1** # 204

Hajduczenia, Marek Charter Communicatio

Comment Type **ER** *Comment Status* **X**

FEC encoding for the transmit function is already covered in 142.2.2.4

SuggestedRemedy

Move content from 142.2.2.9 to 142.2.2.4 and updated cross references accordingly.

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.9** *P* **64** *L* **3** # 205

Hajduczenia, Marek Charter Communicatio

Comment Type **T** *Comment Status* **X**

Overview text needs an update

SuggestedRemedy

Change "The {NG-EPON type} PCS shall encode the transmitted data stream using {TBD} FEC." to "The Nx25G-EPON PCS shall encode the transmitted data stream using 3072 × 17664 LDPC FEC, defined in 142.2.2.9.1."

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.9.1** *P* **64** *L* **34** # 414

Laubach, Mark Broadcom

Comment Type **T** *Comment Status* **X**

Modify to refelect PCS state diagrams adopted at the last meeting.

SuggestedRemedy

Modify the figure to refelect PCS state diagrams adopted at the last meeting. Remove the 1) the circle underneath “K-bit information” on the left side of the figure, 2) remove the shorter arrow between that circle and the “Zero Padding” box and extend the remaining arrow to the same box, 3) remove the down and right arrow and label “K-bit information”, and 4) “N-bit FEC codeword” to “Parity Staging Buffer”. Up to the Editor to continue using the mux symbol or to replace with a buffer representation.

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.9.1** *P* **64** *L* **46** # 415

Laubach, Mark Broadcom

Comment Type **T** *Comment Status* **X**

Modify to refelect PCS state diagrams adopted at the last meeting.

SuggestedRemedy

Insert new text paragraph after Figure 142-6:

"The LDPC encoder as shown in Figure 142-6 places the M-bit FEC parity bits into the PARITY_STAGING_BUFFER for use by the PCS Transmit process (142.2.2.6) and the FecParity() function. The buffer is comprised of the 2560 bits of calculated parity along with the 10-bit CD (codeword delimiter) constant. This results in the parity bits assigned to PARITY_STAGING_BUFFER<2559:0> and the 10-bit CD value to PARITY_STAGING_BUFFER<2569:2560>. The transmission order starts with bit 0 and ends with bit 2569."

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.2.10** *P* **74** *L* **25** # 348

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

142.2.2.10 Gearbox
text to replace "{TBD}"
Note in this proposed change I've suggested a 16-bit interface between the PCS and PMA. This could also be a 1-bit interface as defined in 105.4.1 Inter-sublayer service interface. We would need to allow for both the 25.78125 and the 10.312 rates as 105.4 only allows for 25G rate. Also we might need to adopt the cl 105 nomenclature of IS_UNITDATA.request, IS_UNITDATA.indication, and IS_SIGNAL.indication. I could not find a definition of an IS_SIGNAL.request as we use in PON.

SuggestedRemedy

Replace with:
“The gearbox adapts between the 257-bit width of the PCS blocks and the 16-bit width of the PMA interface. It receives the 257-bit blocks. When the transmit channel is operating in normal mode, the gearbox sends 16 bits of transmit data at a time via the PMA_UNITDATA.request primitive. The primitive is fully packed with bits. The bits shall be packed into the tx_data-group in sequence with the lowest numbered bit of the block going into the lowest numbered bit of the part of tx_data-group<15:0> bits containing bits from that block (see {equivalent to Figure 49–5}). The internal data-path width between the PCS and PMA is an implementation choice. Depending on the path width, the gearbox functionality may not be necessary.”

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.3** *P* **74** *L* **38** # 349

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

We no longer require a separate descrambler

SuggestedRemedy

strike "— Descrambler (see 142.2.3.5),"

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.3.2.4** *P* **76** *L* **23** # 406

Kramer, Glen Broadcom

Comment Type **T** *Comment Status* **X**

Motion 10 at the last meeting accepted FEC delimiter match with the Hamming distance of 0 (i.e., an exact match). This allows the SD to be simplified and not use Compare function and Match variable. Also, by convention, constants should be shown in all caps. FecDecodeFail and FecDecodeSuccess are two dependent variables -- we can just use a single bollean instead of these two. Typo in FEC_CW_SIZE constant.

SuggestedRemedy

Replace the synchronization state diagram in figure 142-14 with the state diagram shown in kramer_3ca_8_0718.pdf

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.3.2.4** *P* **76** *L* **23** # 350

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

I believe the figure is 142-14

SuggestedRemedy

Change "Figure 76–20" to "Figure 142-14" and remove red highlight.

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.3.2.4** *P* **76** *L* **50** # 351
Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Correctly name Figure 142-14

SuggestedRemedy

Change to "Synchronizer state diagram"

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.3.5** *P* **77** *L* **9** # 352
Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Remove 142.2.3.5 Descrambler
See 49.2.10.
This is done in the transcoder now.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.3.6** *P* **77** *L* **14** # 353
Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

142.2.3.6 256B/257B to 64B/66B transcoder description is in error.

SuggestedRemedy

Change section text to read:
The 256B/257B to 64B/66B transcoder converts one scrambled 256B/257B block received from the PCS Deframer functional
block into four consecutive 64B/66B blocks as described in 91.5.3.5 and returns the result to the Output functional block.

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.3.7** *P* **77** *L* **18** # 354
Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

142.2.3.7 Receive/Decode no longer exists

SuggestedRemedy

Change to "142.2.3.7 64B/66B Decoder"

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.3** *P* **78** *L* **20** # 355
Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**

This is the Nc25G-EPON PMA

SuggestedRemedy

Replace {NG-EPON type} with Nx25G-EPON

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.3** *P* **78** *L* **21** # 206
Hajduczenia, Marek Charter Communicatio

Comment Type **T** *Comment Status* **X**

Title needs an update

SuggestedRemedy

Change to "Nx25G-EPON PMA"

Proposed Response *Response Status* **O**

Cl **143** *SC* **143** *P* **82** *L* **3** # 356
Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Resolution to Editors note and comment 52 against D1.0.

SuggestedRemedy

See remein_3ca_2_0718.pdf. Some figures in this clause are provided in source file remein_3ca_3_0718.fm and pdf version of that source.

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.1** *P* **82** *L* **17** # 234

Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **X**

Sentence reads "up to four PHYs requiring up to four 25 Gigabit Media Independent Interfaces".

SuggestedRemedy

Replace "four" with up to N=2.

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.1** *P* **82** *L* **18** # 394

Powell, Bill Nokia

Comment Type **TR** *Comment Status* **X**

Current text includes "up to four PHYs requiring up to four 25 Gb/s…"

SuggestedRemedy

Change text to read:
"…inter face with up to N=2 PHYs requiring up to N=2 25 Gigabit Media Independent Interfaces (25GMIIs)"

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.2** *P* **82** *L* **8** # 235

Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **X**

Sentence reads "of up to four 25GMIIs".

SuggestedRemedy

Replace "four" with up to N=2.

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.2** *P* **82** *L* **48** # 395

Powell, Bill Nokia

Comment Type **TR** *Comment Status* **X**

Point "b)" still includes "four" describing 25GMII PHYs

SuggestedRemedy

Change point "b)" to read:
"The MPRS converts between the MAC serial data stream and the parallel data paths of up to N=2 25GMIIs servicing separate PHYs."

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.2** *P* **84** *L* **54** # 357

Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**

item "e)" gets lost.

SuggestedRemedy

Insert a line feed or new line to ensure this text starts on the next page. Might increase the size of the fig so no text can occupy the same page.

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.2.2** *P* **85** *L* **1** # 358

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

"25 Gb/s, 50 Gb/s, and 100 Gb/s operation over P2MP media". Will "this clause" also address 10G?

SuggestedRemedy

Add "10 Gb/s," to this list (2x). In the para below the clause title add "For additional details on operation at 10 Gb/s see 143.5.xxx."

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.2.2.1** *P* **85** *L* **13** # 236

Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **X**

Sentence reads "all four MPRS channels".

SuggestedRemedy

Replace "four" with up to N=2.

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.2.2.1** *P* **85** *L* **15** # 396

Powell, Bill Nokia

Comment Type **TR** *Comment Status* **X**

Lines 15-16 contain a sentence that should be dropped that mentions four channels and 100 Gb/s.

SuggestedRemedy

Delete the sentence reading:
"An implementation containing all four channels supports 25 Gb/s, 5 0 Gb/s, and 100 Gb/s MAC data rates."

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.2.2.1** *P* **85** *L* **21** # 391

Powell, Bill Nokia

Comment Type **TR** *Comment Status* **X**

Several rows of table 143-1 still include 100 Gb/s

SuggestedRemedy

DC1 Row - Drop "and 100 Gb/s" from Col.3
DC2/DC3 Rows - Drop "at 100 Gb/s" from Col.3
UC1 Row - Drop "and 100 Gb/s" from Col.3
UC2/UC3 Rows - Drop "at 100 Gb/s" from Col.3

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.2.3.1** *P* **86** *L* **7** # 359

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

While true(ish) the following statement in incomplete. "Within the PCS, each EQ is converted into a single 66-bit block, according to the 64B/66B encoding rules (see 142.2.2.9)." Why doe the MPRS need to describe the details of the PCS?

SuggestedRemedy

Strike the sentence.

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.2.3.1** *P* **86** *L* **13** # 216

Doo, Kyeonghwan ETRI

Comment Type **ER** *Comment Status* **X**

Replace "25XGMII transfer" in Figure 143-2 with "25GMII"

SuggestedRemedy

Change "25XGMII" to "25GMII"

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.2.3.3** *P* **86** *L* **42** # 217

Doo, Kyeonghwan ETRI

Comment Type **E** *Comment Status* **X**

Replace "see Figure 143-5" with "see Figure 143-3"

SuggestedRemedy

Change "143-5" to "143-3"

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.2.4** *P* **88** *L* **36** # 237
Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **X**
Sentence reads "all four MPRS channels".

SuggestedRemedy
Replace "four" with up to N=2.

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.2.4** *P* **88** *L* **46** # 238
Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **X**
Sentence reads "all four MPRS channels".

SuggestedRemedy
Replace "four" with up to N=2.

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.2.4** *P* **88** *L* **46** # 229
Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **X**
Sentence includes "100 Gb/s" and mentions "four MPRS channels."

SuggestedRemedy
remove "100 Gb/s" and "four MPRS channels."

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.2.4.1** *P* **89** *L* **1** # 392
Powell, Bill Nokia

Comment Type **TR** *Comment Status* **X**
Figure 143-6 still includes 4 US channels (UC0-3)

SuggestedRemedy
Drop UC2 & UC3 lines from figure and change summation of instantaneous data rate at top of figure accordingly.

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.2.4.1** *P* **89** *L* **29** # 393
Powell, Bill Nokia

Comment Type **TR** *Comment Status* **X**
Figure 143-7 still includes 4 US channels (UC0-3)

SuggestedRemedy
Re-draw figure with only UC0 & UC1 lines (drop UC2 & UC3 lines)

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.2.2 25** *P* **85** *L* **1** # 225
Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **X**
Title includes "100 Gb/s"

SuggestedRemedy
remove "100 Gb/s"

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.2.2 25** *P* **85** *L* **3** # 226
Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **X**
Sentence includes "100 Gb/s"

SuggestedRemedy
remove "100 Gb/s"

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.2.2 25** *P* **85** *L* **16** # 227
Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **X**
Sentence includes "100 Gb/s" and mentions "four channels."

SuggestedRemedy
remove "100 Gb/s" and "four channels."

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.2.2 25** *P* **85** *L* **20** # 228
Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **X**
Table 143–1 has several mentions of "100 Gb/s"

SuggestedRemedy
remove all "100 Gb/s"

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.1** *P* **92** *L* **54** # 239
Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **X**
Sentence reads "of up to four 25GMIIs".

SuggestedRemedy
Replace "four" with up to N=2.

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.1.1** *P* **93** *L* # 240
Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **X**
Sentence reads "four PLS service interfaces"

SuggestedRemedy
Remove text

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.1.1** *P* **93** *L* **45** # 397
Powell, Bill Nokia

Comment Type **TR** *Comment Status* **X**
Sentence reads "four PLS service interfaces"

SuggestedRemedy
Remove "four"

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.3** *P* **97** *L* **41** # 360
Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**
in Fig 143-12 TX_FIFO is now ENV_TX

SuggestedRemedy
per comment

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.3.2** *P* **98** *L* **16** # 361
Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**
Assuming "3.1" refers to subclause 3.1 it should be in forest green.

SuggestedRemedy
per comment

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.3.3** *P* **98** *L* **18** # 362
Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**
Missing definitions for IEI_EQ and IBI_EQ

SuggestedRemedy
Add entry for IBI_EQ and ref. definition Cl 142.
Add following for IEI_EQ in 143.4.3.3:
IEI_EQ
TYPE: 72-bit vector
Value: 0xF 10 10 10 10
The IEI_EQ constant indicates that the MPRS is between bursts and there is no envelope being transmitted by the sublayer.

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.3.3** *P* **98** *L* **33** # 363

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

This definition is incorrect: "The value of an EQ which represents idle space between transmissions."

SuggestedRemedy

Change "between" to "within"

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.3.3** *P* **98** *L* **35** # 364

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

PARITY_PLACEHLDR should be removed here and in 143.4.4.2 pg 104 line 47.

SuggestedRemedy

per comment

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.3.4** *P* **98** *L* **45** # 365

Remein, Duane Huawei

Comment Type **TR** *Comment Status* **X**

TxActive is not defined

SuggestedRemedy

Add the following definition:
TxActive[ch]
TYPE: Boolean
Variable TxActive indicates the transmission status of MPRS channel ch. When TxActive is true, the MPRS channel ch outputs MAC data or Inter Envelope Idle. When TxActive is false, the channel ch only outputs Inter Burst Idle.

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.3.4** *P* **98** *L* **48** # 366

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Ch should be a 1-bit integer

SuggestedRemedy

per comment

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.3.4** *P* **98** *L* **52** # 367

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

CwdLeft no longer exists in the SD. It was replaced with EnvLeft

SuggestedRemedy

Remove CwdLeft definition

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.3.4** *P* **99** *L* **6** # 368

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

This definition of EnvLeft implies that there is a fixed max time between US Grants (2.56 ns * 2^22) "if negative this variable represents the number of EQ periods since the end of the last envelope on the channel".

SuggestedRemedy

Change the definition to be non-rollover

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.3.4** *P* **99** *L* **18** # 369
Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**
GRANT_MARGIN is not longer used in these SD's

SuggestedRemedy
Remove definition.

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.3.4** *P* **99** *L* **33** # 370
Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**
There are numerous references to "Output Process" in the draft, we are likely to adopt an output process for the PCS also. We should be specific.

SuggestedRemedy
Use "MPRS Output Process" everywhere in D1.1 (as is done on pg 108 line 35).

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.3.4** *P* **99** *L* **51** # 230
Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **X**
Sentence reads, "For 100 Gb/s devices N = 4…"

SuggestedRemedy
Remove that text; we only talk about N=1 or 2.

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.3.5** *P* **100** *L* **39** # 371
Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**
Comparing EnvLeft to GRANT_MARGIN is no longer valid

SuggestedRemedy
Change " == GRANT_MARGIN" to " <= 0"

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.3.6.1** *P* **102** *L* **8** # 372
Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**
a envelope s/b an envelope

SuggestedRemedy
per comment

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.4** *P* **104** *L* **33** # 373
Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**
There are numerous references to "Receive Process" in the draft, we are likely to adopt a receive process for the PCS also. We should be specific.

SuggestedRemedy
Use "MPRS Receive Process" everywhere in D1.1.

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.4.1** *P* **104** *L* **40** # 218
Doo, Kyeonghwan ETRI

Comment Type **ER** *Comment Status* **X**
Replace "See 143.4.4.1." with "See 143.4.3.1."

SuggestedRemedy
Change "143.4.4.1" to "143.4.3.1"

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.4.2** *P* **104** *L* **45** # 219
Doo, Kyeonghwan ETRI

Comment Type **ER** *Comment Status* **X**
Replace "See 143.4.4.2." with "See 143.4.3.3."

SuggestedRemedy
Change "143.4.4.2" to "143.4.3.3" on line 45, 48

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.4.2** *P* **105** *L* **12** # 374
Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**
RX_FIFO in Figure 143–15 and RX-FIFO at pg 106 line 10 s/b ENV_RX.

SuggestedRemedy
per comment

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.4.3** *P* **105** *L* **28** # 220
Doo, Kyeonghwan ETRI

Comment Type **ER** *Comment Status* **X**
Replace "See 143.4.4.3." with "See 143.4.3.4."

SuggestedRemedy
Change "143.4.4.3" to "143.4.3.4" on line 28, 31, and 34

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.4.3** *P* **105** *L* **38** # 375
Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**
This phrase is incorrect "and runs at half the frequency of TX_CLK"

SuggestedRemedy
Strike the phrase

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.4.3** *P* **106** *L* **13** # 231
Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **X**
Sentence reads, "For 100 Gb/s devices N = 4…"

SuggestedRemedy
Remove that text; we only talk about N=1 or 2.

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.4.3** *P* **106** *L* **20** # 376
Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**
We should be positionally specific in this definition: "The RxEQ variable represents the most recent EQ received from a 25GMII interface."

SuggestedRemedy
Change;
"EQ received from" to:
"EQ received by the MPRS from"

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.4.4** *P* **106** *L* **31** # 209
Doo, Kyeonghwan ETRI

Comment Type **ER** *Comment Status* **X**
It's a typo : "eq,64:71>"

SuggestedRemedy
Change "eq,64:71>" to "eq<64:71>"

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.4.4** *P* **106** *L* **51** # 210
Doo, Kyeonghwan ETRI

Comment Type **ER** *Comment Status* **X**
It's a typo : "octet_index < 8,"

SuggestedRemedy
Change "octet_index < 8," to "octet_index < 8;"

Proposed Response *Response Status* **O**

Cl **143** *SC* **143.4.4.5.2** *P* **109** *L* **17** # 377
Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Figure 143–17 needs updating, no PARITY_PLACEHLDR.

SuggestedRemedy

Replace with RATE_ADJ_EQ

Proposed Response *Response Status* **O**

Cl **144** *SC* **144** *P* **113** *L* **1** # 403
Kramer, Glen Broadcom

Comment Type **T** *Comment Status* **X**

Clause 144 should include additional material, such as a sublcuase for Channel Control Protocol.

SuggestedRemedy

Adopt the outline for Clause 144 as shown in kramer_3ca_5_0718.pdf

Proposed Response *Response Status* **O**

Cl **144** *SC* **144** *P* **113** *L* **1** # 224
Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **X**

Title includes "100G EPON"

SuggestedRemedy

Replace with Nx25G EPON

Proposed Response *Response Status* **O**

Cl **144** *SC* **144** *P* **113** *L* **1** # 407
Hajduczenia, Marek Charter Communicatio

Comment Type **TR** *Comment Status* **X**

Architecture overview for Clause 144 is missing

SuggestedRemedy

Adopt text per hajduczenia_3ca_8_0718.pdf, containing new text of introduction, architecture for ONU and OLT, parser and multiplexer state diagrams.

Proposed Response *Response Status* **O**

Cl **144** *SC* **144** *P* **113** *L* **1** # 232
Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **X**

Title includes "100G EPON"

SuggestedRemedy

Replace with Nx25G EPON

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.3** *P* **116** *L* **6** # 179
Hajduczenia, Marek Charter Communicatio

Comment Type **TR** *Comment Status* **X**

We are very inconsistent in the way we specify Opcode for Discovery GATE and the way we reference to it in text

SuggestedRemedy

Change all instances of "DISCOVERY GATE" to "DISCOVERY_GATE" (observe case)
Change all instances of "DISCOVERY" when referring to the message Opcode (e.g., Figure 144-3) to "DISCOVERY_GATE"

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.3** *P* **117** *L* **6** # 399

Kramer, Glen Broadcom

Comment Type **TR** *Comment Status* **X**

Figure 144-2 is missing information or shows incorrect information being passed between the OLT and the ONUs

SuggestedRemedy

DISCOVERY GATE is missing Min and Max RSSI fields.
REGISTER shows target Laser ON/OFF (should not be there).
REGISTER and DISCOVERY GATE show a single SyncTime field. Should be SP1 Count, SP2 Count, [SP3 Count]
REGISTER_ACK should echo the same SP Count values.

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.3.1** *P* **117** *L* **17** # 181

Hajduczenia, Marek Charter Communicatio

Comment Type **T** *Comment Status* **X**

Discovery Processing service interfaces do not sink and process DISCOVERY GATE MPCPDU.

SuggestedRemedy

Remove "OpcodeRx = DISCOVERY" from Figure 144-5

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.3.1** *P* **119** *L* **22** # 182

Hajduczenia, Marek Charter Communicatio

Comment Type **TR** *Comment Status* **X**

No service interface definition for DISCOVERY GATE MPCPDU
MH_DISCOVERY

SuggestedRemedy

Implement changes shown in hajduczenia_3ca_6_0718.pdf - only changes are shown, i.e., new Figure 144–6, new Figure 144–11 with associated text, and new primitive definition (MCC:MACI(DISCOVERY_GATE ...) in 144.3.3.5 + changes to Figure 144-3, Figure 144-6, and existing primitive in 144.3.3.5

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.3.1** *P* **119** *L* **27** # 378

Remein, Duane Huawei

Comment Type **TR** *Comment Status* **X**

Per definition 1 EQ is 64 data bits and 8 control bits, therefore any number of EQs cannot equate to some number of ns.
The same issue exists at line 35, and at Pg 119 line 27 and line 35.
Note that is previous EPON clauses this confusion was avoided by using a defined term time_quantum (different and distinct from TQ) to refer to the 16 ns required for a TQ to be transmitted at a given rate.

SuggestedRemedy

Change "in the units of 1 EQ" to "in the units of 1 EQ divided by 25 Gb/s"

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.3.1** *P* **119** *L* **28** # 379

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

Ton and Toff are not specified in Cl 75 and it is now 128 ns.

SuggestedRemedy

pg 119 line 28 change "Table 75–8 and Table 75–9" to "Table 141–11 and Table 141–12".
pg 119 line 31 change "VA LUE: 0xC8 (512 ns, default value)" to "VA LUE: 0x32 (128 ns, default value)"
pg 119 line 36 change "T able 75–8 and T able 75–9" to "Table 141–11 and Table 141–12".
pg 119 line 39 change "VA LUE: 0xC8 (512 ns, default value)" to "VA LUE: 0x32 (128 ns, default value)"
Pg 120 line 20 change "75.7.14" to "Table 75–8 and Table 75–9"
Pg 120 line 26 change "75.7.14" to "Table 75–8 and Table 75–9"

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.3.2** *P* **120** *L* **28** # 380

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

An oddly self-deprecating definition of local time.

SuggestedRemedy

Change to read:
This variable holds the value of the local timer used to control MPCP operation. This variable is advanced by a timer at 390.625 MHz, and is equivalent to one EQ at 25 Gb/s. At the OLT the counter shall track the transmit clock, while at the ONU the counter shall track the receive clock. For accuracy of receive clock, see {TBD 65.3.1.2}. It is reloaded with the received timestamp value (from the OLT) by the {TBD Control Parser (see Figure 64–11)}. Changing the value of this variable while running using Layer Management is highly undesirable and is unspecified.
TYPE: 32 bit unsigned

Update the reference in 144.3.6.2 to point to this definition.

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.3.2** *P* **121** *L* **1** # 233

Harstead, Ed Nokia

Comment Type **TR** *Comment Status* **X**

The behavior of a "100G–EPON ONU" is described..

SuggestedRemedy

Delete description, or modify for 25G and 50G ONUs.

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.3.5** *P* **121** *L* **36** # 180

Hajduczenia, Marek Charter Communicatio

Comment Type **E** *Comment Status* **X**

Message definitions are not sorted correctly

SuggestedRemedy

Use the following sort order:
MAC:MADI
MAC:MADR
MCC:MACI
MCC:MACR
Within each group, sort alphanumerically by the next character after "("

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.3.5** *P* **123** *L* **8** # 381

Remein, Duane Huawei

Comment Type **T** *Comment Status* **X**

"PendingGrant" seem to be "Pending Envelopes"

SuggestedRemedy

Change all instances of "PendingGrants" to "PendingEnvelopes"

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.3.6** *P* **125** *L* **16** # 402

Kramer, Glen Broadcom

Comment Type **T** *Comment Status* **X**

Per action item from May 2018 comment #104, we are to remove bit-level parsing and message field extraction from the state diagrams.

SuggestedRemedy

Replace state diagrams in figures 144-6 and 144-7 with a single state diagram shown in kramer_3ca_2_0718.pdf

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.3.6** *P* **125** *L* **30** # 174

Hajduczenia, Marek Charter Communicatio

Comment Type **TR** *Comment Status* **X**

MH_PRIMITIVES
Per discussion at the May 2018 meeting, showing data packing with bit-level information (see SEND DISCOVERY WINDOW state in Figure 144-6 as an example) is unnecessary - we already have bit-level definitions of message format, showing where individual fields are packed and in what order. Such detailed definitions can be compressed without loss of information, resulting in more compact state diagrams and removing unnecessary data replication

SuggestedRemedy

The following changes need to be done:

Figure 144-6, state SEND DISCOVERY WINDOW, change content to read as follows and resize as needed:
DataTx <= (DISCOVERY_GATE|ChMap|StartTime|GrantLength|DiscoveryInfo)
MCI:MADR(DA, SA, m_sdu_ctl)

Figure 144-7, state SIGNAL, change content to read as follows and resize as needed:
(Flags|PendingGrants|DiscoveryInfo|LaserOnTime|LaserOffTime|Status) <= DataRx
MCC:MACI(REGISTER_REQ, Status, Flags, PendingGrants, RTT, LaserOnTime, LaserOffTime, DiscoveryInfo)

Figure 144-8, state REGISTER, change content to read as follows and resize as needed:
DataTx <=
(REGISTER|PLID|MLID|Status|SyncTime|PendingGrants|LaserOnTime|LaserOffTime)
MCI:MA_DATA.request(DA, SA, m_sdu_ctl)

Figure 144-10, state REGISTER_REQUEST, change content to read as follows and resize as needed:
DataTx <=
(REGISTER_REQ|Status|PendingGrants|DiscoveryInfo|LaserOnTimeCapability|LaserOffTimeCapability)
MCI:MA_DATA.request(DA, SA, m_sdu_ctl)
InsideDiscoveryWindow <= false

Figure 144-10, state REGISTER_PENDING, change content to read as follows and resize as needed:
(PLID|MLID|SyncTime|LaserOnTime|LaserOffTime) <= DataRx
Status <= accepted
if (LaserOnTimeCapability > LaserOnTime)
 LaserOnTime <= LaserOnTimeCapability
if (LaserOffTimeCapability > LaserOffTime)
 LaserOffTime <= LaserOffTimeCapability
MCC:MACI(REGISTER, SA, PLID, MLID, Status)

Figure 144-10, state REGISTER_ACK, change content to read as follows and resize as needed:
Registered <= True
DataTx <= (REGISTER_ACK|Ack|PLID|MLID|SyncTime)
MCI:MADR(DA, SA, m_sdu_ctl)

Figure 144-10, state LOCAL DEREGISTER, change content to read as follows and resize as needed:
DataTx <= (REGISTER_REQ|Status <= deregister)
MCI:MA_DATA.request(DA, SA, m_sdu_ctl)
MCC:MACI(REGISTER_REQ, Status <= deregister)

Figure 144-12, state RECEIVE REPORT, change content to read as follows and resize as needed:
(NumNonEmptyQ|ReportTime|LLID[7]|QueueLength[7]) <= DataRx
MCC:MACI(REPORT, RTT, ReportCount, ReportList)
[start mpcp_timer, mpcp_timeout]

Figure 144-13, state PERIODIC_TRANSMISSION, change content to read as follows and resize as needed (NOTE: ReportList parameters was removed, per comment tagged as MH_REPORT1):
DataTx <= (REPORT|NumNonEmptyQ <= 0)
MCI:MADR(DA, SA, m_sdu_ctl)

Figure 144-13, state SEND_REPORT, change content to read as follows and resize as needed (NOTE 1: ReportList parameters was removed, per comment tagged as MH_REPORT1; NOTE 2: ReportTime parameter was removed per comment tagged as MH_REPORT2)
DataTx <= (REPORT|NumNonEmptyQ|LLID[7]|QueueLength[7])
MCI:MADR(DA, SA, m_sdu_ctl)

Figure 144-15, state PERIODIC TRANSMISSION, change content to read as follows and resize as needed:
DataTx <= (GATE|ChMap <= 0)
MCI:MADR(DA, SA, m_sdu_ctl)

Figure 144-15, state SEND GATE, change content to read as follows and resize as needed:
DataTx <= (GATE|ChMap|StartTime|LLID[7]|Length[7]|Fragment[7]|ForceReport[7])
MCI:MADR(DA, SA, m_sdu_ctl)

Figure 144-16, state CHECK_START_TIME, change content to read as follows and resize as needed:
(ChMap|StartTime|LLID[7]|Length[7]|Fragment[7]|ForceReport[7]) <= DataRx

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.3.6** *P* **127** *L* **20** # 175

Hajduczenia, Marek Charter Communicatio

Comment Type **TR** *Comment Status* **X**

In D1.0, the field "Pending Grants" was changed to "Pending Envelopes" - this change needs to be propagated through the draft now

SuggestedRemedy

Replace "PendingGrants" with "PendingEnvelopes" in the following locations: Figure 144-3 (2x), Figure 144-4 (1x), Figure 144-5 (1x), 144.3.3.2 (including change of "pending grants that" to "pending envelopes that"), 144.3.3.5 (change primitive parameter name to PendingEnvelopes and definition, where present), Figure 144-7 (2x), Figure 144-8 (2x), Figure 144-10 (1x).

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.4** *P* **130** *L* **19** # 186

Hajduczenia, Marek Charter Communicatio

Comment Type **TR** *Comment Status* **X**

MH_PRIMITIVES
MH_REPORT2
The Report Time field was dropped from REPORT MPCPDU in D1.0. It is still present in primitives and operands

SuggestedRemedy

Remove ReportTime in the following locations:
- Figure 144-11 (2 instances)
- 144.3.4.5, definition of MCC:MACR(DA, REPORT, NumNonEmptyQ, ReportTime, LLID[7], QueueLength[7]) primitive and ReportTime parameter on page 132, line 1
- 144.3.4.5, definition of MCC:MACI(REPORT, RTT, NumNonEmptyQ, ReportTime, LLID[7], QueueLength[7]) primitive and ReportTime parameter on page 132, line 18
- Figure 144-12, one instance
- Figure 144-13, two instances

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.4.6** *P* **132** *L* **43** # 176

Hajduczenia, Marek Charter Communicatio

Comment Type **TR** *Comment Status* **X**

REPORT associated primitives show the use of "ReportList" parameter, that is not defined anywhere

SuggestedRemedy

MH_REPORT1
Remove "ReportList" parameter in Figure 144-12 (page 132, line 43) and Figure 144-13 (page 133, line 23)

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.5** *P* **134** *L* **7** # 207

Hajduczenia, Marek Charter Communicatio

Comment Type **T** *Comment Status* **X**

"Grant Length #n field, see 144.3.7.1" uses not the correct field name - it is Envelope Length as of D1.1

SuggestedRemedy

Change all instances of "Grant Length" with "Envelope Length"

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.5** *P* **134** *L* **15** # 208

Hajduczenia, Marek Charter Communicatio

Comment Type **E** *Comment Status* **X**

"pending envelopes" uses wrong capitalization

SuggestedRemedy

Change to "Pending Envelopes" + fix reference to read 144.3.7.3

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.5** *P* **134** *L* **28** # 177

Hajduczenia, Marek Charter Communicatio

Comment Type **TR** *Comment Status* **X**

In D1.0, the GATE MPCPDU definition was modified to use an compound field Envelope Allocation and defining subfields instead of defining them individually. This simplified message structure, but requires alignment of individual primitives

SuggestedRemedy

Implement changes shown in hajduczenia_3ca_5_0718.pdf - all changes are tracked for visibility (both figures and text alike) - only sections / portions changed are shown

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.5.2** *P* **135** *L* **8** # 382

Remein, Duane Huawei

Comment Type **E** *Comment Status* **X**

ChIndex is never used in the draft.

SuggestedRemedy

Strike the definition

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.5.2** *P* **135** *L* **15** # 178

Hajduczenia, Marek Charter Communicatio

Comment Type **TR** *Comment Status* **X**

in D1.1, the GATE MPCPDU Channel Assignment field uses only bits 0-1 to encode 2 channels. ChMap definition still uses bits 0-3

SuggestedRemedy

Change "value of bits 0 through 3 of the" to "value of the" to remove repetition of the range Change size from 4-bit to 8-bit to match the size of the Channel Assignment field in the GATE MPCPDU - no issue with keeping the variable larger even though most bits will be set to zero anyway

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.5.5** *P* **136** *L* **10** # 183

Hajduczenia, Marek Charter Communicatio

Comment Type **E** *Comment Status* **X**

In state diagrams that are being added, we consistently use state names where individual compound words are combined using "_". In older state diagrams, we use names with compound words using " " (space) to combine them together. The use of space is confusing, especialy when names of states are referenced anywhere

SuggestedRemedy

Align with the new state name methodology, i.e., use "_" as combiner for state names where more than one word exists. In here, change "WAIT FOR GATE" to "WAIT_FOR_GATE". Scrub the whole draft

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.5.5** *P* **136** *L* **18** # 211

Doo, Kyeonghwan ETRI

Comment Type **ER** *Comment Status* **X**

wrong the number of bits for ChMap

SuggestedRemedy

Change "DataTx[48:50]" to "DataTx[48:51]" in SEND GATE box of Fig. 144-15

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.5.5** *P* **136** *L* **19** # 212

Doo, Kyeonghwan ETRI

Comment Type **ER** *Comment Status* **X**

mismatching StarTime with DataTx

SuggestedRemedy

Change "DataTx[46:87]" to "DataTx[56:87]" in SEND GATE box of Fig. 144-15

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.5.5** *P* **137** *L* **1** # 404

Kramer, Glen Broadcom

Comment Type **T** *Comment Status* **X**

Per action item from May 2018 comment #104, we are to remove bit-level parsing and message field extraction from the state diagrams.

SuggestedRemedy

Replace the state diagram in figure 144-16 with the state diagram shown in kramer_3ca_6_0718.pdf

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.5.5** *P* **137** *L* **12** # 213

Doo, Kyeonghwan ETRI

Comment Type **ER** *Comment Status* **X**

wrong the number of bits for ChMap

SuggestedRemedy

Change "DataRx[48:50]" to "DataRx[48:51]" in CHECK_START_TIME box of Fig. 144-16

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.5.5** *P* **137** *L* **13** # 214

Doo, Kyeonghwan ETRI

Comment Type **ER** *Comment Status* **X**

mismatching StarTime with DataRx

SuggestedRemedy

Change "DataRx[46:87]" to "DataRx[56:87]" in CHECK_START_TIME box of Fig. 144-16

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.5.5** *P* **137** *L* **19** # 215

Doo, Kyeonghwan ETRI

Comment Type **E** *Comment Status* **X**

It needs to be considered that Localtime is periodically turned over

SuggestedRemedy

Change "StartTime – LocalTime" to "|StartTime – LocalTime| in Fig. 144-16

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.7** *P* **141** *L* **2** # 383

Remein, Duane Huawei

Comment Type **TR** *Comment Status* **X**

Duane did investigate byte order per instructions given in the meeting and it is in agreement with comment 114 against D1.0 (SuggestedRemedy copied here for the convenience of the group.

SuggestedRemedy

In all MPCPDU message figures add the following note: "Octets within the frame are transmitted from top to bottom. Bits within a field or word are transmitted left to right with the leftmost bit within a field being the lsb." The arrow/note to the right of the octet numbering can then be removed.
Note that the label "Octets" should be kept and placed above the rightmost column of numbers.

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.7.2** *P* **144** *L* **3** # 405

Kramer, Glen Broadcom

Comment Type **T** *Comment Status* **X**

It would be more convenient to show REPORT MPCPDU format with an array of 7 LLID reports, as was done for Envelope Allocations in GATE MPCPDU.

SuggestedRemedy

Use the same structure for REPORT MPCPDU format (Figure 144-21) as was used for GATE MPCPDU format (Figure 144-20). The new structure is shown in kramer_3ca_7_0718.pdf.

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.7.6** *P* **150** *L* **25** # 398

Kramer, Glen Broadcom

Comment Type **TR** *Comment Status* **X**

Wrong padding size in DISCOVERY GATE MPCPDU

SuggestedRemedy

Padding length should be 24 octets, not 26.

Proposed Response *Response Status* **O**

Cl **144** *SC* **144.3.7.7** *P* **150** *L* **30** # 409

Hajduczenia, Marek Charter Communicatio

Comment Type **TR** *Comment Status* **X**

New SYNC_PATTERN MPCPDU is needed to address the need for dynamic configuration of Sync Pattern zones (value and/or duration)

SuggestedRemedy

See hajduczenia_3ca_4_0718.pdf for motivation and hajduczenia_3ca_94_0718.pdf for all changes in Clause 144 needed to accommodate the new mechanism, including new MPCPDU, changes to existing MPCPDUs, state diagrams, and associated text. All changes to the original D1.1 MPCP Clause are marked in red, including strike-throughs where appropriate.

Proposed Response *Response Status* **O**

Cl **Title** *SC* **Title** *P* **1** *L* **17** # 254

Lee, HH ETRI

Comment Type **TR** *Comment Status* **X**

100G is out of scope.

SuggestedRemedy

delete 100 Gb/s in the title.

Proposed Response *Response Status* **O**