Proposed Response

**Draft 1.3**

**IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 3rd Task Force review comments**

**Comment ID 3197**

**Comment Type: E** - Comment Status: D

Ref to 101.4.3.8 incorrect

**Suggested Remedy:**
change to 101.4.2.5.4

**Proposed Response: W**

**Proposed ACCEPT IN PRINCIPLE.**

Use 101.4.2.5.5 (where param CntPltSF is defined)

See topic VarXRef

---

**Comment ID 3198**

**Comment Type: E** - Comment Status: D

this statement is slightly misguided

"Sets the CLT output port to a muted state for text purposes"

**Suggested Remedy:**
change text to test

**Proposed Response: W**

**Proposed ACCEPT.**

---

**Comment ID 3199**

**Comment Type: T** - Comment Status: D

The referenced register should be 12.10241.

"same bit structure as that of register 12.10242."

**Suggested Remedy:**
change The remaining registers 12.10242 to 12.10241

**Proposed Response: W**

**Proposed ACCEPT IN PRINCIPLE.**

Change the end of the sentence from "of register 12.10242" to "of register 12.10241"

---

**Comment ID 3200**

**Comment Type: E** - Comment Status: D

Unlinked ref to 103.3.3.2

**Suggested Remedy:**
make it a live link (103.3.3.2 is correct).

**Proposed Response: W**

**Proposed ACCEPT IN PRINCIPLE.**

It is a live link when tested to 103.3.3.2. Need to change color from magenta to black.

---

**Comment ID 3201**

**Comment Type: ER**

Cross references to the amendment, such as "Figure 67-2a" should be live using cross-reference formal Clause, section, Figure # or Table #. Those to objects in the standard and not included in the amendment should be in character style "External"

**Suggested Remedy:**
Correct all cross references styles.

**Proposed Response: W**

**Proposed ACCEPT IN PRINCIPLE.**

Figure 67-2a does not exist.

Otherwise, will check for conformance.

---

**Comment ID 3202**

**Comment Type: E** - Comment Status: D

This editors note has served it's purpose:

"EDITORS NOTE (to be removed prior to publication): US Block diagram needs to reflect symbol duplication for PHY Link Discovery Response message."

**Suggested Remedy:**
remove

**Proposed Response: W**

**Proposed ACCEPT.**
Proposed Responses

Comment ID 3203

IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 3rd Task Force review comments

Proposed Response

Comment ID 3204

Proposed Response

Comment ID 3205

Proposed Response

Comment ID 3207

Proposed Response
### Proposed Responses

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**Comment ID** 3211
Proposed Response

EDI TORS NOTE (to be removed prior to publication): the above variable definition of 
DS_FreqCh(n), taken from 45.2.1.109 should be moved to Cl 100 and referenced in the 
above para. The details in Cl 45 should be removed to avoid duplicate definitions and a 
cross reference to the location in Cl 100 provided. A complementary definition for the US 
OFDMA channel center frequency is also needed in Cl 100.

SuggestedRemedy

Move DS_FreqCh(n) definition to 100.2.7.1.
Change definition in 101.4.2.10.1 to read: "See 100.2.7.1."

Change text of 45.2.1.109.1 from
"Register bits 1.1902.15:0 specify the center frequency, in steps of 50 kHz, of subcarrier 0 
for the first OFDM channel. Subcarriers are numbered from 0 to 4095 with subcarrier 0 at 
the lowest frequency. This definition equates to a subcarrier 0 center frequency of from 
54.0 to 3,276.75 MHz in 50 kHz steps. The minimum value for this register is 1080. See 
101.4.2.12 for additional details."
To:
"Register 1.1902 specifies the center frequency for the first OFDM channel. This register 
is a reflection of the DS_FreqCh(1) defined in 100.2.7.1."

Similarly change 45.2.1.109.2 thru 45.2.1.109.5 to read:
"Register 1.190x specifies the center frequency for the second OFDM channel. This 
register is a reflection of the DS_FreqCh(x) defined in 100.2.7.1." Replacing x and second 
with the appropriate numbering.

Proposed Response

PROPOSED ACCEPT.

Comment Type  T  Comment Status  D

Comment ID  3213

Proposed Response

Duplicate definitions
Register bit 1.1907:7 indicates the number of OFDM symbols in a Resource Block in the 
upstream direction. When this bit is set to a zero there are 8 symbols per Resource Block. 
When this bit is set to a one there are 
16 symbols per Resource Block.

101.4.4.3.3 pg 182 ln 1
RBsize
TYPE: boolean
This variable determines the size of the upstream Resource Blocks. When RBsize is TRUE 
then Resource Block size is 16 symbols. When RBsize is FALSE then Resource Block size 
is 8 symbols.

EDITORS NOTE (to be removed prior to publication): This definition duplicates that in Cl 
45.2.1.110. Only one should be kept.

SuggestedRemedy

change 45.2.1.110.1 to read:
Register bit 1.1907:7 indicates the number of OFDM symbols in a Resource Block in the 
upstream direction. This bit is a reflection of RBsize defined in 101.4.4.3.3.*

Proposed Response

PROPOSED ACCEPT.

Comment ID  3214

Proposed Response

Type 1 Start is between 0 and 15 not 0 and 31

SuggestedRemedy

change 31 to 15

Proposed Response

PROPOSED ACCEPT.

Comment ID  3214

Page 4 of 35
3/4/2015  5:05:36 PM
CI 45  SC 45.2.7a.3  P 53  L 20  #3215
Remein, Duane  Huawei Technologies

Comment Type T  Comment Status D
This statement could be clearer:
"Each number is a 16-bit signed fractional two's complement number."

SuggestedRemedy
Change to "Each number is a 16-bit signed fractional number conforming to the Q2.14 format."

Proposed Response  Response Status W
PROPOSED ACCEPT.

CI 101  SC 101.4.3.3  P 179  L 47  #3216
Remein, Duane  Huawei Technologies

Comment Type T  Comment Status D  Review

The following statement needs to be updated now that we have no time interleaver:
"Each Resource Block is composed of one subcarrier and has a duration identical to the time interleaver period as set using the RBsize variable, of either 8 or 16 symbols. See RB size parameter in the 10GPASS-XR US OFDM control register 45.2.1.110.1. Changing the Resource Block duration results in a network restart."

SuggestedRemedy
change to:
"Each Resource Block is composed of one subcarrier and has a duration of either 8 or 16 symbols and is set using the RBsize variable. Changing the Resource Block duration results in a network restart."

Proposed Response  Response Status W
PROPOSED ACCEPT.

Add an Editors note @@ Where? @@:
EDITORS NOTE (to be removed prior to publication): We should create a normative list of variables that cause a network restart when changed.
Proposed Response

#3220
Cl 100 SC 100.2.6 P 84 L 44 # 5220
Remain, Duane Huawei Technologies

Comment Type T Comment Status D
Is DS & US data rate calculated at CNU or configured? If configured then add to Table 102-13 and 102-1. If calculated then this should be specified in Cl 100.

SuggestedRemedy

NOT FINAL

Question sent to Mark

PROPOSED ACCEPT IN PRINCIPLE.
The CLT configures the CNU on DS and US rates. A variable needs to be added for the CNU to raise an error if the CNU calculation is different than the CLT calculation. There are spare bits in 1907 which can be used as a flag. Mismatch would create a link negotiation failure. Need to define accuracy for matching UQ34.3 format.

Remain, Duane Huawei Technologies

Comment Type T Comment Status D
Need to provide a variable and register to indicate the time required for CNU to respond to the DS PHY Link

SuggestedRemedy

NOT FINAL

May not submit

PROPOSED ACCEPT IN PRINCIPLE.
Change TBD to 5.1 ms
This value is derived from the length of one superframe minus 16 symbols (Max RB size) and the 6 Probe symbols.

TBD = (252-6-16)*20us = 4.8 ms
This will ensure that the CLT can designate an US response window within the size limit of Response Frame ID (RF_ID), which is 8 bits.

If this minimum time is deamed to be too short for the CNU PHY then we will need to take steps to allow US responses that take more than one Superframe. This will impact RF_ID field, EPCH message, and require creation of an US_Superframe counter.

We might want to consider creating a variable that the CNU can pass to the CLT to indicate what it's min response time is if it can be shorter than this.

Remain, Duane Huawei Technologies

Comment Type E Comment Status D
Xref update for:
See [ref] for a definition of this register

SuggestedRemedy

Change [ref] to "variable FecCodeWordCount in 101.3.3.1.5 and Table 101-1"

PROPOSED ACCEPT IN PRINCIPLE.
See topic VarXRef
See Response to comment #3316
Draft 1.3
IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 3rd Task Force review comments

Proposed Responses

Comment ID 3224
Remein, Duane
Huawei Technologies

Proposed Response

Proposed ACCEPT IN PRINCIPLE.

Comment Type E
Comment Status D

There is no Xref for:
This is used to provision a delay in the ranging response in the event there is an analogue
optical segment between the CLT and the CNUs as described in (ref).

SuggestedRemedy
Add
"EDITORIAL NOTE (to be removed prior to publication): the care and feeding of this
register and it’s associated variable is not defined anywhere in the draft."

Comment ID 3225
Remein, Duane
Huawei Technologies

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

Comment Type E
Comment Status D

Add to 102.4.1.7.2
RngOffset
TYPE: 32-bit integer
This variable is used to provision a delay in the ranging response in the event there is an
analogue optical segment between the CLT and the CNUs as described in 102.4.1.4.

Add to 102.4.1.4 at pg 232 in 41
"In the event there is an analog fiber segment between the CLT and CNU the CLT can
delay the PHY Discovery Response by the amount of time specified in RngOffset."

Comment ID 3226
Remein, Duane
Huawei Technologies

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

Comment Type T
Comment Status D

Accept the comment. Note to use to check to see where the text is for changing CP would
cause network restart.

Comment ID 3227
Remein, Duane
Huawei Technologies

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

Comment Type ER
Comment Status D

Footnotes do not appear to be connected to the Table but appear as separate text.

SuggestedRemedy
For all table sin this clause ensure the table footnotes are part of the table and not
separate text of style "footnote". Footnotes not called out in individual table cells can be
attached to the table title or column heading as appropriate.

Proposed Response

PROPOSED ACCEPT.
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<td>&quot;Ncp&quot; should be USNcp at Cl 100 pg 94 ln 12.</td>
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</tbody>
</table>

Remein, Duane
Huawei Technologies

Comment Type E Comment Status D
Inconsistent register name

pg 31 In 14 10GPASS-XR FEC success counter
pg 48 In 47 10GPASS-XR FEC codeword success counter
pg 48 In 49 10GPASS-XR FEC codeword counter success
pg 49 In 5 10GPASS-XR FEC codeword counter and in table 101-1 (3x)
pg 113 In 20 10GPASS-XR FEC success count & 10GPASS-XR FEC codeword success counter

Likewise in 45.2.1.127

pg 31 In 16 10GPASS-XR FEC fail counter
pg 49 In 16 10GPASS-XR FEC codeword fail counter
pg 49 In 18 10GPASS-XR FEC codeword counter fail
pg 49 In 27 10GPASS-XR FEC codeword counter fail and in table 101-1
pg 113 In 24 10GPASS-XR FEC fail count, 10GPASS-XR FEC codeword fail counter & Fec codeword fail count

SuggestedRemedy
Consistently use 10GPASS-XR FEC codeword success counter 10GPASS-XR FEC codeword fail counter

Proposed Response Response Status W
PROPOSED ACCEPT.
IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 3rd Task Force review comments

Proposed Responses

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**Comment ID** 3235

**Sort Order** Comment ID

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**Comment ID** 3233

**Comment Type** ER

**Comment Status** D

**Proposed Response**

After consulting with the WG Secretary I believe that 802.3bx is sufficiently stable that we can make this change now so as to catch any editorial errors before WG ballot.

EDITORS NOTE (to be removed prior to publication): Paragraph and register numbering will need to be reviewed and updated after release of 802.3 2015.

**Suggested Remedy**

Renumber Cl 45 as follows

- 45.2.1.13a -> 45.2.1.14a
- Table 45-15b -> 45.17a
- 45.2.1.107 -> 45.2.1.131 renumber subsequent subclauses as appropriate
- Table 45–78a -> Table 45–98a renumber subsequent Tables as appropriate
- Update Editorial notes as appropriate

**Proposed Response**

PROPOSED ACCEPT.

See topic Cl 45 Renum

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**Comment ID** 3234

**Comment Type** ER

**Comment Status** D

**Proposed Response**

Renumber Clause per 802.3bx D2.1 plus editorial updates see related comments on 1.4.135a through 1.4.258a

**Proposed Response**

PROPOSED ACCEPT.

See remein_3bn_15_0315 and remein_3bn_15_0315CMP

---

**Comment ID** 3235

**Comment Type** T

**Comment Status** D

**Proposed Response**

No such variable as NxtCNU_ID, Shouldn't ref Cl 45 as normative.

**Suggested Remedy**

Change 3 instances of NxtCNU_ID to AllwdCNU_ID,

Strike references to Cl 45 in this para: "(see 45.2.1.117)"; "(see 45.2.1.120)" and "(see 45.2.1.121)"

Add "variables" to very end of para so it reads: "... write the CNU PHYTimingOffset and PHYPowerOffset variables."

Add the following definitions to 102.4.1.7.2

**Define AllwdCNU_I**

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<th>TYPE: 15-bit integer</th>
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</thead>
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<td>This variable is used to indicate to the 10GPASS-XR PHY a valid CNU_ID value. The value may be assigned to a new CNU when the associated CNU_ID assigned flag is set to zero, when the flag is set to one it is an indication that this value has already been assigned to a CNU and it should not be use for another CNU.</td>
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**Define DS_OFDM_ID**

<table>
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<th>TYPE: 3-bit integer</th>
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<tr>
<td>This variable is a pointer to one of the five possible OFDM channels in the downstream EPoC network. Thus when DS_OFDM_ID is set to a value of one variables DS_ModTypeSC(n) reflect the OFDM descriptor for OFDM channel one. When DS_OFDM_ID is set to a value of two variables DS_ModTypeSC(n) reflect the OFDM descriptor for OFDM channel two, etc.</td>
</tr>
</tbody>
</table>

In 45.2.1.117.2 pg 45 In 13 change:

"See 102.4.1.6 for additional details on the use of these bits."

to:

"These bits are a reflection of the AllwdCNU_I variable defined in 102.4.1.7.2."

In 45.2.7a.1 pg 49 In 51 add the following:

"These bits are a reflection of the DS_OFDM_ID variable defined in 101.4.2.3.5."

**Proposed Response**

PROPOSED ACCEPT.
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<td><strong>Add definition of DS_ChCnt to Cl 100 and in tables 100-1</strong></td>
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<td><strong>derivation of values for FEC_PARITY_SIZE and FEC_PAYLOAD_SIZE can be less obfuscated.</strong></td>
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**Comment ID:** 3240

**Page 10 of 35**

**3/4/2015 5:05:36 PM**
Proposed Response

# 3241

Cl 00 SC 0 P 24 L 31 # 5241

Remein, Duane
Huawei Technologies

Comment Type E
Comment Status D

Align capitalization
Cyclic Prefix
cyclic prefix
Proper noun or not? I think not (not eh term is used in 802.3bx as cyclic prefix)

SuggestedRemedy
Convert all instances to cyclic prefix excepting cases where it is all caps in figures (in Fig 100-2 use all caps)

PROPOSED ACCEPT.

---

Proposed Response

# 3242

Cl 00 SC 0 P 24 L 37 # 5242

Remein, Duane
Huawei Technologies

Comment Type E
Comment Status D

Align capitalization
Modulation Error Ratio or modulation error ratio?
Also we should not define the abbreviation in the Definitions clause

SuggestedRemedy
Use modulation error ratio exclusively.
Change
1.4.258a Modulation Error Ratio (MER): to
1.4.258a modulation error ratio:

Add to 1.5 Abbreviations
MER modulation error ratio

PROPOSED ACCEPT.

---

Proposed Response

# 3243

Cl 103 SC 103.2.2.1 P 262 L 3 # 5243

Remein, Duane
Huawei Technologies

Comment Type T
Comment Status D

FEC_CODEWORD_SIZE, FEC_PARITY_SIZE and FEC_PAYLOAD_SIZE are only constants in the DS direction. In the US these will vary depending on OctetsRemaining

SuggestedRemedy
For DS change existing constant names, via global search & replace to:

DS_FEC_CW_Sz
DS_FEC_PrtySz
DS_FEC_PldSz

Change the definition of each of these constants by replacing
"the size of FEC codeword" with
"the size of the downstream FEC codeword"

Add new functions:

US_FEC_CW_Sz(OctetsRemaining)
This function returns an integer that represents the size of upstream FEC codeword in octets (FEC_PAYLOAD_SIZE + FEC_PARITY_SIZE) depending on the size of OctetsRemaining.

{ If OctetsRemaining > 0 and OctetsRemaining < 192 then US_FEC_CW_Sz = 1120/8
ElseIf OctetsRemaining > 193 and OctetsRemaining < 800 then US_FEC_CW_Sz = floor(5940/8)
Else US_FEC_CW_Sz = 16200/8 }

US_FEC_PrtySz(OctetsRemaining)
TYPE: integer
This function returns an integer that represents the size of upstream FEC codeword parity field in octets depending on the size of OctetsRemaining.

{ If OctetsRemaining > 0 and OctetsRemaining < 192 then US_FEC_PrtySz = 280/8
ElseIf OctetsRemaining > 193 and OctetsRemaining < 800 then US_FEC_PrtySz = ceiling(900/8)
Else US_FEC_PrtySz = 1800/8 }

US_FEC_PldSz(OctetsRemaining)
TYPE: integer
This function returns an integer that represents the size of upstream FEC codeword payload in octets depending on the size of OctetsRemaining.

{ If OctetsRemaining > 0 and OctetsRemaining < 192 then US_FEC_PldSz = (840-40)/8
ElseIf OctetsRemaining > 193 and OctetsRemaining < 800 then US_FEC_PldSz = (5040-40)/8
Else US_FEC_PldSz = (14400-40)/8 }

---

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Comment ID
IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 3rd Task Force review comments

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

As proposed for DS constants.

Functions to be addressed with US Idle deletion definition (volunteer needed!).

Proposed Response

PROPOSED ACCEPT.

Comment Type T

Comment Status D

Two definitions for FEC CW size which are nearly identical. These need to be more clearly differentiated.

FEC_CODEWORD_SIZE

TYPE: integer

This constant represents the size of FEC codeword in octets (FEC_PAYLOAD_SIZE + FEC_PARITY_SIZE).

Value: 1987

This constant represents the exact size of the FEC codeword in octets.

Value: 1760+2944/13

This is confusing.

Suggested Remedy

NOT FINAL

Change definitions as show below

FEC_CODEWORD_SIZE

TYPE: integer

This constant represents the approximate size of the downstream FEC codeword in whole octets (FEC_PAYLOAD_SIZE + FEC_PARITY_SIZE).

Value: 1987

FEC_CODEWORD_SIZE_FRAC

TYPE: real number

This constant represents the exact size of the FEC codeword in whole and fractional octets.

Value: 1760+2944/13 (1760 +1840*64/65/8)

Proposed Response

PROPOSED ACCEPT.

Comment Type T

Comment Status D

"If CRC40ErrCtrl is set to enable and the calculated value"

We typically use TRUE or FALSE

Suggested Remedy

change "enable" to "TRUE"

Proposed Response

PROPOSED ACCEPT.

(TRUE & FALSE are also used in the def. pg 144)

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

Add ref to 101.4.2.9 along with Figure 100-2

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

Add ref to 101.4.2.9 along with Figure 100-2
### Proposed Responses

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### Proposed Accept

**Duplicate requirements:**

- "The CLT shall define a set of continuous pilots distributed as uniformly as possible (see below) over the entire OFDM spectrum in addition to the predefined continuous pilots described in 101.4.3.5.3." (Pg 162 ln 3)
- "The CLT shall place continuous pilots (excluding the eight continuous pilots around the PHY Link) per the 8 Steps below after calculating a value for NCP using Equation (101–6)." (pg 162 ln 12)

**Suggested Remedy**

Keep the latter and change the former to read:

"The CLT defines a set of continuous pilots ...

**Proposed Response**

**Response Status** W

PROPOSED ACCEPT.

### Proposed Accept

**Check that we specify min/max active subcarriers (was Table 101-12 in D1.2)**

- Pg 157 In 1 DS Min in Table 101-8 (40 SC)
- Pg 87 In 43 DS Max as encompassed spectrum in Table 100-3
- Pg 182 In 23 US min - Table 101-13 (40 SC)
- US Max - as max encompassed in Table 101-13

**Suggested Remedy**

Impacts Cl 101 & possibly 100

Rationalize Tables 101-8 with Table 100-3 and Table 101-13 with expected new table in 100 addressing GNU RF output requirements

**Proposed Response**

**Response Status** W

PROPOSED ACCEPT IN PRINCIPLE.

Needs review for rationalization.

---

**Comment ID** 3250  Page 13 of 35  3/4/2015  5:05:36 PM
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<td>Probe Duration (and therefore PrbDur) are no longer used. remove row from Table 101-3</td>
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<td>Cl 00</td>
<td>SC 0</td>
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<td>Huawei Technologies</td>
<td>Two names for US cp and windowing (US_Nrp =&gt; USNrp). Names can be aligned with DS (CI 45, 101, 102 and possibly others) Change all instance of &quot;US_Nrp&quot; to &quot;USNrp&quot; (4x; CI 100 pg 80 ln 53, CI 101 pg 112 ln 29, CI 102 pg 233 ln 29 &amp; Fig 102-29 pg 234 ln 16) and &quot;US_Ncp&quot; to &quot;USNcp&quot; (8x; CI 100 pg 81 ln 6, Fig 100-6 pg 94 ln 24, CI 101 pg 112 ln 30, CI 102 pg 233 ln 28, Fig 102-21 pg 234 ln 15, 16, 17, 22)</td>
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<td>Huawei Technologies</td>
<td>Variables listed in Table 102-13 needs to be aligned with those named in Table 102-1 (and CI 100 &amp; 101). See remein_3bn_16_0315.pdf for update to Table 102-13. Add to Tables 101-1 &amp; 102-1</td>
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Proposed Responses

**Comment ID: 3255**

**Cl 100 SC 100.1.3 P 76 L 9 # 3255**

Remain, Duane
Huawei Technologies

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

In Fig 100-2 & 100-3 we illustrate a "RATE ADAPTATION" functional block. In Cl 101.3.2 (pg 120 ln 4) this is referred to as "an Idle control character deletion function performing the function of data rate adaptation". In section 5 of the standard (76.3.2 Fig 76-7 & 76-8) this is referred to as "Idle Deletion". We should be consistent with the standard.

See related comment against 101.3.2 pg 120 ln 4

**Suggested Remedy:**

Change "RATE ADAPTATION" to "IDLE DELETION" in Figure 100-2 & 100-3 and to "IDLE INSERTION" in Figure 100-4 & 100-5

**Proposed Response**

PROPOSED ACCEPT.

See Related cmt #3256

---

**Comment ID: 3256**

**Cl 101 SC 101.3.2 P 120 L 4 # 3256**

Remain, Duane
Huawei Technologies

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

This statement can be better worded:
"the EPoC PCS includes an Idle control character deletion function performing the function of data rate adaptation and a FEC overhead compensation followed by a 64B/66B encoder, and a mandatory FEC encoder."

(also see related comment against 100.1.3, pg 76 ln 9)

**Suggested Remedy:**

Change to read:
"the EPoC PCS includes an Idle Deletion function that performs data rate adaptation and FEC overhead compensation, followed by a 64B/66B Encoder, and a FEC Encoder / Data Detector."

In Cl 101 replace:
15 instances of "Idle control character deletion process" with "Idle Deletion process"
14 instances of "FEC encoder" with "FEC Encoder"
12 instances of "64B/66B encoder" with "64B/66B Encoder"

**Proposed Response**

PROPOSED ACCEPT.

See Related cmt #3256

---

**Comment ID: 3257**

**Cl 101 SC 101.3.2.1 P 120 L 18 # 3257**

Remain, Duane
Huawei Technologies

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

This statement is self contradictory:
"to decrease the data rate between the MAC and PHY, while maintaining the effective data rate unchanged (data rate adaptation sub-process)"

**Suggested Remedy:**

Change to read:
"to decrease the data rate between the MAC and PHY (data rate adaptation sub-process)"

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.
"to decrease the effective data rate between the MAC and PHY (data rate adaptation sub-process)"

---

**Comment ID: 3258**

**Cl 101 SC 101.3.2.1 P 120 L 35 # 3258**

Remain, Duane
Huawei Technologies

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

This statement is conflicts with the preceding sentence which states that, once Idle Deletion is complete no excess Idles remain in the data stream:
"sufficient number of excess Idle control characters are present in the data stream, so that the minimum IPG between two adjacent frames is preserved once all excess Idle control characters are removed"

**Suggested Remedy:**

Strike first "excess" so the statement reads:
"sufficient number of Idle control characters are present in the data stream, so that the minimum IPG between two adjacent frames is preserved once all excess Idle control characters are removed"

**Proposed Response**

PROPOSED ACCEPT.

---

**Comment ID: 3259**

**Cl 101 SC 101.1.1 P 111 L 25 # 3259**

Remain, Duane
Huawei Technologies

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

Cl 101 also uses the floor function symbols (see Eq 101-3)

**Suggested Remedy:**

Add definition of floor symbol (copy from Cl 100.1.1 pg 74 ln 9)

**Proposed Response**

PROPOSED ACCEPT.
Proposed Response

# 3260

Cl 101 SC 101.3.2.1.2 P 121 L 17 # 3260
Remain, Duane
Huawei Technologies

Comment Type T
Comment Status D

countVector defined twice, here and in 101.3.3.3.2 with different definitions
101.3.2.1.2

TYPE: 16-bit unsigned integer
Counts the number of 72-bit vectors transmitted after the removal of Idle characters as part of data rate adaptation and FEC overhead compensation.
101.3.3.3.2

TYPE: 16-bit unsigned integer
This variable represents the number of 72-bit vectors stored in the FIFO_II at the given moment of time.

Suggested Remedy

Change variable name in 101.3.2.1.2 to countVectorT and in Fig 101-2 (4x)

PROPOSED ACCEPT.

Proposed Response
Response Status W

PROPOSED ACCEPT.

Proposed Response
Response Status W

PROPOSED ACCEPT.

Proposed Response
Response Status W

PROPOSED ACCEPT.

Proposed Response
Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
See related comment #3264
Comment Type: TR
Comment Status: D
Review
This para has little to do with LDPC encode process and more rightly belongs in 101.3.2.2 (which points to CI 49).
The 64B/66B encoder produces a stream of 66-bit blocks as shown in Figure 101–6 (see 49.2.4.3 for more details); each 66-bit block is composed of 2 bits of sync header and 64 bits of data. These 66-bit blocks are converted to 65-bit blocks by removing the redundant first bit (i.e., sync header bit <0>) in each 66-bit block received from the 64B/66B encoder and are then delivered to the FEC encode and Data Detector input process. The FEC encoder accumulates BQ (see Table 101–2) of these 65-bit blocks to form the payload portion of the FEC codeword. In addition the referenced material in CI 49 includes a scrambler within the 64/66B encoder and is not appropriate for EPoC as we scramble in the PMA layer.

Similar text with similar issues lives in 101.3.2.5.6 pg 135 ln 9
See related comments against wording in 101.3.2.5.2 & 101.3.2.5.6

SuggestedRemedy
Remove the para’s from 101.3.2.5.2 & 101.3.2.5.6
Change 101.3.3.2 to read:
"The EPoC PHY utilizes a 64B/66B decoder based on that described in 49.2.11 with several important differences. The EPoC 64B/66B encoder does not include a scrambler function and the output is a 65B block with a single synch header bit as illustrated in Figure 101-11. The state diagram found in Figure 49-16 is followed. The 66-bit blocks produced by the Clause 49 64B/66B encoder are shortened to 65-bits by removing the redundant first bit (i.e., sync header bit <0>). These 65-bit blocks are then delivered to the PMA as described in 101.4.1.2."

Proposed Response: W
PROPOSED ACCEPT.
See related comment #3263
Rationalize with any contributions accepted on this section.
3269

Cl 101 SC 101.3.3.2 P 149 L 24 # 3269
Remein, Duane Huawei Technologies

Comment Type T  Comment Status D  Review
The reference to Cl 49.2.11 64B/66B decoding function needs some clarification as there are some differences in EPoC encoding (notably the lack of scrambling and single sync header bit).

SuggestedRemedy
Change 101.3.2.2 to read:
"The EPoC PHY utilizes a 64B/66B encoder based on that described in 49.2.11 with several important differences. The EPoC 64B/66B decoder does not include a descrambler function as described in 49.2.10 and the input is a 65B block with a single synch header bit. The state diagram found in Figure 49-17 is followed after the addition of sync header bit <0> as illustrated in Figure 101–11."

Proposed Response  Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

See comment related comment #3264

"The EPoC PHY utilizes a 64B/66B decoder based on that described in 49.2.11 with several important differences. The EPoC 64B/66B decoder does not include a descrambler function as described in 49.2.10 and the input is a 65B block with a single synch header bit. The state diagram found in Figure 49-17 is followed after the addition of sync header bit <0> as illustrated in Figure 101–11."

Need to make similar changes in 101.3.2.2 pg 127 ln 47 (remove scrambler)
Proposed Response

#3272
Cl 45 SC 45.2.1.119 P 46 L 2
Remein, Duane Huawei Technologies

Comment Type E Comment Status D

Wording

"Register 1.1921.1 through 1.1921.0 represent the DS PHY Link frame count" and
"The assignment of bits in the DS PHY Link frame counter bit definition is shown in Table 45–78m"

SuggestedRemedy

Change to

"Register 1.1921 is the DS PHY Link frame counter" and
"The assignment of bits in the DS PHY Link frame counter register is shown in Table 45–78m"

Proposed Response Response Status W

PROPOSED ACCEPT.

#3273
Cl 100 SC 100.2.8.4 P 90 L 5
Remein, Duane Huawei Technologies

Comment Type T Comment Status D

Two tables labeled "CLT RF output requirements"; Table 100-3 & 100-5

SuggestedRemedy

Change title for 100-5 to "CLT RF output power requirements"

Proposed Response Response Status W

PROPOSED ACCEPT.

#3274
Cl 100 SC 100.2.8.5 P 91 L 26
Remein, Duane Huawei Technologies

Comment Type T Comment Status D

Unique instances of DS_Ncp and DS_Nrp.

SuggestedRemedy

change to DSNcp and DSNrp respectively.

Proposed Response Response Status W

PROPOSED ACCEPT.

#3275
Cl 102 SC 102.4.1.4 P 234 L 24
Remein, Duane Huawei Technologies

Comment Type T Comment Status D

Nrp/Ncp

"NCP" should be USNcp Cl 102 Fig 102-21 pg 234 In 24

SuggestedRemedy

Per comment

Proposed Response Response Status W

PROPOSED ACCEPT.

#3276
Cl 101 SC 101.4.2.5.4 P 162 L 3
Laubach, Mark Broadcom

Comment Type T Comment Status D

There are a number of "shall"s in this subclause, but the continuous pilot placement is normative in its entirety. Maybe one "shall" at the top?

SuggestedRemedy

Consider placing a single statement at the start of this subclause. Suggestion of adding a first sentence: "The CLT shall follow continuous pilot placement requirements and procedures as defined in this subclause in their entirety." If yes, then consider replacing the occurrences of "shall"s in the subclause with active replacements; e.g. "shall follow" to "follows" or equivalent at editor's discretion.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See comment #3247

#3277
Cl 101 SC 101.4.3.10 P 191 L 1
Laubach, Mark Broadcom

Comment Type T Comment Status D

This sub clause is duplicative of 101.4.3.8

SuggestedRemedy

Remove blank subclause 101.4.3.10.
Remove blank subclause 101.4.3.12 and add "and pre-equalization" to end of next subclause title.

Proposed Response Response Status W

PROPOSED ACCEPT.
Proposed Responses

---

Proposed Response  
Response Status  W

PROPOSED ACCEPT.

Change "45.2.1.119 DS PHY Link frame counter bit definitions (Register 1.1921)"
to "45.2.1.119 DS PHY Link frame counter (Register 1.1921)"

---

Proposed Response  
Response Status  W

PROPOSED ACCEPT IN PRINCIPLE.

This will change with global renumbering comment. Editor discretion will need to validate numbers after this renumbering takes place. See Comment #3222.

Expect lines 24-31 "100" to go to "101", line 33, "101" to "102", etc. Also, lines 37-44, "2124" to "1124".

---

Proposed Response  
Response Status  W

PROPOSED ACCEPT.

Consider changing TxEnable to tx_enable, aligns variable with similar clauses that use an underscore, e.g. Clause 76. There are differences in settings from clause 75 "enable" and "disable" to clause 76 using "on" and "off".

**SuggestedRemedy**

Change "TxEnable" to "tx_enable" where applicable in clauses. Change values from "ENABLE" and "DISABLE" to "ON" and "OFF" respectively to match use in Clause 76.

---

Proposed Response  
Response Status  W

PROPOSED REJECT.

TxEnable - 20x in Cl 100 & 102

The tx_enable in Cl 76 ( & Tx_Enable elsewhere in Section 5) has a subtle difference in meaning. In previous PON clauses this is used to turn on the Laser during US transmission.

In our case we are using TXEnable to allow transmission in both the CNU and the CLT. In the CNU case it is a confirmation that all the variables listed in Table 102-13 needed for PHY Discovery have been received. Similarly in the CLT there are a number of variable that need provisioning prior to going live on the network.

We can consider a new name in our clauses but should distinguish it from that in Cl 75/76.
Consider taking out all RS text as EPoC does not modify the RS. Clause 101.2.4.2, keep title and first sentence and references. Do for Tx and Rx.

**Proposed Remedy**

Page 117, Line 10 Clause 101.2.4.2, keep title and first sentence and references. Remove subclauses 101.2.4.2.1 through 101.2.4.2.3.

Page 117, Line 46, keep title and add new first paragraph "The receive function of the EPoC RS is described in <green>65.1.3.3</green> with the exceptions as noted in <green>76.2.6.1.3</green>. The XGMII receive function is described in <green>46.3.2</green>.

Remove remainder of text in this subclause, and subclauses 101.2.4.3.1 through 101.2.4.3.3.

**Proposed Response**

PROPOSED ACCEPT.

---

Consider replacing with DS_DataRate. Do sanity check on OFDM symbol rate, etc. Why is PLC separated out in this?

**Proposed Remedy**

Replace PMD_Rate lines 16 through 22 with DS_DataRate variable definition with cross reference to 100.2.6.1 as appropriate.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

---

We removed the legacy TDD CLT Tx data detection from figure in earlier comment rounds. This subclause is not needed.

**Proposed Remedy**

Remove subclause 101.3.2.5.1.

**Proposed Response**

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

---

Did the Annex 101B go away already? We think we said to get rid of it.

**Proposed Remedy**

Remove "Annex 101B gives an example of LDPC (FC, FP) FEC decoding." sentence.

**Proposed Response**

PROPOSED ACCEPT.

---

The setting of 0xFF and 0xFFF respectively in the two start burst markers designates that the first bit of data for the burst starts in the MSB bit of the first usable data resource element in the resource block immediately following the start burst marker. All other values and designations are reserved.

**Proposed Remedy**

Add new paragraph "The setting of 0xFF and 0xFFF respectively in the two start burst markers designates that the first bit of data for the burst starts in the MSB bit of the first usable data resource element in the resource block immediately following the start burst marker. All other values and designations are reserved."

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE:

*The start burst marker setting of 0xFF and 0xFFF in RB Frames of size 8 and 16 respectively designates that the first bit of data for the burst starts in the MSB bit of the first usable data resource element in the resource block immediately following the start burst marker.*
Proposed Responses

---

**Proposed Response**

**# 3287**  
**Cl 101 SC 101.3.3.1.7**  
Laubach, Mark  
**Proposed Response**  
**Comment Type** T  
**Comment Status** D  
Figure 101-13, "CTC" to "CRC"  
**Suggested Remedy**  
As per comment.

---

**Proposed Response**

**# 3288**  
**Cl 100 SC 100.2.8.4**  
Laubach, Mark  
**Proposed Response**  
**Comment Type** T  
**Comment Status** D  
Remove the "all" context from the table footnote to avoid confusion with the rest of the use of ceiling in this Clause, except where indicated. Format all table footnotes in Clause 100 to use Framemaker footnotes (to tables).  
**Suggested Remedy**  
Change "All equations are Ceiling(Power, 0.5) dBc. Use " to "This equation produces values in 0.5 dBc steps. To calculate use ". Update all table footnotes in Clause 100 as FM footnotes, where applicable.

---

**Proposed Response**

**# 3289**  
**Cl 100 SC 100.1.1**  
Laubach, Mark  
**Proposed Response**  
**Comment Type** T  
**Comment Status** D  
Figure 67-2a does not exist. Remove cross reference until such a time the TF approves a new figure for Clause 67.  
**Suggested Remedy**  
Delete ", as shown in Figure 67-2a".

---

**Proposed Response**

**# 3290**  
**Cl 100 SC 100.1.1**  
Laubach, Mark  
**Proposed Response**  
**Comment Type** T  
**Comment Status** D  
Review  
**Suggested Remedy**  
Delete ", as shown in Figure 67-2a".

---

**Proposed Response**

**# 3291**  
**Cl 103 SC 103.3.3**  
Laubach, Mark  
**Proposed Response**  
**Comment Type** E  
**Comment Status** D  
What is all the yellow highlight text mean?  
**Suggested Remedy**  
Suggestion: Describe why text is highlighted in the editors note on Line 49, or remove highlight.

---

**Proposed Response**

**# 3292**  
**Cl 45 SC 45.2.7a.4**  
Laubach, Mark  
**Proposed Response**  
**Comment Type** E  
**Comment Status** D  
"the" is spelled wrong in second line of second description in table. Register numbering should start in 45.2.7a.4.1 "12.10240" not "12.240" Is correct in descriptions.  
**Suggested Remedy**  
"the" is spelled wrong in second line of second description in table. Register numbering should start in 45.2.7a.4.1 "12.10240" not "12.240" Is correct in descriptions. Editor's discretion to review and correct any register numbering issues.
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<td>76</td>
<td>P 72</td>
<td>L 54</td>
<td># 3295</td>
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**Comment Type:** E  **Comment Status:** D  
**Comment:** Double check downstream DSNcp, DSNrp, USNcp, and USNrp and avoid subscription or underscores in this clause.

**Suggested Remedy:**
- Line 45, change "CP" to "DSNcp". - can't find this is D1.3 clean text.

**Editor's discretion to correct in Clause 101.**

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<td>101</td>
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<td>P 162</td>
<td>L 17</td>
<td># 3298</td>
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</table>

**Comment Type:** ER  **Comment Status:** D  
**Comment:** Fix upstream frame data load equation to move "RE" to italics. Look at other italics stuff.

**Suggested Remedy:**
- As commented. Editor to review FM equations and text for consistent use of italics.

**As commented. Editor to review FM equations and text for consistent use of italics.**

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<tr>
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<td>76</td>
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**Comment Type:** ER  **Comment Status:** D  
**Comment:** Fix master page copyright from 2013 to 2015.

**Suggested Remedy:**
- As commented.

**As commented.**
Proposed Responses

Cl 101 SC 101.4.1.2.3 P 154 L 35 # 5299
Laubach, Mark Broadcom

Comment Type T Comment Status D

Fix reference to 100.x.x.x.

SuggestedRemedy

Cross reference to 100.2.6.2.

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 101 SC 101.4.1.3.1 P 155 L 7 # 3300
Laubach, Mark Broadcom

Comment Type T Comment Status D

Why was upstream statement removed from the paragraph?

SuggestedRemedy

Consider returning last sentence of paragraph from previous Draft (modified): “In the upstream direction, the burst received by the CLT is variable in size and if comprised of one or more concatenated FEC codewords (see see 101.3.2.5.7).”

Proposed Response Response Status W
PROPOSED REJECT.
The statement was removed by Cmt #2792
While the statement is true I don’t see what it adds to the definition of PMA_UNITDATA.indication.

May want to remove the last sentence in this para.

Cl 100 SC 100.2.10.2 P 104 L 5 # 3301
Laubach, Mark Broadcom

Comment Type T Comment Status D

“Table 7-12” need to be updated to correct table cross reference.

SuggestedRemedy

Change both Table refs from “7-12” to “100-12”.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.
Just one ref needs to be updated.

Cl 00 SC 101.3.2.5.5 P 132 L 51 # 3302
Laubach, Mark Broadcom

Comment Type T Comment Status D

Need to change as the generation of the PMD_SIGNAL.request() was moved into the CNU PMA Pilot Insertion function (the reference point in the processing where it is known if an RB is going to be used (turned on with energy in a subcarrier) in an RB Frame prior to passing to IDFT.

SuggestedRemedy

Remove subclause 101.3.2.5.5.
Page 135, line 12 remove “and Data Detector input”.
Page 137, line 45 change “Data Detector” to “PMA Client function”.
Page 138, line 38 remove the redundant “, FEC encode and Data Detector output process,” from CLT paragraph.
Page 138, line 42 remove “and Data Detector” from CNU paragraph.
Page 77, line 14, move “DATA DETECTOR” Pilot Insertion box, line 31.

Note that this comment will likely overlap with other CNU transmit changes entered by comment or by presentation.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.
Changed to Cl 00 (effects CL 101 & 100)
Page 77, line 14, Remove “DATA DETECTOR” Pilot Insertion box, line 31.
<OR>
state where the “DATA DETECTOR” gets moved to.

Cl 101 SC 101.4.1.2.2 P 154 L 29 # 3303
Laubach, Mark Broadcom

Comment Type T Comment Status D

Text change made for D1.3 incorrectly states operation of burstStart and burstEnd boolean operation.

SuggestedRemedy

Change "always a single FEC codeword of size FEC_DS_CodeWordSize bits, and the CLT transmits continuously, thus both burstStart and burstEnd are FALSE." to "composed of a single FEC codeword where in the CNU upstream, the burst may comprise of one or more concatenated FEC codewords (see 101.3.2.5.7).”

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

**Cl 101 SC 101.4.1.2.3**

Proposed Response

Comment Type: T  
Comment Status: D

Fix the cross reference. Fix also in next subclause 101.4.1.2.4, Line 51.

Suggested Remedy

Line 35, Change “101.x.x.x” to “100.2.6.2”
Line 50, Change “101.x.x.x” to “101.4.2.7”.
Line 49, Change “PMA” to “PMA symbol mapper”

**Proposed Response**  
**Response Status:** W

PROPOSED ACCEPT.

**Cl 101 SC 101.4.2.2**

Proposed Response

Comment Type: T  
Comment Status: D

Xref should be 101-12. Before 101.4.2.3.

Suggested Remedy

Change "10X-X" to crossref to Table 101-12.

**Proposed Response**  
**Response Status:** W

PROPOSED ACCEPT IN PRINCIPLE.

Should be Table 101-7 (?) (Table 101-12 covers Multiple OFDM channel requirements)
Note that this is the only mention of "10.24" or "CLT Master Clock" in the draft.

**Cl 101 SC 101.4.2.11**

Proposed Response

Comment Type: T  
Comment Status: D

Add a note to Figure 101-25 that Cyclic prefix and windowing: US is created in same fashion using USNcp and USNrp.

**Proposed Response**  
**Response Status:** W

PROPOSED ACCEPT.
Table 101-13.
Line 26: Upstream does not have exclusion band or contiguous group requirementes. OFDM channel bandwidth is specified as minimum 10 MHz in Table 100-11, so "40" subcarriers here creates confusion.

Line 29: What is value for TBD? Note no corresponding percentage requirement in D3.1 upstream. CLT will control percentage needed for proper upstream receiver operation.

Page 157:
Also need to look at Table 101-8 want to borrow some terminology from D3.1 and update the table. Page 157, Line 5, we don't define "group" anywhere. Also need minimum size exclusion band.

**Suggested Remedy**

Page 182:
Line 26: remove "Minimum number of active subcarriers in a contiguous group" row from table.
Line 29: remove "Maximum excluded spectrum in the encompassed spectrum" row from table.

Page 157:
Line 5: change "group" to "modulation band"
Line 5: Add new table row: Parameter: "Minimum number of subcarriers in an exclusion band" Limit: "20" Unit: <blank> or write in "subcarriers" where appropriate.
Page 156, Line 49. Insert "Exclusion bands separate contiguous modulation bands." before the last sentence.

**Proposed Response**

Page 218
Cannot be accepted until such time as a timestamp section is proposed. Rationalize with accepted contributions.
Proposed Response

#3311
Cl 102 SC 102.4.1.7.7 P 237 L 14 # 5311
Laubach, Mark Broadcom

Comment Type T Comment Status Review

Figure CNU PHY Discovery Response Transmission control state diagram. Need to resolve the TBD in "rnd(TBD)".

Suggested Remedy
Part of TBD resolution.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
Define a provisioned parameter (create variable, add to Cl 45, add to Table 102-1, 102-13).

Cl 45.2.1.110 add:
"1.1907.15:8 | Rnd | Random back-off seed for PHY Discovery | R/W"

*45.2.1.110.1 Rnd (1,1907.15:8) Register bits 1.1907.15:8 form an 8-bit integer that is used by the CNU for the seed of the back-off algorithm. These bits are a reflection of the Rnd variable defined in 102.4.1.7.2.*

renumber as needed.

Add to Table 102-3
"Rnd | US OFDM control | 1.1907.15:8 | Rnd | 7 | 15:8"

In 102.4.1.7.2 add
"Rnd
TYPE: 8-bit integer
This variable is used as a seed in the back-off algorithm for the PHY Discovery Response."

In Figure 102–23 replace "TBD" with "Rnd"

Proposed Response Response Status W

PROPOSED REJECT.
Used in Figure 103–14

Cl 103 SC 103.0.0.0 P 251 L 1 # 5313
Laubach, Mark Broadcom

Comment Type T Comment Status Review

Rate calculations that were added were based on 10GEPON sub layer definitions, in EPoC, much of what was in the PMD is in our PMA.

Suggested Remedy
Change “PMD” to “PMA” where appropriate to reflect correct sublayer for overheads, calculations, etc. Editor’s discretion.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Pg Ln Action
263 20 PMD -> PHY
266 10 PMD_Overhead -> PHY_Overhead (global)
266 14 none
267 5 none
279 31 none
279 38 none
280 11 none
280 15 none
280 16 none
302 53 none
308 2 none
Fig 103-2 no change
Editors notes no change

Editors notes no change

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
Review each footnote with TF for normative or informative status.

Cl 100A SC 100A.0.0.0 P 323 L 1 # 5314
Laubach, Mark Broadcom

Comment Type T Comment Status Review

Fix all table footnotes to normative alpha format and use FM table footnote indenting.

Suggested Remedy
Editor’s discretion to fix Tables as per comment.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
Review each footnote with TF for normative or informative status.
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**Comment Type**: T

**Comment Status**: D

**Review**

Need to resolve TBD's or not modify Clause 67. Nominal reach is first defined in amendments to Table 56-1, page 63 as "2.9 km" with table footnote of "Maximal differential distance between CNUs. Reach may vary depending on the CCDN."

Note that Table 67.1 has not been updated with other EPON PHY standards that increase split ratio beyond 1:16, e.g. 1:32, 1:64. Since EPoC does not specify the maximum number of CNUs, the number of PHYs = CLT PHY + N * CNU PHYs is not readily quantifiable into this table format.

**Suggested Remedy**

Consider 1 of 2 choices:

Choice 1: do not modify Clause 67 and remove from our draft.

Choice 2: try to fill in the TBD's with something that makes some sense:

Page 67, Lines 27 and 28, replace nominal reach TBDs with "2.9" and add a table footnote same as "i" from Table 56-1. Note now that this is duplicative of the changes to Table 56-1. Page 67, Lines 27 and 28, replace number of PHYs TBD with "variable" and a new table footnote "Based on cable operator's CCDN configuration, the number of PHYs will be the CLT PHY plus each CNU PHY." or similar.

**Proposal Response**

**Response Status**: W

PROPOSED ACCEPT IN PRINCIPLE.
TF needs to decide on CL 67 Table 67-1. Also consider removing changes to 67.3.

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**Comment Type**: E

**Comment Status**: D

**VarXRef**

Line 27 and 50 ">{ref}" needs to be defined.

Page 46, Line 19, same comment.

**Suggested Remedy**

**Proposed Response**

**Response Status**: W

PROPOSED ACCEPT IN PRINCIPLE.

Changed to Pg 48 (was 2748) 2nd ref should be pg 49 ln 19
See topic VarXRef

Pg 48 Ln 27 change
"See [ref] for a definition of this register."
to
"These registers are a reflection of the variable FecCodeWordCount defined in 101.3.3.1.5."

Pg 48 Ln 50 change
"See [ref] for a definition of this register."
to
"These registers are a reflection of the variable FecCodeWordSuccess defined in 101.3.3.1.5."

pg 49 Ln 19 change
"See [ref] for a definition of this register."
to
"These registers are a reflection of the variable FecCodeWordFail defined in 101.3.3.1.5."

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<td>Broadcom</td>
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**Comment Type**: T

**Comment Status**: D

**Update to place stake in ground. I've heard from implementers that PMD jitter should be negligible. These values are the same at for 10GEPON.**

**Suggested Remedy**

1) Change subclause text to: "The PMD shall introduce a transmit delay variation of no more than 0.5 time_quanta, and a receive delay variation of no more than 0.5 time_quanta. A description for the time_quanta can be found in 77.2.2.1."

2) Remove editor's note.

**Proposal Response**

**Response Status**: W

PROPOSED ACCEPT.
IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 3rd Task Force review comments

Proposed Responses

**Comment ID 3318**

Laubach, Mark

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

**Comment**

Lines 13 through 28. We need a set of counters for the DS (CNU receiver) and a set of counters for the US (CLT receiver).

**Suggested Remedy**

Add a second set of counters and distinguish US and DS. Variable names Page 145 Line 27 through 36 should be updated for DS as well as names in state diagram on Page 148, lines 6-8, 31, and 34.

**Proposed Response**

PROPOSED REJECT.

These counters are always from the perspective of the receiver; US counters will reside in CLT, DS counters will reside in CNU. There is no need to differentiate US & DS in the variable name.

**Comment ID 3319**

Laubach, Mark

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

**Comment**

Variables need to be added for FEC decode counters. There is no subclause for PHY Link FEC decoder.

**Suggested Remedy**

Suggest adding: DSPL and USPL prefix for FecCodeWordCount, FecCodeWordSuccess, FecCodeWordFail, similar to Clause 101 names. Create a new subclause for PHY Link FEC decoder. Editor to create appropriate text (only, no SD required) that describes the above counter operation in CLT and CNU receivers.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

The PHY Link does not have a CRC associated with each FEC codeword as in the data path but rather has CRC’s associated with each message type. Define message and CRC error counters and add 8 new registers in Cl 45 as shown in remein_3bn_21_0315.pdf

**Comment ID 3320**

Laubach, Mark

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

**Comment**

The MER variables here are not reflected in any clause variable table (that I can find). MER values will be calculated as part of the CNU and CLT receive Pilot Processing, Equalization, and FFT functions in the PMA. Note to us that we may need to add some extra words into the FFT subclause to require MER calculation.

**Suggested Remedy**

Suggest adding MER variables into Table 101-1, page 112-114. Editor’s discretion on naming and placement.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

Changed from Cl 45 to Cl 100

MER defined in:

100.2.9.6.1 pg 101 & 100.2.12.3

Rqmt to make meas. in 100.2.12.3 pg 106 in 42

Add formal definitions in 100.2.12.3.1 as

100.2.12.3.1 Variables

RxMER(n)

- TYPE: array of 8-bit integer (???)
- This set of variables reflect the MER measured on the OFDM subcarriers for the OFDM channel indicated by the RxMERchID. The measurements are only valid when RxMERValid is TRUE.

**** WHAT IS THE UNIT OF THIS VALUE? ****

RxMERchID

- Type: integer

This variable indicate which of the 5 possible OFDM channels the values in RxMER(n) represent.

RxMERValid

- TYPE: boolean

When TRUE this variable indicates that the values in RxMER(n) variables are valid for the channel indicated by RxMERchID. When FALSE this variable indicates the some values in the RxMER(n) variables may be invalid for the channel indicated by RxMERchID.

Add each of the above defined variables to Table 100-1

MDIO Param | MDIO reg | Reg/bit | VarName | Index | Bits

MER measurement valid | 10GPASS-XR receive MER control | 12.10240.3 | RxMERValid
Receive MER Channel ID | 10GPASS-XR receive MER control | 12.10240.0:2 | RxMERchID
10GPASS-XR receive MER measurement | 10GPASS-XR receive MER measurement | 12.10241 - 12.12287 | RxMER(n)
IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 3rd Task Force review comments

Proposed Responses

Laubach, Mark 
Broadcom

Comment Type T  Comment Status D  Review

Time to put a stake in the ground. Also, fix xref to point to 10G EPON subclause as the time_quantum in 64.2.2.1 does not point to the 10GEPON MPCP clause. This subclause will likely be amended to include any (de)jitter effects and impact of upstream symbol mapper operation. Will do so in a later contribution. For now, all functional processing implementations should adhere to the same combined delay variation as 10GEPON (Section 76.1.2).

Suggested Remedy

Change "TBD" to "1". Change "64.2.2.1" to "77.2.2.1".

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Suggested Remedy

Subclauses 102.2.6.5 Timers and 102.2.6.6 Messages have no text or TBD.

Suggested Remedy

Remove these textless subclauses if no text is provided in another comment.

Proposed Response Response Status W

PROPOSED ACCEPT.

Comment Type T  Comment Status D  Review

laubach_3bn_10_0315.pdf (laubach_3bn_10_0315.fm) contains the upstream symbol mapper draft text as per TQ #148.

Suggested Remedy

Insert the upstream symbol mapper draft text from laubach_3bn_10_0315.pdf for subclause 101.4.3.6.

Proposed Response Response Status W

PROPOSED REJECT.

The proposal has several issues (see remein_3bn_22_0315.pdf, a marked-up version of laubach_3bn_10_0315.pdf)
1) Subclauses through 100.3.3 to 100.6 have no text. If no text is provided by end of this
March meeting, remove these subclauses.

2) Subclause 100.7 is “EEE capability” and needs text.

3) Consider removing subclause or adding an editor’s note to remove subclause “100.8
Timesync capability” if no text is provided by the May meeting; i.e. in general, any empty
subclauses with no text at the close of the May meeting should be removed.

**Suggested Remedy**

1) as per comment.

2) Add the following text: “For the 10GPass-XR-U PHY the CNU shall enable Energy-
Efficient Ethernet (EEE) capability to conserve energy by deactivating power-consuming
PMD Functions (e.g. RF power amplifier) between bursts using PMD_SIGNAL.request()
(see 100.2.1.4).”

Page 82, Line 30. Add sentence to paragraph: “PMD functions are implementation
dependent and include digital-to-analog conversion, analog-to-digital conversion,
interpolation, analog filtering, frequency conversion, and/or RF power amplification.”

For 3) as per what TF decides.

**Proposed Response**

*Response Status: W*

PROPOSED ACCEPT IN PRINCIPLE.
May want to review wording so we have a starting point. For 3) add Editor’s note following
comment.

---

1) Subclauses through 100.3.3 to 100.6 have no text. If no text is provided by end of this
March meeting, remove these subclauses.

2) Subclause 100.7 is “EEE capability” and needs text.

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dependent and include digital-to-analog conversion, analog-to-digital conversion,
interpolation, analog filtering, frequency conversion, and/or RF power amplification.”

For 3) as per what TF decides.

**Proposed Response**

*Response Status: W*

PROPOSED ACCEPT IN PRINCIPLE.
May want to review wording so we have a starting point. For 3) add Editor’s note following
comment.

---

In the box “B-1” should be “beta-1”

**Suggested Remedy**

Replace B to beta (greek letter)

**Proposed Response**

*Response Status: W*

PROPOSED ACCEPT.
**Proposed Responses**

### Cl 101 SC 101.3.2.1.2 P 121 L 36 # 3335

Zhang, Jin  
Marvell Semiconductor

<table>
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<tr>
<th>Comment Type</th>
<th>T</th>
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<th>D</th>
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The equation 101-1 is an approximation of the PCS_Rate in 101-2. There is a small gap between the two values.

**Suggested Remedy**

Use 101-2 as the definition for PCS_Rate because it is further used in other equations. We can rename the PCS_Rate as PCS_Rate_Nominal, showing this is a normal rate.

**Proposed Response**

**Response Status**: W

PROPOSED ACCEPT IN PRINCIPLE.

Remove Eq 101-1

(PCS_Rate = XGMII_Rate x (PHY_Dsize/(PHY_Dsize + PHY_Osize)))

### Cl 101 SC 101.3.2.1.2 P 122 L 16 # 3336

Zhang, Jin  
Marvell Semiconductor

<table>
<thead>
<tr>
<th>Comment Type</th>
<th>T</th>
<th>Comment Status</th>
<th>D</th>
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</thead>
</table>

PMD_Rate is a referenced variable, its definition should be found in the PMA section, so are PLC_TotalBits and PLC_TotalCycles, or similar variables with other names. The equation of PMD_Rate can be relocated to the appropriate section in PMA.

**Suggested Remedy**

Remove the equation of PMD_Rate or put a note saying the equation will be relocated to PMA. Modify the text as "The transmission rate of PMD data. It is a rate determined by the bit loading profile, pilot overhead, band plans, Cycle Prefix, Windowing."

**Proposed Response**

**Response Status**: W

PROPOSED ACCEPT IN PRINCIPLE.

Replace the text with the following:

a) create gaps by Idle removal to allow for FEC parity and CRC40.

b) rate adaptation by Idle removal to adjust from the XGMII rate to the PMD rate."

### Cl 99 SC 99 P 1 L 9 # 3339

Remein, Duane  
Huawei Technologies

<table>
<thead>
<tr>
<th>Comment Type</th>
<th>E</th>
<th>Comment Status</th>
<th>D</th>
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</thead>
</table>

Change "Ammendment X:" to "Ammendment:" per latest template

**Suggested Remedy**

per comment

**Proposed Response**

**Response Status**: W

PROPOSED ACCEPT.

At 101.3.2.1 pg 120 In 8 Add "EDITORS NOTE (to be removed prior to publicaiton) the TF need to do a thorough review of Idle control character deletion process as it is currently written to be applicable to both US & DS and these processes will be very different in EPoC where US/DS rates are different and US has multiple FEC’s."

Cmt #3283 is related
IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 3rd Task Force review comments

Proposed Responses

<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Comment</th>
<th>Proposed Response</th>
<th>Response Status</th>
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<tbody>
<tr>
<td>3340</td>
<td>E</td>
<td>D</td>
<td>the &quot;where;&quot; at line 40 applies to Eq 100-16 and 100-17 and should be split.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Proposed Remedy</td>
<td>Add new &quot;where;&quot; statement just below Eq 100-16</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Move to new &quot;where;&quot;</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&quot;Eavg is the average constellation energy for equally likely symbols,</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>RBSIZE is the number of symbols averaged, either 8 or 16,&quot; and</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&quot;ej,k is the error vector from the jth subcarrier in the burst and kth received symbol to the</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>ideal transmitted QAM symbol of the appropriate modulation order.&quot;</td>
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<td></td>
</tr>
<tr>
<td>3341</td>
<td>T</td>
<td>D</td>
<td>For each register field in 45.2.1.107-45.2.7a there is a corresponding variable in Cl 100, 101 or 102 replace any reference to Cl 100, 101 or 102 with the following:</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>“This register [These register bits] is[are] a reflection of the variable_name defined in [ref].”</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Wherever possibil[e][Ref] shoul[d][p] point to the para where the variable is defined.</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Proposed Remedy</td>
<td>Made technical due to extent of change. per comment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Use topic VarXRef</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3342</td>
<td>T</td>
<td>D</td>
<td>Conditions for action A &amp; B are the same:</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>“If CRC40EnCtrl is enabled and the calculated value of CRC40 does not match the value of CRC40 retrieved” then do action A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>“If CRC40EnCtrl is set to enable and the calculated value of CRC40 does not match the value of CRC40 retrieved” then do action B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Suggested Remedy</td>
<td>Change the second condition from</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>“If CRC40EnCtrl is set to enable and ...”</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>to</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>“If CRC40EnCtrl is disabled and ...”</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Proposed Response</td>
<td>PROPOSED ACCEPT IN PRINCIPLE. Rationalize with any material contributed on this section.</td>
</tr>
<tr>
<td>3343</td>
<td>T</td>
<td>D</td>
<td>the term XGMII_Rate is used here and in Cl 103 but is not defined anywhere.</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Proposed Remedy</td>
<td>Add to 101.3.2.1.1 Constants</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>XGMII_Rate</td>
<td>TYPE: Integer</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The data transfer rate of the XGMII interface.</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Value: 10 Gb/s</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Add to 103.2.2.1 Constants</td>
<td>XGMII_Rate</td>
</tr>
<tr>
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</tbody>
</table>

Draft 1.3

Cl 100 SC 100.2.9.6.1 P 101 L 40 # 3340
Remein, Duane Huawei Technologies

Cl 101 SC 101.3.1.3 P 144 L 17 # 3342
Remein, Duane Huawei Technologies

Cl 101 SC 101.3.2.1.2 P 121 L 36 # 3343
Remein, Duane Huawei Technologies

Comment ID 3343 Page 33 of 35 3/4/2015 5:05:37 PM

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Comment ID
### Comment 3344

**Comment Type:** T  
**Comment Status:** D  
**Page:** 3344  
**Type:** Proposed Response  
**Type:** TR  
**Page:** 3344  
**Type:** Proposed Responses  

- **Comment:** PCS_Rate is not defined in this clause.  
- **Suggested Remedy:** Add to 103.2.2.3  
  - PCS_Rate  
  - See 101.3.2.1.2 and Figure 101–2  
- **Proposed Response:** PROPOSED ACCEPT.

### Comment 3345

**Comment Type:** T  
**Comment Status:** D  
**Page:** 3345  
**Type:** Proposed Response  
**Type:** TR  
**Page:** 3345  
**Type:** Proposed Responses  

- **Comment:** P802.3bx is modifying Cl 77. We should rationalize these changes complementary changes to Cl 103.  
- **Suggested Remedy:** In Figure 77-14 (Eq to Fig 103–14)  
  - IdleCount is changed to IdleGapCount (In 5, 11 & 16)  
  - Added to 77.2.2.3 (eq to 103.2.2.4)  
  - IdleGapCount  
    - TYPE: 32-bit unsigned  
    - This variable represents length of gap between subsequent frames, expressed in the unit of octet time. This variable advances by 1 after every 8-bit times.  
  - ResetBound  
    - TYPE: 32-bit unsigned  
    - This variable represents the value of DelayBound (see 76.3.1.2) expressed in units of octet time (i.e., ResetBound = 8 * DelayBound).  
  - In Figure 77-29 in PARSE GATE added "then" (this has already been done in Figure 103-29).  
- **Proposed Response:** PROPOSED ACCEPT.

### Comment 3346

**Comment Type:** T  
**Comment Status:** D  
**Page:** 3346  
**Type:** Proposed Response  
**Type:** TR  
**Page:** 3346  
**Type:** Proposed Responses  

- **Comment:** Several errors in this definition:  
  - "A variable that advances by one after every octet time. After reaching the value of FEC_CODEWORD_SIZE, this variable is held for a period of time for PMD derating and then reset to zero. A state diagram of fecOffset behavior is illustrated in Figure 103–9.
  - In the CLT, this variable is initialized to 0 at system initialization. In the CNU, this variable (fecOffset) is assigned in the GATE Processing CNU Activation state diagram (see Figure 103–30)."
  - We have added Figure 103–9—fecOffset state diagram which sets this variable for the CLT.  
  - For CNU the Title and Ref are both incorrect. fecOffset is not mentioned in Figure 103–30.
  - In P802.3bx D2.1 the title is used but the figure reference is to Fig 77-14 (our Fig 103-14).
  - For Ref here is the definition from 802.3bx D1.2  
    - "A variable that advances by 1 after every 8 bit times. After reaching the value of FEC_CODEWORD_SIZE, this variable is reset to zero. In the OLT, this variable is initialized to 0 at system initialization. In the ONU, this variable is assigned in the GATE Processing ONU Activation state diagram (see Figure 77–14)."
- **Suggested Remedy:**  
  - Change to read:  
    - "A variable that advances by one after every octet time. In the CLT, after reaching the value of FEC_CODEWORD_SIZE, this variable is held for a period of time for PMD derating and then reset to zero as illustrated in Figure 103–9. In the CNU, this variable is assigned in Figure 103-14 CNU Control Multiplexer state diagram" (use full ref in FrameMaker).  
  - Change title of Figure 103-9 from  
    - "fecOffset state diagram"  
  - to:  
    - "CLT fecOffset state diagram"  
- **Proposed Response:** PROPOSED ACCEPT.
Comment Type: T
Comment Status: D

In Fig. 103-9, the exit condition of "START_DERATING_TIMER" should not be UCT. It should wait until the timer expires.

Suggested Remedy:
Change the exit condition for the box "START_DERATING_TIMER" to be "derating_timer_done".

Proposed Response: W
Response Status: PROPOSED ACCEPT.

Zhang, Jin
Marvell Semiconductor