IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 2nd Task Force review comments

Comment ID 2361

**Cl 45 SC 45.2.1.116 P 41 L 20 # 2361**

Hajduczenia, Marek
Bright House Network

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

"The PHY Discovery process is used to bring up new CNUs on the EPoC Coax network. " - we do not use "coax network" anymore

**SuggestedRemedy**
Replace "coax network" with the proper term.

**Response**  **Response Status C**

ACCEPT IN PRINCIPLE.
Change:
"EPoC Coax network"

**Comment ID 2362**

**Cl 45 SC 45.2.a.116.1 P 41 L 33 # 2362**

Hajduczenia, Marek
Bright House Network

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

Wrong subclause number: 45.2.a.116.1 should be 45.2.116.1

**SuggestedRemedy**
Per comment

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

PROPOSED ACCEPT.

**Comment ID 2363**

**Cl 45 SC 45.2.a.116.1 P 41 L 38 # 2363**

Hajduczenia, Marek
Bright House Network

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

The editorial note makes more sense in the PCS / PHY link sections and not in registers. Register shoudl point to where it is actually described.

**SuggestedRemedy**
Insert reference to where the the timestamp details are defined. Move the editorial note to that location.

**Response**  **Response Status C**

ACCEPT IN PRINCIPLE.
Remove the note.

**Comment ID 2364**

**Cl 45 SC 45.2.1.117.1 P 42 L 19 # 2364**

Hajduczenia, Marek
Bright House Network

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

"When the flag is True the associated CNU_ID has been assigned to a new CNU whereas when the flag is False the associated CNU_ID has not been assigned."

There are no True and False values defined, but only 1 and 0.

**SuggestedRemedy**
Update the listed sentences to use values of 0 and 1.

**Response**  **Response Status C**

ACCEPT.

**Comment ID 2365**

**Cl 45 SC 45.2.1.117 P 42 L 8 # 2365**

Hajduczenia, Marek
Bright House Network

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

What is "allowed" CNU_ID? We do not define "disallowed" or any other values.

**SuggestedRemedy**
Remove the word "allowed" from 45.2.1.117

**Response**  **Response Status C**

ACCEPT IN PRINCIPLE.
We have agreed that upper layers assign the CNU_ID values.
Change:
"the allowed CNU_ID 1 value has [not] been assigned to a CNU" to:
"the Allowed CNU_ID value per register 1.1917.14:0 has [not] been assigned to a CNU"

**Comment ID 2366**

**Cl 45 SC 45.2.1.117.1 P 42 L 19 # 2366**

Hajduczenia, Marek
Bright House Network

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

There are no True and False values defined, but only 1 and 0.

**SuggestedRemedy**
Update the listed sentences to use values of 0 and 1.

**Response**  **Response Status C**

ACCEPT.

**Comment ID 2367**

**Cl 45 SC 45.2.1.117 P 42 L 8 # 2367**

Hajduczenia, Marek
Bright House Network

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

What is "allowed" CNU_ID? We do not define "disallowed" or any other values.

**SuggestedRemedy**
Remove the word "allowed" from 45.2.1.117

**Response**  **Response Status C**

ACCEPT IN PRINCIPLE.
We have agreed that upper layers assign the CNU_ID values.
Change:
"the allowed CNU_ID 1 value has [not] been assigned to a CNU" to:
"the Allowed CNU_ID value per register 1.1917.14:0 has [not] been assigned to a CNU"
IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 2nd Task Force review comments

Draft 1.1

Approved Resolution

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<th>Comment Type</th>
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<td>new CNU</td>
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<tr>
<td>2367</td>
<td>E</td>
<td>D</td>
</tr>
<tr>
<td>2368</td>
<td>T</td>
<td>A</td>
</tr>
</tbody>
</table>

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Comment 2366

Hajduczenia, Marek

Bright House Network

New CNU

Comment Type: TR

New CNU

Comment Status: R

"A new CNU may be assigned this value for CNU_ID if the CNU_ID assigned flag is false."

It is very confusing why we would insert a value in 1.1917.14:0 and then disallow it to be assigned.

Suggested Remedy

What is the purpose of this register 1.1917 altogether is unclear. Do we set the value for each newly discovered CNU and then write the value for each new CNU that is supposed to be discovered?

The purpose of registers 45.2.1.117 and 45.2.1.118 need to be discussed in more detail. It seems that right now we make it more complex than necessary - the value for CNU could be assigned automatically without involvement of the management layer

Response

Response Status: U

REJECT.

This was discussed in San Diego and it was agreed that CNU_ID values should be assigned by upper layers so that they can be aligned with LLID values. Details on the process were presented in remein_3bn_02_0714.pdf (see slide 9). Basically the Allowed CNU_ID and the CNU_ID assigned flag form a handshake mechanism between the upper layers and the PHY as described in referenced section 102.4.4.

---

Comment 2367

Hajduczenia, Marek

Bright House Network

Full stop is missing at the end of the line

Suggested Remedy

Per comment.

Proposed Response

Response Status: W

PROPOSED ACCEPT.

---

Comment 2368

Hajduczenia, Marek

Bright House Network

Incorrect PHY name: "10G-PASS_XR"

Suggested Remedy

Change all "10G-PASS_XR" to "10GPASS-XR" (2 instances)

There are also multiple instances of "10G-PASS" which would be really "10GPASS"

Response

Response Status: C

ACCEPT.

---

Comment 2370

Hajduczenia, Marek

Bright House Network

We typically start description from register number: The Probe duration parameter

(Register 1.1007.11)

Suggested Remedy

Change to "Register 1.1907.11 (Probe duration) determines"

Note that also register number needs fixing. It is 1007 and should be 1907

Response

Response Status: C

ACCEPT.

---

Comment 2371

Hajduczenia, Marek

Bright House Network

"Subcarriers are numbered from 0 to 4095 with subcarrier 0 at the lowest frequency" - we have 16 bits in total, indicating 65535 possible units. If a unit is 50Hz, we can reach 3,276,750Hz, which is consistent with value in line 29. However, the number of subcarriers is incorrect. It is 4095 and should be 65535

Suggested Remedy

Change 4095 to 65535

Fill in the TBD value. Is there any reason for it NOT to be equal to zero? We are not concerned about running out of space here, are we?

Similar issue in 45.2.1.109.1, but there is some maximum value assigned there without any reason.

Response

Response Status: C

ACCEPT IN PRINCIPLE.

We only have 4096 SC's in US so no change to that.

Change the TBD's to 10 MHz and 200 to the last two sentences read:

"This definition equates to a center frequency from 5 MHz to 3.27675 GHz in 50 kHz steps. The minimum value for this register is 100."

This is consistent with TD#72.
Comment Type | Comment Status | Comment
---|---|---
TR | A | DOCSISism: "The Type 1 Repeat parameter cannot be zero, whereas a value of 1 would indicate that all subcarriers would be Type 1 Pilots unless otherwise specified via the US profile descriptor (see 45.2.7a.2)."
Same comment on 45.2.1.112.3

Suggested Remedy
If the value of 0 is not allowed, then how about making it a reserved value?
The statement "all subcarriers would be Type 1 Pilots unless otherwise specified via the US profile descriptor" is just confusing, including double conditional statements is a way to misinterpret. Consider restating in simpler terms, to leave no doubts what is meant. As a side note, is this information really necessary in the description of this register?

Response | Response Status | C
---|---|---
ACCEPT IN PRINCIPLE.
Change:
"Register bits 1.1909.10 through 1.1909.5 indicate the number, as a binary integer between 1 and 31, of subcarriers between repeating Type 1 Pilots. The Type 1 Repeat parameter cannot be zero, whereas a value of 1 would indicate that all subcarriers would be Type 1 Pilots unless otherwise specified via the US profile descriptor (see 45.2.7a.2)."
to:
"Register bits 1.1909.10 through 1.1909.5 indicate the number, as an integer between 0 and 31, of subcarriers between repeating Type 1 Pilots. Setting these bits to zero disables the Type 1 repeating pilot pattern. See 101.4.4.7 for additional information on Pilot patterns."

Likewise change text of 45.2.1.112.3 to read:
"Register bits 1.1910.10 through 1.1910.5 indicate the number, as an integer between 0 and 31, of subcarriers between repeating Type 1 Pilots. Setting these bits to zero disables the Type 1 repeating pilot pattern. See 101.4.4.7 for additional information on Pilot patterns."

Comment Type | Comment Status | T
---|---|---
Unnecessary detail in the table "DS PHY Link starting subcarrier from 0 to 4095 in steps of 1 subcarrier."

Suggested Remedy
Change to "DS PHY Link starting subcarrier" - teh rest should be included in 45.2.1.113.1

Response | Response Status | C
---|---|---
ACCEPT.

Comment Type | Comment Status | T
---|---|---
Unnecessary detail in the table "DS PHY Link starting subcarrier from 0 to 4095 in steps of 1 subcarrier."

Suggested Remedy
Change to "DS PHY Link starting subcarrier" - teh rest should be included in 45.2.1.113.1

Response | Response Status | C
---|---|---
ACCEPT.
IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 2nd Task Force review comments

Draft 1.1

Approved Resolution

Comment ID 2376

Draft 1.1

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</table>
| 56 | 56.1.5 | 56 | 40 | 2376 | Hajduczenia, Marek

Comment Type: T

Comment Status: R

Response: C

In contrast to previous editions of IEEE Std 802.3, ... it is just an odd statement, given that it has been allowed in 802.3 since 2007 at least when 1G-EPON and EFM came out.

Suggested Remedy

Change "In contrast to previous editions of IEEE Std 802.3, in certain circumstances" to "In certain circumstances"

Response: REJECT.

This is outside our scope.

Comment ID 2377

Draft 1.1

<table>
<thead>
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<th>L</th>
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</tr>
</thead>
</table>
| 67 | 67.6.1 | 61 | 10 | 2377 | Hajduczenia, Marek

Comment Type: TR

Comment Status: A

Response: C

Note that there is an outstanding MR (http://www.ieee802.org/3/maint/requests/maint_1255.pdf) adding changes to Clause 67 already and it is ready for ballot.

Suggested Remedy

Once new revision process starts and merged base standard is available, alignment will be needed

Response: ACCEPT IN PRINCIPLE.

Add Editor's note to front of introduction material on Page 21, near line 48:

"Will need to align to the new 802.3 revision once balloted."

Comment ID 2378

Draft 1.1

<table>
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</table>
| 76 | 76 | 63 | 1 | 2378 | Hajduczenia, Marek

Comment Type: T

Comment Status: A

Response: C

Title probably does not need "2014" in it ...

Suggested Remedy

Remove "2014" from title of Clause 76

Response: ACCEPT IN PRINCIPLE.

The "2014" in the Section header was a typo introduced for D11, it is not in D10. Will be removed by the editor.

Also, Editor needs to adjust copyright year for this framemaker file from 2013 to 2014.

Comment ID 2379

Draft 1.1

<table>
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</table>
| 45 | 45.2.1.114 | 39 | 53 | 2379 | Hajduczenia, Marek

Comment Type: T

Comment Status: A

Response: C

"These registers permit the CNU to more rapidly acquire the PHY Link when its location is unknown." - it is not so registers in themselves, but the information contained in these registers.

Suggested Remedy

Change to "These registers contain information permitting the CNU to locate the PHY Link more rapidly." - note that nothing prevents CNU from using this information when PHY Link location is known, or almost known.

Response: ACCEPT.
Comment Type TR  Comment Status A
There are several issues with the description of individual registers in Table 45–78h:

1.1912.14 provides a search control, in which case it should just have options to Start a search and Stop a search. "search complete" belongs to 1.1912.13. Definition in 45.2.1.114.1 and 45.2.1.114.2 need to be aligned accordingly.

1.1912.13 should be extended to 2 bits with the following encoding
1 1 reserved
1 0 search complete
0 1 search successful
0 0 search unsuccessful
Definition in 45.2.1.114.1 and 45.2.1.114.2 need to be aligned accordingly.

1.1912.12:0 contains unnecessary detail "From 1 to 5000 MHz in 1 MHz steps", which should be moved to 45.2.1.114.3 (already there, BTW)

1.19131914.7:0 contains unnecessary detail "From 1 to 256 MHz in 1 MHz steps", which should be moved to 45.2.1.114.4 (already there, BTW)

1.19131914.7:0 has likely incorrect number. Should be 1914.7:0 (likely)

1.19131914.7:0 has inconsistent name. Should be "DS PHY Link search step"

1.1912.13 has inconsistent name. Should be "DS PHY Link search status"

1.1914.12:0 has inconsistent name. Should be "DS PHY Link search count"

Apply the same set of changes to names in subclauses 45.2.1.114.xx

Suggested Remedy
Changes per comment

Response
Accept in principle.
Implement changes proposed for 1.1912.12:0 and 1.19131914.7. Also change 1.19131914.7 to 1.1914.7

Proposed Changes for 1.1912.13 will not work as we need to signal search is complete or not and success/unsuccess.

Comment Type T  Comment Status D
Register bits 1.1912.12 through 1.1912.0 specify the starting frequency, in 1 MHz steps from 0 to 5000 MHz, at which to begin searching for a PHY Link.

Since there are 13 bits, we can go all the way to 8191 MHz. Is there any reason we need to go that far?

Suggested Remedy
Either increase the resolution to 500 kHz if needed, or decrease the size of register set to 12 bits.

Proposed Response
Response Status Z
REJECT.

This comment was WITHDRAWN by the commenter.

Change resolution to 500 kHz. Reword appropriately.

Comment Type T  Comment Status A
Register bits 1.1913.7 through 1.1913.0 specify the spectrum granularity, in 1 MHz steps from 1 to 256 MHz, between successive search attempts the PHY is to use when searching for a PHY Link.

Since we have 255 positions (2^8-1) available, we can search from 0 to 255. Otherwise, a different encoding is needed, i.e., all zeros represent 1, all 1s represent 256.

Suggested Remedy
Either change the range to 0 to 255, or show the actual encoding

Response
Response Status C
 ACCEPT IN PRINCIPLE.
Remove the PHY Link search registers (this will impact Cl 102 also).
IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 2nd Task Force review comments

Approved Resolution

### Comment ID: 2383

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<td>40</td>
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</table>

Hajduczenia, Marek  
Bright House Network

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

Register bits 1.1914.12 through 1.1914.0 specify the integer number of search steps through which to search for a PHY Link.

The word "integer" does not add anything here.

It is also not clear what "steps" are. Does it mean repetitions of the search process or something altogether else?

**Suggested Remedy:** Remove "integer"  
Clarify what "search steps" are or point to where they are defined.

**Proposed Response**  
**Response Status:** W  
**Proposed Accept in Principle.**  
Previous comments implied we should always include a numerical type for a field. Change "steps" to "attempts".

### Comment ID: 2384

<table>
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Hajduczenia, Marek  
Bright House Network

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

"from 0 to 4095 in steps of 1 subcarrier" - unnecessary detail in the table. It should be covered in 45.2.1.115.1

**Suggested Remedy:** Add definition of resolution and range to 45.2.1.115.1

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

### Comment ID: 2386

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Hajduczenia, Marek  
Bright House Network

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

"Modulation format for PHY Link is specified in Clause 102.2.1.2 and 102.3.1.2" - remove the word "Clause" - these are subclauses

**Suggested Remedy**  
per comment

**Proposed Response**  
**Response Status:** W  
**Proposed Accept.**

### Comment ID: 2387

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Hajduczenia, Marek  
Bright House Network

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

Insert TBD here rather than just an Editor's note. The note will be gone, and the subclause will remain empty

**Suggested Remedy**  
Per comment

**Response**  
**Response Status:** C  
**Accept in Principle.**

Remove PMD_SIGNAL.indication everywhere. Reason: the MDI is always receiving broadband RF energy from both EPoC and other services on the cable network. It is not possible to distinguish a valid EPoC signal from within the broadband RF energy present from other services and and noise sources at the MDI interface.

### Comment ID: 2388

<table>
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Hajduczenia, Marek  
Bright House Network

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

"The US PHY Link Start bits are used to set" - we usually list the registers

**Suggested Remedy**  
Change to "Registers 1.1915.11 through 1.1915.0 set"

**Proposed Response**  
**Response Status:** W  
**Proposed Accept.**
The text "The PMD Receive function shall convey the bits received from the MDI according to the PMD to MDI RF specifications in 100.TBD to the PMD service interface using the message PMD_UNITDATA.indication(rx_unit), creating appropriately formatted stream of bits." makes no sense.

Suggested Remedy:
Clarify the text, breaking it into two sentences (?). Seems that "according to the PMD to MDI RF specifications in 100.TBD" should be removed?

Response
ACCEPT IN PRINCIPLE.

From:
"The PMD Receive function shall convey the bits received from the MDI according to the PMD to MDI RF specifications in 100.TBD to the PMD service interface using the message PMD_UNITDATA.indication(rx_unit), creating appropriately formatted stream of bits."

To:
"The PMD Receive function shall convey the bits received from the MDI to the PMD service interface using the message PMD_UNITDATA.indication(rx_unit), creating appropriately formatted stream of bits."

The text describing the register set is confusing.

Suggested Remedy:
Revise text to read: "The 10GPASS-XR DS profile descriptor registers describe modulation parameters for each downstream OFDM subcarrier. Register 12.0 describes modulation parameters for downstream OFDM subcarriers number 0 through 3. Register 12.1 describes modulation parameters for downstream OFDM subcarriers number 4 through 7, etc. Finally, register 12.1023 describes modulation parameters for downstream OFDM subcarriers number 4092 through 4095. The assignment of individual bits in register 12.0 is shown in Table 45-191c. The remaining registers 12.1 through 12.1023 have the same bit structure as that of register 12.0."

Apply the same change to 45.2.7a.2

Response
ACCEPT IN PRINCIPLE.

The 10GPASS-XR DS profile descriptor registers determine the modulation parameters for each downstream OFDM subcarrier. Each register in the group controls 4 of the 4096 subcarriers that comprise the OFDM channel. Register 12.0 describes modulation parameters for downstream OFDM subcarriers number 0 through 3. Register 12.1 describes modulation parameters for downstream OFDM subcarriers number 4 through 7, etc. Finally, register 12.1023 describes modulation parameters for downstream OFDM subcarriers number 4092 through 4095. The assignment of individual bits in register 12.0 is shown in Table 45-191c. The remaining registers 12.1 through 12.1023 have the same bit structure as that of register 12.0. Changing these registers does not affect the active profile, only the inactive profile (see 102.2.3 for a description of the Configuration ID bits in the PHY Link frame for information on active profile control).
Cl 45 SC 45.2.7a.1 P 45 L 5 # 2392
Hajduczenia, Marek Bright House Network

Comment Type: E Comment Status: D

empty lines 5-7

Suggested Remedy:
remove empty lines of text
Same change on page 46, lines 18-20

Proposed Response: Response Status: W
PROPOSED ACCEPT.

Cl 45 SC 45.2.7a.1 P 45 L 17 # 2393
Hajduczenia, Marek Bright House Network

Comment Type: T Comment Status: A

"Modulation to be used for a subcarrier 0" could be improved for clarity

Suggested Remedy:
Change to "Modulation profile for subcarrier 0". Same change for 12.0.15:12, 12.0.11:8, and 12.0.7.4 for downstream, and then 12.1024.15:12, 12.1024.11:8, 12.1024.7.4, and 12.1024.3.0

Response: Response Status: C
ACCEPT.

Cl 45 SC 45.2.7a.1.1 P 45 L 39 # 2394
Hajduczenia, Marek Bright House Network

Comment Type: T Comment Status: A

"Register bits 12.0.15 through 12.0.12 specify the modulation type of downstream subcarrier 3 for the first DS OFDM channel. Bit enumeration for bits 15:12 is the same as for bits 3:0 for DS Modulation Type SC0" contains a lot of information which is redundant.

Change the text to read

"Register bits 12.0.15 through 12.0.12 specify the modulation profile for the downstream OFDM subcarrier number 3. See registers 12.0.3 through 12.0.0 for interpretation of individual bits."

Apply the same change to 45.2.7a.1.2, 45.2.7a.1.3, and 45.2.7a.1.4.

Suggested Remedy:
The same change should be applied to 45.2.7a.2.1, 45.2.7a.2.2, 45.2.7a.2.3, and 45.2.7a.2.4, with the proper change from downstream to upstream.

Response: Response Status: C
ACCEPT.

Cl 45 SC 45.2.7a.2 P 46 L 16 # 2395
Hajduczenia, Marek Bright House Network

Comment Type: E Comment Status: D

"EDITORS NOTE (to be removed prior to publication): we need a way to copy the active profile copy to the inactive profile. This would affect these registers."

it is not clear what the difference is between active and inactive profiles and why we would need to copy "profiles". It seems that we have enough registers to cover all downstream and upstream subcarriers.

Suggested Remedy:
Remove the note in 45.2.7a.2 and 45.2.7a.1

Proposed Response: Response Status: W
PROPOSED REJECT.
Recall that we have two profiles for both U S & DS; one is active (what is being used on the wire) the other is inactive and can be modified and then switched to once all modifications are complete.

Cl 45 SC 45.2.7a.3 P 48 L 2 # 2396
Hajduczenia, Marek Bright House Network

Comment Type: T Comment Status: A
Wrong register number: "12.2048 through 12.10237" should be "12.2048 through 12.10239" - at least that is what Table 45–191a indicates

Suggested Remedy:
Per comment

Response: Response Status: C
ACCEPT.

Cl 45 SC 45.2.7a.3.1 P 48 L 32 # 2397
Hajduczenia, Marek Bright House Network

Comment Type: E Comment Status: D
A few editorial issues:
a) font sizes are different within this subclause. Please align it
b) "Register bits 12.2048.15:0" should read "Registers 12.2048.15 through 12.2048.0"
c) no need to capitalize "Real"
Similar changes in 45.2.7a.3.2

Suggested Remedy:
Per comment

Proposed Response: Response Status: W
PROPOSED ACCEPT.
Comment Type: T  Comment Status: A
Definition of the number format should be improved. Remove the editorial note and replace
"The number is a 16-bit signed fractional two's complement number where bit 15 is the
sign bit, bit 14 is integer part and bits 13:0 are the fractional part." to read

"The number is a 16-bit signed fractional two's complement number with the following
structure:
* bit 15 is the sign bit,
* bit 14 represents the integer part of the number (1 or 0),
* bits 13 through 0 represent the fraction part of the number."

Suggested Remedy:
The same change in 45.2.7a.3.2

Response Status: C
Response
ACCEPT IN PRINCIPLE.
Change from:
The number is a 16-bit signed fractional two's complement number where bit 15 is the sign
bit, bit 14 is integer part and bits 13:0 are the fractional part.
To:
"The number is a UQ2.14 format unsigned fractional number."

modify the editors note that we need a reference for this format or provide a definition.

Comment Type: T  Comment Status: A
It is not clear why we keep on making references to all the stuff described in lines 13
through 22.

Suggested Remedy:
Remove lines 13 through 22

Response Status: C
Response
ACCEPT.
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Comment</th>
<th>Proposed Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>2403</td>
<td>T</td>
<td>A</td>
<td>We specify modulation formats for transmitters only - does that mean that a receiver on both ends of the link needs to support the very same modulation formats well? Should that be specified?</td>
<td><strong>Suggested Remedy</strong> &lt;br&gt;Add specifications for supported modulation formats for CNU and CLT receivers.</td>
</tr>
<tr>
<td>2404</td>
<td>T</td>
<td>A</td>
<td>“The DS PHY Link frame counter bits reflect the current DS PHY Link frame count.” - we usually list register numbers</td>
<td><strong>Suggested Remedy</strong> &lt;br&gt;Change to “Registers 1.1923.15 through 1.1923.0 represent the current DS PHY Link frame count.”</td>
</tr>
<tr>
<td>2405</td>
<td>T</td>
<td>A</td>
<td>Reference to the whole Clause 102 is useless for a reader: “For additional information on this counter see Clause 102.”</td>
<td><strong>Suggested Remedy</strong> &lt;br&gt;Either insert a more detailed reference to where in Clause 102 we use it, or remove this statement altogether</td>
</tr>
<tr>
<td>2406</td>
<td>E</td>
<td>D</td>
<td>“Transmit timing offset adjustment.” - full stop not needed at the end of the description of 1.1924.15:0 and 1.1925.15:0</td>
<td><strong>Suggested Remedy</strong> &lt;br&gt;Remove “.” at the end of both descriptions</td>
</tr>
<tr>
<td>2407</td>
<td>E</td>
<td>W</td>
<td>Missing space in “PHY timing offset(1.1924.15:0 &amp; 1.1925.15:0)”</td>
<td><strong>Proposed Accept.</strong></td>
</tr>
<tr>
<td>2408</td>
<td>T</td>
<td>A</td>
<td>A negative value causes the timing to be delayed, resulting in later times of transmission at the CNU.</td>
<td><strong>Accept In Principle.</strong> &lt;br&gt;Change from: &lt;br&gt;A negative value causes the timing to be delayed, resulting in later times of transmission at the CNU. &lt;br&gt;To: &lt;br&gt;A negative value causes the timing of CNU transmissions to be delayed.</td>
</tr>
</tbody>
</table>
**Comment ID:** 2410  
**Cl:** 01  **SC:** 1.4.127  **P:** 22  **L:** 15  
**Hajduczenia, Marek**  
**Bright House Network**  

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

"Relative TX Power offset adjustment" - why is it relative and what is "adjustment"

**Suggested Remedy:**

Change to "TX Power adjustment"

**Response**

ACCEPT IN PRINCIPLE.

**Response Status:** C

**Hajduczenia, Marek**  
**Bright House Network**

---

**Comment ID:** 2411  
**Cl:** 01  **SC:** 1.4.160a  **P:** 22  **L:** 32  
**Hajduczenia, Marek**  
**Bright House Network**  

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

"an effective delay between symbol payloads" ... what is a "symbol payload"? This is the only instance in the whole draft.

**Suggested Remedy:**

Either define what it is, or use terms used in PCS clause for EPoC.

**Response**

ACCEPT IN PRINCIPLE.

**Response Status:** C

**Hajduczenia, Marek**  
**Bright House Network**

---

**Comment ID:** 2409  
**Cl:** 45  **SC:** 45.2.1.122  **P:** 44  **L:** 10  
**Hajduczenia, Marek**  
**Bright House Network**  

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

Resize the "Bit(s)" column so that "1.1926.15:8" fits into a single line of text

**Suggested Remedy**

Per comment

**Proposed Response**

PROPOSED ACCEPT.

---

**Comment ID:** 2410  
**Cl:** 45  **SC:** 45.2.1.122  **P:** 44  **L:** 12  
**Hajduczenia, Marek**  
**Bright House Network**  

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

"Relative TX Power offset adjustment" - why is it relative and what is "adjustment"

**Suggested Remedy**

Change to "TX Power offset"

**Response**

ACCEPT IN PRINCIPLE.

**Response Status:** C

**Hajduczenia, Marek**  
**Bright House Network**

---

**Comment ID:** 2411  
**Cl:** 45  **SC:** 45.2.1.122.1  **P:** 44  **L:** 17  
**Hajduczenia, Marek**  
**Bright House Network**  

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

"The PHY power offset, bits 7:0 of register 1.1926, is a" to "Registers 1.1926.7 through 1.1926.0 represent a"

**Suggested Remedy**

Per comment

**Response**

ACCEPT.

**Response Status:** C

**Hajduczenia, Marek**  
**Bright House Network**

---

**Comment ID:** 2412  
**Cl:** 01  **SC:** 1.4.127  **P:** 22  **L:** 15  
**Hajduczenia, Marek**  
**Bright House Network**  

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

need a comma before "and" in a serial list

**Suggested Remedy**

Change "Clause 100, Clause 101 and Clause 102" to "Clause 100, Clause 101, and Clause 102"

**Proposed Response**

PROPOSED ACCEPT.
**Comment Type** T  **Comment Status** A  **CP Def**

"The k redundant CP samples attached at the beginning of the symbol are identical to the last k samples of the same symbol." - this is not really important to the definition, but might need to be explained / included where the actual cyclical prefix is shown relative to the frame structure.

**SuggestedRemedy**

Remove from definition and move into location where the use of a cyclical prefix is defined in PCS / PMD Clause

**Response**  **Response Status** C

ACCEPT IN PRINCIPLE.

See comment 2413
see topic CP Def

---

**Comment Type** T  **Comment Status** A  **SC 1.4.280a**

Hajduczenia, Marek  Bright House Network

**Comment**

OFDM channel definition does not read right and contains unnecessary details.

**SuggestedRemedy**

Change to read: "A data transmission channel carrying a number of closely-spaced orthogonal QAM subcarriers. The total data capacity of the OFDM channel is divided into individual QAM subcarriers, where each subcarrier is modulated with low data rate."

**Response**  **Response Status** C

ACCEPT IN PRINCIPLE.

---

**Comment Type** ER  **Comment Status** A  **SC 45.2.1**

Hajduczenia, Marek  Bright House Network

**Comment**

There are two tables 45-3 in the draft. The existing editorial instructions are confusing. Each part of the table should have its own editorial instruction to clearly indicate which rows are replaced and have clearly marked rows being inserted or modified.

**SuggestedRemedy**

Add table continuation.

**Response**  **Response Status** C

ACCEPT IN PRINCIPLE.

Add table continuation.

---

**Comment Type** E  **Comment Status** D  **SC 45.2.1**

Hajduczenia, Marek  Bright House Network

**Comment**

Seems that somebody did not change the template correctly: "IEEE P802.3xx Task Force name Task Force"

**SuggestedRemedy**

Please update the master template for pages in the draft. There are multiple instances of this problem.

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

PROPOSED ACCEPT.

Changed to Cl 00
Cl. 45  SC 45.2.1.107.1  P 34  L 23  # 2421
Hajduczenia, Marek  Bright House Network

Comment Type  T  Comment Status  A

"every 8th 64B/66B block, e.g. 1st, 9th, 17th, 25th, " - current numbers indicate every 9th block:
block 1: marked
block 2
block 3
block 4
block 5
block 6
block 7
block 8
block 9: marked
There is 8 blocks of distance between them, hence it is every 9th block you're marking.

SuggestedRemedy
Fix it by indicating it is either every 8th block, or correct numbers in the example

Response  Response Status  C

ACCEPT IN PRINCIPLE.
Add editors note that states "every 8th" is confusing. Replace with a formula and update SD FEC Decoding (101).

Cl. 45  SC 45.2.1.107.2  P 34  L 29  # 2422
Hajduczenia, Marek  Bright House Network

Comment Type  E  Comment Status  D

font is messed up in "102.4) on the coaxial cable distribution network. When read as a zero, bit 1.1900.1 indicates that the PHY has not completed PHY Discovery on the coaxial cable distribution network." - words "coaxial cable distribution network" are inserted in smaller font than the rest of the text

SuggestedRemedy
Fix font size / type

Response  Response Status  W

PROPOSED ACCEPT.
IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 2nd Task Force review comments

Approved Resolution

Draft 1.1

Cl 45 SC 45.2.1.107 P 34 L 8 # 2423
Hajduczenia, Marek Bright House Network

Comment Type TR Comment Status A
"coaxial cable distribution network (default)" - what does it mean that the given value is "default"?

Suggested Remedy

Explain what it means that the value is default. It seems to me that the register should always reflect the actual state of the PHY discovery process, and there is no condition under which it would in an undefined state, indicating the need for a default value. Same for register 1.1900.0. In 45.2.1.107.3, you create default value without any need - note that in EPON we have the same requirement for PHY to be operational, yet we don't define default values for PHY enable registers. I am not sure why we need it at all in FDD mode. It was needed in TDD long time ago for some reason. Now it seems not needed.

Response Response Status C
ACCEPT IN PRINCIPLE.
Remove "(default)" in table (2 places).
In 45.2.1.107.2 include at end of section a new para:
"The default value for bit 1.1900.1 is zero."
In 45.2.1.107.3 include at end of section a new para:
"The default value for bit 1.1900.0 is zero."

Both of these bits are critical to the behaviour of the CNU on start-up and being clear on their default values can only help create a robust standard.

Cl 45 SC 45.2.1.108.1 P 35 L 34 # 2424
Hajduczenia, Marek Bright House Network

Comment Type TR Comment Status A
Stop creating new terms when not needed: "binary encoded integer"

Suggested Remedy

Remove ", as a binary encoded integer," - it adds to confusion and the interpretation is already explained more than clear in the following sentence. Same in 45.2.1.108.2 and in 45.2.1.110.2
Similarly in 45.2.1.112.1 you create the term "binary integer" without any need. Remove all 4 instances of "as a binary integer" from the text, leaving just the orange of values intended.

Response Response Status C
ACCEPT IN PRINCIPLE.
Replace 3 instances (pg 35 ln 34, 40, Pg 37 ln 50 ) of:
"indicate the number, as a binary encoded integer, of …"
with:
"indicate the integer number of …"
Pg 39 ln 6 replace:
"the number, as a binary integer between"
with:
"the integer number between"

Cl 45 SC 45.2.1.108 P 35 L 20 # 2425
Hajduczenia, Marek Bright House Network

Comment Type T Comment Status R
Unnecessary (and quite meaningless) information in table: "samples refer to OFDM clock (204.8 MHz)"

Suggested Remedy

Remove all 4 instances of this term from tables in Clause 45. You already explain what a sample is in definition of individual bits, which is sufficient.

Response Response Status C
REJECT.

Vote to accept
For: 2
Against 6
Abstain 4
Comment #2426

**SC 45.2.1.108.3**

**Comment Type:** T

**Comment Status:** A

- That is a new type of PMD: 10G-PASSS-XR

**SuggestedRemedy**

- Change all "10G-PASSS-XR" to "10G-PASS-XR" (2 instances).

**Response Status:** C

**Acceptance:** ACCEPT IN PRINCIPLE.

**Change to "10GPASS-XR"**

---

Comment #2427

**SC 45.2.1.109**

**Comment Type:** E

**Comment Status:** D

- Extra lines 6-8

**SuggestedRemedy**

- Remove

**Response Status:** W

**Proposed Response:** PROPOSED ACCEPT.

---

Comment #2428

**SC 45.2.1.109**

**Comment Type:** E

**Comment Status:** D

- Statement does not read right: "The assignment of bits in the DS OFDM channel frequency control register 1 through 5 are shown in Table 45–78c."

**SuggestedRemedy**

- Change to "The assignment of bits in the DS OFDM channel frequency control register 1 through 5 >>is<< shown in Table 45–78c."

**Response Status:** W

**Proposed Response:** PROPOSED ACCEPT.

---

Comment #2430

**SC 100.2.8.1**

**Comment Type:** E

**Comment Status:** D

- This section defines the terms and concepts used when specifying the CLT RF output requirements.

**SuggestedRemedy**

- We use the term "subclause" and not "section" - there are at least 20 instances in the document where changes ought to be made.

**Response Status:** W

**Proposed Response**

- PROPOSED ACCEPT IN PRINCIPLE.

---

Comment #2431

**SC 100.2.8.1**

**Comment Type:** E

**Comment Status:** D

- This section defines the terms and concepts used when specifying the CLT RF output requirements.

**SuggestedRemedy**

- We use the term "subclause" and not "section" - there are at least 20 instances in the document where changes ought to be made.

**Response Status:** W

**Proposed Response**

- PROPOSED ACCEPT IN PRINCIPLE.
IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 2nd Task Force review comments

Draft 1.1

Comment Type T  Comment Status A

Text "For an OFDM channel there is a) the number of equivalent 6 MHz channels (N_eq), b) the encompassed spectrum, c) the occupied bandwidth, and d) the modulated spectrum." is not needed - this section just adds definitions, as outlined in the previous sentence

Suggested Remedy
Remove this text

Response
Response Status C
ACCETP IN PRINCIPLE.
Removal of this text would remove the definition for Neq.

Suggest remedy: add editors note to beginning of subclause 100.2.8:
EDITORS NOTE (to be removed prior to publication): This subclause needs to be thoroughly reviewed and cleaned up for Draft 1.2. Additionally, Neq, Neq', and Neq'' need to be well defined.

Comment ID 2432  Page 16 of 56

Comment Type TR  Comment Status A

"Occupied bandwidth (Occupiedbandwidth) is the sum of the bandwidth (RF spectrum) in all channel frequency allocations (e.g., 6 MHz channel size) that are occupied by the OFDM channel (OFDMchannelbandwidth). Even if one active subcarrier of an OFDM channel is placed in a given standard channel frequency allocation, that standard channel frequency allocation in its entirety is said to be occupied by the OFDM channel" - definition does not correspond to equation 100-1

Suggested Remedy
Equation indicates that occupied bandwidth is a product of 6MHz channel size and ceiled number of 6MHz channels fitting into a single OFDM channel. That is dramatically different from the definition written in words.

Also, some vague terms without any definition and meaning "standard channel frequency allocation"

Seems that the second sentence in the definition is not connected with occupied bandwidth in any way and fits more into OFDM channel definition: Even if one active subcarrier of an OFDM channel is placed in a given standard channel frequency allocation, that standard channel frequency allocation in its entirety is said to be occupied by the OFDM channel" - either remove it or move it to definition of OFDM channel

Response
Response Status C
ACCETP IN PRINCIPLE.
The equation is correct. The ceiling of 6.05 MHz with a significance of 6 produces 12 as a result. This behavior corresponds to the text following "Even if one active subcarrier."
change divide symbol to forward slash "/".

Comment ID 2434  Page 16 of 56

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 2nd Task Force review comments

Comment Type T  Comment Status A

A pretty convoluted way to express definitions. Also, we do not put examples in the middle of the definition: "The encompassed spectrum in MHz is 204.8 MHz, minus the number of subcarriers in the band edge exclusion sub-band for the upper and lower band edges (combined), multiplied by the subcarrier spacing in MHz. For example, with subcarrier spacing of 50 kHz and 150 lower band edge subcarriers and 152 upper band edge subcarriers (for a total of 302 subcarriers in the two band edge exclusion sub-bands), the encompassed spectrum = 204.8 - 302*(0.05) = 189.7 MHz. The encompassed spectrum is also equal to the center frequency of the highest frequency modulated subcarrier minus the center frequency of the lowest frequency modulated subcarrier in an OFDM channel, plus the subcarrier spacing."

Suggested Remedy

Reword to "The encompassed spectrum is equal to the width of the OFDM channel (expressed in MHz) less subcarriers in the band edge exclusion sub-band for the upper and lower band edges (combined), multiplied by the subcarrier spacing (expressed in MHz). The encompassed spectrum may be also expressed as the difference between the center frequency of the highest frequency modulated subcarrier minus the center frequency of the lowest frequency modulated subcarrier in an OFDM channel, plus the subcarrier spacing (all expressed in MHz)."

Response  Response Status C

ACCEPT IN PRINCIPLE.

Reword to

"The encompassed spectrum is the difference between the center frequency of the highest active subcarrier and the lowest active subcarrier in an OFDM channel, plus the subcarrier spacing (all expressed in MHz)."

For example wording see 2675

Comment Type T  Comment Status A

"This standard requires that the CLT is terminated with a 75 Ohm load per Table 100-1" - what is this doing in the section of definitions? if the CLT termination requirements are already covered in Table 100-1, why repeat it?

Suggested Remedy

Remove this text

Response  Response Status C

ACCEPT.
Comment Type T
Comment Status A
Text in line 41-44 is not really bringing into the description. Why is there?

SuggestedRemedy
Remove lines 41-47

Response C
Accept

Response Status C
Accept

Comment ID 2439
Type: TR/technical required
Comment Status: A/accepted
Page 18 of 56
11/5/2014 4:37:41 PM

Several issues with the way Table 100-1 is structured:
1) typically, we have a separate column for units - see Table 75-5 for example of that
2) missing spaces and extra spaces between number
3) row "Signal Type" is meaningless - should be removed
5) " n - number of continuous pilot tones" - if that is needed, it should be moved to the Parameter name
6) for "Level" parameter, "adjustable" is meaningless - it is defined in Table 100-2 anyway.
7) given that table 100-2 is mandatory, support for 8192-QAM and 16384-QAM is optional and should be removed from the table.
8) "Average over center 400 kHz subcarriers within gap" should be moved to the parameter name, and not have it in the values
9) Notes in 802.3 specs are referenced in a different way - we do not "See Notes 4,6", look at Table 75-5 for format reference.
10) Parameters which define values in ranges, such as "Inband Spurious, Distortion, and Noise:" usually come with a graphical representation of the values in specific ranges. Please insert a chart for such parameter and point to it from within the table. Drawing is illustrative of course.
11) "[CW not processed via FFT]" - what does this mean?

SuggestedRemedy
Apply changes per comment

Response C
Accept

Response Status C
Accept

Comment ID 2440
Type: TR/technical required
Comment Status: A/accepted
Page 18 of 56
11/5/2014 4:37:41 PM

Several issues with the way Table 100-1 is structured:
1) typically, we have a separate column for units - see Table 75-5 for example of that
2) missing spaces and extra spaces between number
3) row "Signal Type" is meaningless - should be removed
4) "(4K FFT)" is unnecessary - remove.
5) " n - number of continuous pilot tones" - if that is needed, it should be moved to the Parameter name
6) for "Level" parameter, "adjustable" is meaningless - it is defined in Table 100-2 anyway.
7) given that table 100-2 is mandatory, support for 8192-QAM and 16384-QAM is optional and should be removed from the table.
8) "Average over center 400 kHz subcarriers within gap" should be moved to the parameter name, and not have it in the values
9) Notes in 802.3 specs are referenced in a different way - we do not "See Notes 4,6", look at Table 75-5 for format reference.
10) Parameters which define values in ranges, such as "Inband Spurious, Distortion, and Noise:" usually come with a graphical representation of the values in specific ranges. Please insert a chart for such parameter and point to it from within the table. Drawing is illustrative of course.
11) "[CW not processed via FFT]" - what does this mean?

SuggestedRemedy
Apply changes per comment

Response C
Accept

Response Status C
Accept

Comment ID 2441
Type: TR/technical required
Comment Status: A/accepted
Page 18 of 56
11/5/2014 4:37:41 PM

Several issues with the way Table 100-1 is structured:
1) typically, we have a separate column for units - see Table 75-5 for example of that
2) missing spaces and extra spaces between number
3) row "Signal Type" is meaningless - should be removed
4) "(4K FFT)" is unnecessary - remove.
5) " n - number of continuous pilot tones" - if that is needed, it should be moved to the Parameter name
6) for "Level" parameter, "adjustable" is meaningless - it is defined in Table 100-2 anyway.
7) given that table 100-2 is mandatory, support for 8192-QAM and 16384-QAM is optional and should be removed from the table.
8) "Average over center 400 kHz subcarriers within gap" should be moved to the parameter name, and not have it in the values
9) Notes in 802.3 specs are referenced in a different way - we do not "See Notes 4,6", look at Table 75-5 for format reference.
10) Parameters which define values in ranges, such as "Inband Spurious, Distortion, and Noise:" usually come with a graphical representation of the values in specific ranges. Please insert a chart for such parameter and point to it from within the table. Drawing is illustrative of course.
11) "[CW not processed via FFT]" - what does this mean?

SuggestedRemedy
Apply changes per comment

Response C
Accept
A lot of notes under Table 100-1, 2/3 cover the testing conditions, and how individual parameters are verified in lab conditions.

Suggested Remedy:
Test conditions and verification process should be described in a subclause on measurements, similar to 75.7 Definitions of optical parameters and measurement methods. This is how specs are typically structured in 802.3. We do not mix testing and measurement description in the section with requirements.

Response: ACCEPT IN PRINCIPLE.
Add editors note:
EDITORS NOTE (remove prior to publication): Test conditions and verification process should be described in a subclause on measurements, similar to 75.7 Definitions of optical parameters and measurement methods. This is how specs are typically structured in 802.3. We do not mix testing and measurement description in the section with requirements.

Comment Type: TR
Comment Status: A

Text in 100.2.8.1.1 already covers a requirement: "A CLT shall output an OFDM RF modulated signal with the characteristics defined in Table 100-1, Table 100-2, and Table 100-3." - text in line 16, page 77 is not needed (repeated).

Suggested Remedy:
Remove "A CLT shall generate an RF output with power capabilities as defined in Table 100-2."

Response: ACCEPT.

Comment Type: T
Comment Status: A

Probably the requirement in line 17 should be clarified: "The CLT shall be capable of adjusting OFDM channel RF power on a per channel basis as stated in Table 100-2." - it is not clear what it really means - "shall be capable"...

Suggested Remedy:
Change to "The CLT shall adjust the RF power per OFCM channel per Table 100-2."

Response: ACCEPT.
### IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 2nd Task Force review comments

#### Draft 1.1

<table>
<thead>
<tr>
<th>Comment Type</th>
<th>TR</th>
<th>Comment Status</th>
<th>A</th>
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<tbody>
<tr>
<td>Hajduczenia, Marek</td>
<td>Bright House Network</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment Type TR**

**Comment Status A**

Several issues with the way Table 100-2 is structured:

1. typically, we have a separate column for units - see Table 75-5 for example of that
2. missing spaces and extra spaces between number
3. "Required power in dBmV per OFDM channel:" - unnecessary, remove
4. what does it mean: "below required power level specified below maintaining full fidelity over the 8 dB range" - it this matters (really), it should be placed into a section on measurement and testing requirements, and not within the table which is supposed to provide numeric values
5. what does this mean: "May: required power (in table below) to required power - 8 dB, independently on each channel," and how do we test it?
6. what does "Strictly monotonic" mean?
7. "Diagnostic carrier suppression modes" should be described in a separate section rather than making them part of this table - it is unclear what they are here for at all
8. entry for RF output port muting should contain just the number. The measurement condition - all the text you have right now - should go into the section on measurement and testing

**Suggested Remedy**

Address individual comments on table 100-2

**Response**

**Response Status C**

1. Accept
2. Accept
3. Remove "Required power per OFDM channel for" from left two table cells.
4. Change row 3 value from "x 8 dB below required power level specified below maintaining full fidelity over the 8 dB range" to "at least 8 dB below the required power level specified in the two rows above, maintaining full fidelity over the range"
5. Remove row 4. On row 3 add "For each OFDM channel"
6. Reject
7. Remove these rows from this table
8. Accept move Port muting rows to new section/table on testing.

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<table>
<thead>
<tr>
<th>Comment Type</th>
<th>T</th>
<th>Comment Status</th>
<th>A</th>
</tr>
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<tbody>
<tr>
<td>Hajduczenia, Marek</td>
<td>Bright House Network</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment Type T**

**Comment Status A**

EDITORS NOTE (to be removed prior to publication): at this time, it is not clear what data format will be used between the bottom of PMA and top of PMD (across PMD service interface). Text will be expanded when more information on this interface is available.

**Suggested Remedy**

This is not true anymore - data across PMA service interface will be serial and not block oriented. Remove the editorial note.

**Response**

**Response Status C**

1. Accept

---

<table>
<thead>
<tr>
<th>Comment Type</th>
<th>T</th>
<th>Comment Status</th>
<th>A</th>
</tr>
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<tbody>
<tr>
<td>Hajduczenia, Marek</td>
<td>Bright House Network</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment Type T**

**Comment Status A**

This primitive defines the transfer of TBD data from the Clause 101 PMA to the Clause 100 PMD.

**Suggested Remedy**

TBD should be replaced with "1 bit"
Also replace "a TBD" with "a continuous stream of bits" in line 6.
Also replace "The tx_unit parameter represents TBD." with "The tx_bit parameter can take one of two values: ONE or ZERO."
Remove the editorial note in lines 8-10.

Similar changes to be applied to 100.2.1.3

**Response**

**Response Status C**

1. Accept
Comment Type: T  Comment Status: A
This text (starting in line 50 and ending on the top of the next page) seems like a set of definitions and should go into the subclause 100.2.8.1 and not be here.

Suggested Remedy
Move to 100.2.8.1 and simplify the wording to break out actual definitions.

Response  Response Status: C
ACCEPT IN PRINCIPLE.
Editor to move para starting at line 50 towards the beginning of the section and pull out the equations into a numbered equations.

Comment Type: E  Comment Status: D
There are two equations in Table 100-3 - move them into main text, put references on them and then reference inside of teh table (if needed)

Also, do we need to denote this parameter as "N"? Could we come up with a notation that does not require special characters?

Suggested Remedy

Proposed Response  Response Status: W
PROPOSED ACCEPT IN PRINCIPLE.

This is addressed in comment #2658

Comment Type: E  Comment Status: D
Complex equations should not break between lines - this impedes readability

Suggested Remedy
Per comment

Proposed Response  Response Status: W
PROPOSED ACCEPT IN PRINCIPLE.

Ask Editor's to see if column widths can be altered to permit these equations on one line. Otherwise, it is what it is, and readable.

Comment Type: ER  Comment Status: A
Plenty of empty subclauses - all of these should be marked with TBDs to make sure that they do not split through cracks.

Suggested Remedy

Comment Type: T  Comment Status: A

100.2.10 PMD receive function - what is the intent of this function?

Suggested Remedy

Proposed Response  Response Status: W
PROPOSED ACCEPT IN PRINCIPLE.
Includes 100.2.10.1

Comment Type: T  Comment Status: A
What does it mean: "The OFDM signals and CNU interfaces shall have the characteristics and limitations defined in Table 100-4"

Suggested Remedy

Proposed Response  Response Status: W
PROPOSED ACCEPT IN PRINCIPLE.

Ask Editor's to see if column widths can be altered to permit these equations on one line. Otherwise, it is what it is, and readable.
IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 2nd Task Force review comments

Response #2453
Cl 100  SC 100.2.11.1  P 83  L 36  # 2453
Hajduczenia, Marek  Bright House Network

Comment Type  T  Comment Status  A
Issues with definitions included in Table 100-4:
1) Variable Bit Loading should be removed - this should be changes into test requirements
2) remove "assuming negligible power outside this range" - if that means anything, add in the form of a note to the parameter
3) "Note: Applies when lower frequency boundary is 108 MHz" and "Note: Applies when upper frequency boundary is 1.794 GHz" should be converted into notes to specific values

Suggested Remedy
Fix the issues per comment

Response  Response Status  C
ACCEPT.

Response #2454
Cl 100  SC 100.2.11.2  P 84  L 14  # 2454
Hajduczenia, Marek  Bright House Network

Comment Type  T  Comment Status  A
"The required level for CNU downstream post-FEC error ratio is defined as less than or equal to 10^{-6} PER (packet error ratio) with 1500 byte Ethernet packets. " - is this intended to be a requirement?

Suggested Remedy
If this is intended to be a requirement, we need to convert to "shall"

Response  Response Status  C
ACCEPT IN PRINCIPLE.

Response #2455
Cl 100  SC 100.2.11.2.1  P 84  L 20  # 2455
Hajduczenia, Marek  Bright House Network

Comment Type  TR  Comment Status  A
What is "implementation loss" and where it is defined? This is the only location where it is used and it is subject in a shall statement.

Suggested Remedy
Clarify what it is, or reword so that a vague term is not used.

Response  Response Status  C
ACCEPT IN PRINCIPLE.
Change:
Implementation loss of the CNU shall be such that the CNU achieves the required error rate when operating at a CNR as shown in Table 100–5, under input load and channel conditions as follows:
"CNU FLR shall be less than or equal to the required loss ratio when operating at a CNR as shown in Table 100–5, under input load and channel conditions as follows:"

Change PER to FLR in entire clause.

Response #2456
Cl 100  SC 100.2.1.4  P 71  L 36  # 2456
Hajduczenia, Marek  Bright House Network

Comment Type  T  Comment Status  A
"A signal for transmitter control is generated as described in TBD for the Clause 101 PCS" - this needs a bit more clarity to the language

Suggested Remedy
Change to:
"A signal for transmitter control is generated by the Data Detector function - see TBD."
"I believe that the signal will be generated by the Data Detector function (whatever it is for EPoC).

Response  Response Status  C
ACCEPT.
Comment Type: E
Comment Status: D
"Clause 101 transfers this signal across towards the Clause 100 without any changes." - wording - clause does not transfer anything.

Suggested Remedy
Change to "Clause 101 PCS transfers this signal across towards the Clause 100 PMD without any changes."

Proposed Response
PROPOSED ACCEPT.

Response
Hajduczenia, Marek
Bright House Network

Comment Type: T
Comment Status: A
EDITORS NOTE (to be removed prior to publication): data rate has to be somehow related to modulation depth. Right now it is marked as TBD

Suggested Remedy
Remove the editorial note in lines 16-17
Change text in line 12: "at a nominal signaling speed of TBD GBd" to read "at the nominal speed in the function of the aggregate OFDM channel capacity, as defined by TBD." - TBD should likely point where we describe the use of CVlause 45 registers for modulation profiles for individual subcarriers.

Similar change to 100.2.1.3

Response
ACCEPT IN PRINCIPLE.

Per comment except
Change text in line 12: "at a nominal signaling speed of TBD GBd" to read "at the nominal speed in the function of the aggregate OFDM channel capacity, as defined by TBD (see ref).

EDITORS NOTE (to be removed prior to publication): needs to be tied back to data rate variables and CI 45 registers"

Comment Type: TR
Comment Status: A
"a 192 MHz OFDM channel shall target a 1.6 Gb/s data rate at MAC/PLS" - what does it really mean?

Suggested Remedy
Change to "a 192 MHz OFDM channel shall support the data rate of at least 1.6 Gb/s at MAC/PLS" or whatever other data rate that is assumed to be achievable. "shall target" is meaningless

Response
ACCEPT IN PRINCIPLE.

Change to:
"a 192 MHz OFDM channel supports a data rate of at least 1.6 Gb/s at MAC/PLS"
Comment Type: T  Comment Status: A

"The MAC/PLS date rate shall scale linearly with the number of OFDM channels, in the same baseline channel conditions in each channel." - this is not testable. No need for "shall" statement here

Suggested Remedy

"The MAC/PLS date rate scales linearly with the number of OFDM channels, in the same baseline channel conditions in each channel."

Response Status: C

ACCEPT.

Comment ID: 2462
Page 24 of 56
11/5/2014  4:37:41 PM

Comment #2462, Cl 100, SC 100, Type: TR/technical required

P 73  L 4

Hajduczenia, Marek
Bright House Network

Response

# 2463

Comment Type: E  Comment Status: D

100.2.6.1.1 is likely supposed to be at the same level as 100.2.6.1

Suggested Remedy

Insert TBD in this subclause and remove all empty lines in this Clause (100)

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

Refer to Comment #2664 that suggests remedy affecting these sub clauses.

Remove all empty lines as per remedy.

Response Status: C

ACCEPT IN PRINCIPLE.

Comment ID: 2463
Page 24 of 56
11/5/2014  4:37:41 PM

Comment #2463, Cl 100, SC 100, Type: TR/technical required

P 73  L 8

Hajduczenia, Marek
Bright House Network

Response

# 2464

Comment Type: T  Comment Status: A

The CLT transmitter and CNU receiver shall support a range that includes from 54 MHz to 1212 MHz. Equipment may be adapted to all or part of this frequency band to suit regional requirements. Equipment conforming to this standard shall clearly mark downstream frequency ranges.

A bunch of unnecessary requirements ... The first shall is already covered in Table 100-1, which is already mandatory. A separate section on PMD marking and labelling is where the second "shall" needs to be placed in

Suggested Remedy

Change the text to read: "The CLT transmitter and CNU receiver is expected to support a frequency range from 54 MHz to 1212 MHz. Equipment may be adapted to all or part of this frequency band to suit regional requirements. Equipment conforming to this standard needs to clearly mark the supported downstream frequency ranges."

Apply similar changes to 100.2.7.2

Response Status: C

ACCEPT IN PRINCIPLE.

Comment #2666, was adopted, this subsection is removed. No TBD needed.

Comment ID: 2464
Page 24 of 56
11/5/2014  4:37:41 PM

Comment #2464, Cl 100, SC 100, Type: TR/technical required

P 73  L 18

Hajduczenia, Marek
Bright House Network

Response
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<td>P 78  L 50  # 2466</td>
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<td>Meaningless requirements that are not testable: “An Neq-channel per RF port CLT shall comply with all requirements operating with all Neq channels on the RF port, and with all requirements for an N eq'-channel per RF port device operating with Neq' active channels on the RF port for all values of N eq' less than Neq, where Neq' is the full set of modulated or active channels.”</td>
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<td>SuggestedRemedy</td>
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<td>The use of Neg, Neg prime is very confusing. Furthermore, what the actual purpose of this statement?</td>
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<td>Note: this subclause and definitions for Neq, Neq', Neq'' need to be cleaned up. Previous comment added editor's note for this subclause.</td>
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<td>Editors note added to section 100.2.8 to check whole section.</td>
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<td>P 79  L 3   # 2467</td>
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<td>P 201  L 1   # 2502</td>
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<td>Fix it - there are more instanced in the draft where &quot;2014&quot; appears without any reason.</td>
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<td>“The EPoC topology is similar to the P2MP topology of EPON with the optical line terminal being replaced by a cable line terminal (CLT), the optical network units replaced by cable network units (CNU) and operating over a coaxial network rather than an optical network.” Acronyms already defined in previous para</td>
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<td>Please fix where it is set in mpcp_timeout variable above.</td>
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Draft 1.1

IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 2nd Task Force review comments

**Approved Resolution**

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<td>Emoty lines around Table 103-2. Also table is missing &quot;continued&quot; in title on second page.</td>
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<td>Google and I have no idea what &quot;Emoty&quot; means. Continued will be added to the table.</td>
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<tr>
<td>Copy Clause 77 from 802.3-2012 (even even better, from 802.3bx) and apply any necessary changes, &quot;without&quot; making changes into formatting of alerady existing text. There are way too many formatting changes in Clause 103 relative to Clause 77 to comment on them separately.</td>
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</table>
Comment Type ER  Comment Status R
Is there any legitimate reason why all existing live cross-references from 802.3-2012 text were removed and replaced with green text? It does not hurt to keep them active, as long as they point to a correct location in 802.3. Only new cross references to subclauses outside of the draft need to be places as text and marked in green for insertion of cross references later on.
SuggestedRemedy
Recover all live cross references taken from 802.3-2012 text and mark into green only cross references added new in this document.
Response REJECT.
At this point these are external references and need to be in forest green per WG template.

Comment Type ER  Comment Status A
"Flags. this is an 8 bit flag register" - "this" should be capitalized?
SuggestedRemedy
Why there are so many differences from Clause 77 in 802.3-2012? What base document was used to generate this Clause?
Response ACCEPT IN PRINCIPLE.
This will be capitalized.

Comment Type ER  Comment Status A
Titles and template of this Annex is off. Please use the official template
SuggestedRemedy
Update headings in this annex to match proper numbering. Fix figure numbering.
Response ACCEPT IN PRINCIPLE.
The annex was generated from the latest template available at the time. Possible formatting was mixed up along the way. Formates will be updated per current template.
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<th>Response Status</th>
<th>Suggested Remedy</th>
<th>Approved Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>2521</td>
<td>T</td>
<td>A</td>
<td>CDN or CCDN? There are just two uses of CDN in the document right now, versus 23 uses of CCDN.</td>
<td>ACCEPT IN PRINCIPLE.</td>
<td>C</td>
<td>Change two stranded instances of CDN to CCDN.</td>
<td></td>
</tr>
<tr>
<td>2522</td>
<td>T</td>
<td>A</td>
<td>The Multipoint MAC Control functionality shall be implemented for subscriber access devices containing point-to-multipoint Physical Layer devices defined in Clause 100, Clause 101 and Clause 102. Only Clause 100 defines PHY. 101 is PCS and 102 is parallel to PCS.</td>
<td>ACCEPT.</td>
<td>C</td>
<td>Address individual issues</td>
<td></td>
</tr>
<tr>
<td>2523</td>
<td>T</td>
<td>A</td>
<td>Several issues with Figure 103-2: 1) PMA clause is marked as TBD - I believe PMA is already defined in Clause 100 to some degree 2) no Clause 102 in the drawing? 3) COAX medium is CCDN defined elsewhere.</td>
<td>ACCEPT.</td>
<td>C</td>
<td>Add the missing &quot;(n)&quot; after &quot;transmitAllowed&quot; signal in Figure 103-8.</td>
<td></td>
</tr>
<tr>
<td>2524</td>
<td>T</td>
<td>A</td>
<td>Editorial Note:In Figure 102-8 the baseline material did not include the &quot;(n)&quot; for &quot;transmitAllowed&quot;, the editor will add a comment to formalize this change.</td>
<td>ACCEPT.</td>
<td>C</td>
<td>Remove editorial note lines 25-26.</td>
<td></td>
</tr>
<tr>
<td>2525</td>
<td>T</td>
<td>A</td>
<td>The description of the discovery process implies that CNUs are discovered by the CLT, just like in EPON. However, there is no indication that the CNU needs to be first discovered via PHY link (Clause 102) before MPCP processes kick in and register the station at the MAC Control layer.</td>
<td>ACCEPT IN PRINCIPLE.</td>
<td>C</td>
<td>Where Discovery Response is discussed insert a statement that CNU's that have not completed PHY Discovery will not respond to discovery window.</td>
<td></td>
</tr>
</tbody>
</table>
### Comment #2526

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

This is not really true in EPoC, where multiple carriers are used simultaneously, each modulated with its own data stream.

A key concept pervasive in Multipoint MAC Control is the ability to arbitrate a single transmitter out of a plurality of CNUs. The CLT controls a CNU’s transmission by the assigning of grants.

**Suggested Remedy:**

Probably we need to change the wording to mention multiple RF transmitters located at one CNU, or come up with some aggregate term distinct from transmitter.

**Response:**

REJECT.  
No acceptable wording is suggested. The author is invited to propose something suitable.  
I see no problem with the concept of a single transmitter operating on multiple frequencies simultaneously, this is somewhat basic to OFDM.

---

### Comment #2527

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

Given the higher complexity of EPoC transmission process, including FEC encoding, is it viable to assume that the minimum processing time stays the same as in EPON:

**Suggested Remedy:**

Either change to a value that is viable for EPoC, or replace the numeric value with TBD  
The same applies to minGrantLength variable

**Response:**

ACCEPT IN PRINCIPLE.  
Add editors notes to Figure 103–12 and Figure 103–13 and beginning of 103.2.2 that these figures and associated variables and functions need updating.

---

### Comment #2528

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

Delay requirements for MPCP running in EPoC has not been examined in any detail so far, and adopting them verbatim from EPON might prove challenging.

**Suggested Remedy:**

Replace all numbers in 103.3.2.4 with TBD

**Response:**

ACCEPT IN PRINCIPLE.  
1024 will be replaced with TBD in two places.
### IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 2nd Task Force review comments

#### Approved Resolution

<table>
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<tr>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Comment ID</th>
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<td>TR</td>
<td>A</td>
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<td>TR</td>
<td>A</td>
<td>2533</td>
</tr>
<tr>
<td>TR</td>
<td>C</td>
<td>2534</td>
</tr>
</tbody>
</table>

#### Comment 2531

**Comment Type**: TR  
**Comment Status**: A  
**Comment ID**: 2531  
**Hajduczenia, Marek**  
**Bright House Network**

**The description of the discovery process assumes that the upstream burst structure, as well as key parameters to be exchanged between the CLT and CNU par 1:1 with the process in EPON. However, we do not really have any information on the upstream burst structure (cannot locate it for now in PCS clause) or a formulated idea on what parameters need to be exchanged between the CLT and CNU to accomplish successfully discovery over CCDN.**

**SuggestedRemedy**

- Remove content of 103.3.3 and mark it as TBD at this time. Only when details of upstream transmission are ironed out, bring the "updated" text back.
- Right now, MPCP gives impression that it is largely done, while in fact it contains a lot of material that is not in sync with PCS / PHY definitions.

**Response**

- Response Status: C

- Add editors note to beginning of 103.3.3

**ACCEPT IN PRINCIPLE.**

Text from pg 238 (103.3.3 & subclauses) will be highlighted. Add editors note to beginning of 103.3.3 EDITORS NOTE (to be removed prior to publication): Material on Discovery processing needs to be rationalized with CL 101 and 102.

**Comment 2532**

**Comment Type**: TR  
**Comment Status**: A  
**Comment ID**: 2532  
**Hajduczenia, Marek**  
**Bright House Network**

**Subclause 103.4 is not needed in EPoC - there are no dual rate systems.**

**SuggestedRemedy**

- Remove subclause 103.4 and associated editorial note in lines 34-35.

**Response**

- Response Status: C

- See comment 2635

**Comment 2533**

**Comment Type**: TR  
**Comment Status**: A  
**Comment ID**: 2533  
**Hajduczenia, Marek**  
**Bright House Network**

**Is there any need to show OLT in this drawing? It is not clear where CCDN is, where CLT and CNU are located. The purpose of this figure is very questionable at this time.**

**SuggestedRemedy**

- Either demonstrate target CCDN architectures, with CNU and CLT in target locations and all passive devices in target places, or remove altogether. It is not clear what this figure is for right now. Note that this figure does not demonstrate any performance, does not set reference points, and does not really define any topology which would be normative for Clause 100.

**Response**

- Response Status: C

**ACCEPT IN PRINCIPLE.**

Editors will propose and additional figure with test points for US/DS Tx/Rx.

**Comment 2534**

**Comment Type**: TR  
**Comment Status**: A  
**Comment ID**: 2534  
**Hajduczenia, Marek**  
**Bright House Network**

**The purpose of this Annex is unclear - 802.3 does not typically specify channel in such a detail, but rather we point to external documents that already provide normative description of the channel. In this case, I would suggest we point to definition of the said channel (I do not think downstream and upstream tables were developed for EpCoC specifically) and avoid documenting stuff that does not really have a place in 802.3 standards.**

**SuggestedRemedy**

- Remove Annex 100A.

**Response**

- Response Status: C

**ACCEPT IN PRINCIPLE.**

Add an editors note in the new test section to include a reference to Annex 100A or move contents of 100A to the test section.

**Comment 2535**

**Comment Type**: ER  
**Comment Status**: A  
**Comment ID**: 2535  
**Leo, Montreuil**  
**Broadcom**

**We need a figure to illustrate the symbol duplication process**

**SuggestedRemedy**

- Attachment has the figure.

**Response**

- Response Status: C

**ACCEPT IN PRINCIPLE.**  
Attachment is titled Symbol duplication figure1 (docx) or OFDMA_initial_ranging (visio)
CI 00 SC 0 P'72 L37 # 2596
Remein, Duane
Huawei Technologies

Comment Type T Comment Status A
It would be good to be explicitly about OFDM channels in all cases.

Suggested Remedy
Replace “channel” with “OFDM channel” wherever appropriate (i.e., where it refers to an EPoC OFDM channel and is not preceded with OFDM or OFDM already.

Response Response Status C
ACCEPT.

CI 102 SC 102.2.1.2 P'177 L20 # 2597
Remein, Duane
Huawei Technologies

Comment Type T Comment Status A
Mod Table 100-x
Assuming we create the suggested new table listing modulation formats (see remein_3bn_11_114.pdf) then we shouldn’t restate a requirement here.

Suggested Remedy
Change:
"The DS PHY Link shall use a 16-QAM constellation for all information subcarriers s." To:
"The DS PHY Link uses a 16-QAM constellation for all information subcarriers as specified in Table 100-REF. In 102.3.1.2 add The US PHY Link may use any of the modulation formats listed in Table 100-REF."

Response Response Status C
ACCEPT.

CI 100 SC 100.1.4 P'88 L12 # 2598
Remein, Duane
Huawei Technologies

Comment Type T Comment Status A
Figure 100-2 NCP Generation should be FCP Generation not NCP

Suggested Remedy
per comment

Response Response Status C
ACCEPT.

CI 101 SC 101.4.3.5.3 P'131 L14 # 2600
Remein, Duane
Huawei Technologies

Comment Type T Comment Status A
DataRate
Figure 101–16—"Placement of predefined continuous pilots around the PHY Link" implies PHY Link is 6 MHz wide ("PHY Link band (6 MHz)" when in fact it is only 400 kHz. The 6 MHz band extends beyond the upper and lower continuous pilots.

Suggested Remedy
Combine with figure 102-9, place in CI 102 and ref from here. (see remein_3bn_12_1114.pdf for new figure)

Response Response Status C
ACCEPT.

CI 101 SC 101.4.2.1.2 P'124 L24 # 2601
Remein, Duane
Huawei Technologies

Comment Type T Comment Status A
DataRate
See related comment against 45.2.1.122 pg 44 4n22
Add US/DS data rate variable to mdio mapping table

Suggested Remedy
Shorten names to DS_DataRate & US_DataRate. see remein_3bn_14_1114.pdf

Response Response Status C
ACCEPT.
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<th>Status</th>
<th>Action</th>
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<td>PROPOSED ACCEPT.</td>
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<td>E</td>
<td>2607</td>
<td>A</td>
<td>ACCEPT.</td>
<td>PROPOSED ACCEPT.</td>
</tr>
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**Comment Type T (Technical)**

- **SC 101.3.1.4 P 117 L 36 #2602**
  - **Comment Status:** A
  - **Commentor:** Remen, Duane Huawei Technologies
  - **Comment Type:** T
  - **Comment:** Need mdio register to reflect FecCodeWordCount, FecCodeWordFail, & FecCodeWordSuccess (see 101.3.1.4 pg 117 ln 31).
  - **Suggested Remedy:**
    - Add to MDIO Mapping table (see remein_3bn_14_1114.pdf)
  - **Response Status:** C
  - **Response:** ACCEPT.

- **SC 102.4.2 P 192 L 18 #2603**
  - **Comment Status:** A
  - **Commentor:** Remen, Duane Huawei Technologies
  - **Comment Type:** T
  - **Comment:** See related cmt Cl 45.2.1.122 pg 44 ln 46; EDITORS NOTE (to be removed prior to publication): need to create a mdio register for RangingOffset (signed number same size as PhyTimingOffset) which defaults to zero. This is to allow the operator to set the distance to the coax cable distribution network in the event there is an analogue optical link between the CLT and coax cable distribution network.
  - **Suggested Remedy:**
    - Don't need sign bit. See remein_3bn_15_1114.pdf, remove Ed Note.
  - **Response Status:** C
  - **Response:** ACCEPT.

- **SC 100.5 P 87 L 14 #2604**
  - **Comment Status:** A
  - **Commentor:** Remen, Duane Huawei Technologies
  - **Comment Type:** T
  - **Comment:** 100.5 Channel characteristics
    - 100.5.1 Coaxial cabling model
    - 100.5.2 Coaxial cable
    - 100.5.3 Coaxial connectors
    - 100.5.4 Medium dependent interface (MDI)
  - **Suggested Remedy:**
    - Remove sections 100.5.x except 100.5.4. Promote 100.5.4 to 100.5
  - **Response Status:** C
  - **Response:** ACCEPT.

**Comment Type E (Editorial)**

- **SC 45.2.1.116.1 P 41 L 38 #2605**
  - **Comment Status:** A
  - **Commentor:** Remen, Duane Huawei Technologies
  - **Comment Type:** E
  - **Comment:** Not needed: EDITORS NOTE (to be removed prior to publication): we should be clear how PHY Disc start is interpreted at both the CLT (origination pt) and CNU (transmission starts at timestamp + offset).
  - **Suggested Remedy:**
    - remove note, with next draft this should be well covered.
  - **Response Status:** W
  - **Response:** PROPOSED ACCEPT.

- **SC 100.2.11.3 P 85 L 5 #2606**
  - **Comment Status:** A
  - **Commentor:** Remen, Duane Huawei Technologies
  - **Comment Type:** E
  - **Comment:** 100.2.11.3 FEC codeword error rate not needed here s/b CL 101. Same for 100.2.12.2 Codeword error rate.
  - **Suggested Remedy:**
    - Remove sections, already in 101.3.3.2 (currently blank, see related comment on 101.3.3.2
  - **Response Status:** W
  - **Response:** PROPOSED ACCEPT.

- **SC 101.3.2.6 P 114 L 25 #2607**
  - **Comment Status:** A
  - **Commentor:** Remen, Duane Huawei Technologies
  - **Comment Type:** E
  - **Comment:** EDITORS NOTE (to be removed prior to publication): the phrase "first codeword of the DS frame is ambiguous. is this coincident with the Timestamp or the first subcarrier of the OFDM column containing the PHY Link Preamble or sometime else?
  - **Suggested Remedy:**
    - Remove note, the description is correct. Change "initialized" to "initializes" on line 21
  - **Response Status:** W
  - **Response:** PROPOSED ACCEPT.
IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 2nd Task Force review comments

1. Comment ID 2608
   - Cl 101 SC 101.3.3.2
   - P 120 L 26
   - Remein, Duane Huawei Technologies

   Comment Type T
   Comment Status A
   Blank section.

   SuggestedRemedy
   Move the para from pg 115 ln 25 starting "The FEC decoder in the CNU shall provide a user-configurable option to indicate ..." to 101.3.3.2.
   Replace the moved test in 101.3.3.1.2 with "The FEC decoder maintains error monitors to detect FEC codeword successes and failures. See 101.3.3.2 for details.

   Response Response Status C
   ACCEPT.

2. Comment ID 2609
   - Cl 102 SC 102.2
   - P 177 L 1
   - Remein, Duane Huawei Technologies

   Comment Type T
   Comment Status A
   Where is DS Timestamp generation described? Need text.

   SuggestedRemedy
   See 102.2.5.2 in remein_3bn_10_1114.

   Response Response Status C
   ACCEPT.

3. Comment ID 2610
   - Cl 102 SC 102.4.1.5
   - P 191 L 19
   - Remein, Duane Huawei Technologies

   Comment Type T
   Comment Status A
   This figure reference is incorrect. "PHY Discovery Response (illustrated in Figure 102–20)." Need to add figure and reassign reference.

   SuggestedRemedy
   Add figure per Leo Montreuil and ref. from here.

   Response Response Status C
   ACCEPT.

4. Comment ID 2611
   - Cl 102 SC 102.2
   - P 177 L 1
   - Remein, Duane Huawei Technologies

   Comment Type T
   Comment Status A
   We should add a maximum allowed turn around time on the DS PHY Link so that we can ensure messages with time sensitive information, such as PHY Discovery Instructions, arrive with sufficient time to be decoded and acted upon.

   SuggestedRemedy
   Add new section 102.2.5 Downstream PHY Link response time. The CNU shall decode and be capable of acting on instructions included in a downstream PHY Link frame, such as PHY Discovery instructions, within TBD us.

   Response Response Status C
   ACCEPT.
   use "TBD" for now.

5. Comment ID 2612
   - Cl 101 SC 101.4.3.1
   - P 125 L 50
   - Remein, Duane Huawei Technologies

   Comment Type E
   Comment Status D
   Editors note on number of channels is not longer needed.

   SuggestedRemedy
   Remove Editors note.

   Proposed Response Response Status W
   PROPOSED ACCEPT.

6. Comment ID 2613
   - Cl 101 SC 101.4.3.2
   - P 126 L 31
   - Remein, Duane Huawei Technologies

   Comment Type T
   Comment Status A
   1Change (4.8828125 ns) to (1/204.8MHz)

   SuggestedRemedy
   Remove Editors note.

   Response Response Status C
   ACCEPT.

---

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Comment ID
Comment ID 2614

Cl 00 SC 101.4.3.11 P 149 L 3 # 2614
Remain, Duane Huawei Technologies

Comment Type E Comment Status D
Reference should be table 101-14

SuggestedRemedy per comment

Proposed Response

Response Status W
PROPOSED ACCEPT.

Comment ID 2615

Cl 101 SC 101.4.3.2 P 150 L 47 # 2615
Remain, Duane Huawei Technologies

Comment Type T Comment Status A
In 101.4.4.3.2 we define a bands edge. I believe this is the same as spectral edge used in 101.4.3.5.4. We should be consistent.

SuggestedRemedy Change band edge to spectral edge. Remove editors note pg 133 ln 40

Response Response Status C
ACCEPT IN PRINCIPLE.
On second thought it might be better to change spectral edge (used 3x) to band edge (used 14 x).

Comment ID 2616

Cl 102 SC 102.4.3 P 192 L 21 # 2616
Remain, Duane Huawei Technologies

Comment Type T Comment Status A
A way is needed to schedule the Probe Period.

SuggestedRemedy

Response Response Status C
ACCEPT IN PRINCIPLE.
See remein_3bn_02c_1014.pdf (diff version compared to Draft 1.1 text is remein_3bn_02c_1014CMP.pdf)

Comment ID 2617

Cl 101 SC 102.2 P 177 L 1 # 2617
Remain, Duane Huawei Technologies

Comment Type T Comment Status A
Need state diagram and related definitions for CLT PHY Link transmit process.

SuggestedRemedy

See Figure 102-1 and related text in remein_3bn_10_1114.

Response Response Status C
ACCEPT IN PRINCIPLE.
See Figure 102-1 and related text in remein_3bn_10b_1114.

Comment ID 2618

Cl 102 SC 102.3 P 185 L 19 # 2618
Remain, Duane Huawei Technologies

Comment Type T Comment Status A
Need state diagram and related definitions for CNU PHY Link transmit process.

SuggestedRemedy

See Figure 102-2 and related text in remein_3bn_10_1114.

Response Response Status C
ACCEPT IN PRINCIPLE.
See Figure 102-2 and related text in remein_3bn_10b_1114.

Comment ID 2619

Cl 102 SC 102.4.1.4 P 190 L 50 # 2619
Remain, Duane Huawei Technologies

Comment Type T Comment Status A
Need state diagram and related definitions for CNU Discovery Response transmit process.

SuggestedRemedy

See Figure 102-2 and related text in remein_3bn_10_1114.

Response Response Status C
ACCEPT.
Need a convention for numbering and referencing PHY Discovery opportunities as there may be up to 16 per Probe Period. This ties in with the back-off mechanism.

**Suggested Remedy**
See figure 1012-16 in remein_3bn_19_1114.pdf.

**Response**

**Response Status** C

Accept in principle.

Create ad text ref to the new figure also.

---

Figure 101–29 needs to be converted to native framemaker format.

**Suggested Remedy**
per comment see remein_3bn_19_1114.pdf

**Proposed Response**

**Response Status** W

Proposed accept.

---

Given that this is a standard and not an implementation does this have any meaning?

"approximately equal number of rows vs. columns works well"

**Suggested Remedy**
Strike the sentence.

**Response**

**Response Status** C

Accept.

---

In Figure 102-2 the order of fields in the EPFH is not the same as in the DS EPFH. It would be better if they were the same.

**Suggested Remedy**
Swap RT/SA(16b) and RF_ID so they are in the same order as in the DS message.

**Response**

**Response Status** C

Accept.

---

Figure 102-3 & 4 change red text to black. Align with Figure 100-2/3. Add TxPre signal to Preamble block.

**Suggested Remedy**
per comment, see remein_3bn_19_1114.pdf

**Response**

**Response Status** C

Proposed Accept.

Also see cmt 2694 & 2695

---

Perhaps we should not leave this specifically up to the implementor. "The periodicity of these windows is unspecified and left up to the implementor."

**Suggested Remedy**
Change the sentence to read: "The periodicity of these windows is unspecified."

**Response**

**Response Status** C

Accept.
IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 2nd Task Force review comments

Comment Type: T  Comment Status: A

Figure 102-16 title is incorrect

Suggested Remedy
Change to "PHY Discovery Preamble generator."

Response Status: C
ACCEPT.

Comment Type: T  Comment Status: A

In Figure 102-15 we should make it clear that the RND Delay is in both time and frequency domain. We should also update it to current bring-up process.

1) CLT Opens PHY Discovery
2) CLT assigns CNU ID, sets Timing Offset and Amplitude Offset via PHY Instruction
3) CLT assigns Fine Ranging Slot to new CNU
4) CLT sends Fine Ranging Response
5) CLT updates Timing Offset and/or Amplitude Offset via PHY Instruction
6) CLT sends Probe response
7) Iterate 4-6 as needed

Suggested Remedy
See remein_3bn_19_1114.pdf

Response Status: C
ACCEPT.

Comment Type: T  Comment Status: A

Figure 102–9—"DS PHY Link spectrum placement" show minimum of 24 MHz of active subcarriers but this has been changed to 22 MHz.

See relate comment Cl 100, SC 101.4.3.5.3 pg 131
In 14

Suggested Remedy
s/b 22 MHz not 24, combine with Fig 101-16 and ref from CI 101. See remein_3bn_12_1114.pdf.

Response Status: C
ACCEPT.
IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 2nd Task Force review comments

# 2630

Cl 102  SC 103.2.2.7  P 219  L 36  # 2630

Remein, Duane
Huawei Technologies

Comment Type E  Comment Status D

Missing text in Figures 103-10 & 103-11.

SuggestedRemedy

Revel text below note: “Refer to Annex 31A for list of supported opcodes and timestamp opcodes.”

Proposed Response  Response Status W

PROPOSED ACCEPT.

# 2631

Cl 102  SC 102.2.1.1.2  P 183  L 32  # 2631

Remein, Duane
Huawei Technologies

Comment Type E  Comment Status D

Figure 102-13 needs to be converted to FrameMaker native format

SuggestedRemedy

Per comment, see remein_3bn_19_1114.pdf

Proposed Response  Response Status W

PROPOSED ACCEPT.

# 2632

Cl 102  SC 102.2.1.1  P 182  L 36  # 2632

Remein, Duane
Huawei Technologies

Comment Type T  Comment Status A

In this statement about Response Frame we still need to specify RF for Fine Ranging as CNUs that have already completed PHY Discovery will still supply and ACK via the PHY Link. “When the Response Type field indicates Fine Ranging / PHY Discovery the Response Frame should be set to zero and is ignored on reception as these signaling types have fixed starting points.”

SuggestedRemedy

Strike the sentence.

Response  Response Status C

ACCEPT.

# 2633

Cl 45  SC 45.2.1.116.1  P 41  L 34  # 2633

Remein, Duane
Huawei Technologies

Comment Type T  Comment Status A

We should provide a way to disable PHY Discovery windows at the CNU.

SuggestedRemedy

After correcting the para numbering (45.2.1.116.1 not 45.2.a.116.1) add the following to the end of the para:

“Setting the PHY Discovery start parameter to zero disables the PHY Discovery window.”

Response  Response Status C

ACCEPT.

# 2634

Cl 45  SC 45.2.7a  P 44  L 39  # 2634

Remein, Duane
Huawei Technologies

Comment Type T  Comment Status A

Table 45-191a shows a register for Resource Block type control but this function has been superseded by Pilot Pattern registers.

SuggestedRemedy

Remove line from table.

Response  Response Status C

ACCEPT.

# 2635

Cl 103  SC 103.4  P 261  L 38  # 2635

Remein, Duane
Huawei Technologies

Comment Type T  Comment Status A

No reason for this section has been made known to the TF.

SuggestedRemedy

Remove section 103.4 and editors note.

Response  Response Status C

ACCEPT.

See cmt 2532
Comment Type T  Comment Status A
PHY Discovery Start should be a 32 bit register as 16 bits relative to timestamp only equates to about 320 us.

SuggestedRemedy
Change to 32 bits describing PHY Discovery Start lower (Reg 1916) & upper (Reg 1917) in 45.2.1.116.1 & 45.2.1.116.2 resp. Update subsequent register numbers.

Response  Response Status C
ACCEPT.

Comment Type T  Comment Status A
Table 45–78o—power offset bit definitions missing “PHY”

SuggestedRemedy
Change to:
Table 45–78o—PHY power offset bit definitions.

Response  Response Status C
ACCEPT.

Comment Type T  Comment Status A
Need mdio register to reflect FecCodeWordCount, FecCodeWordFail, & FecCodeWordSuccess (see 101.3.3.1.4 pg 117 ln 31).

SuggestedRemedy
Add to CI 45 at end of PMA/PMD register section.

Response  Response Status C
ACCEPT. Note this is included in remein_3bn_15_1114.pdf

Comment Type T  Comment Status A
See related comment against 101.4.2.1.2 Pg 124, Ln 24
Need mdio registers for provisioning data rates CLT_DS_DataRate & CLT_US_DataRate

SuggestedRemedy
Create CI 45 registers per remein_3bn_15_1114.pdf.

Response  Response Status C
ACCEPT.
### Comment ID 2642

**Comment Type:** T  **Comment Status:** A  
**Remein, Duane**  
**Huawei Technologies**  

**Comment**

We indicate there is a user configurable variable but never identify it.

**Suggested Remedy**

Create a variable CRC40ErrCtrl and include in MDIO Mapping table (see remein_3bn_14_1114.pdf).

Change wording from:

The FEC decoder in the CNU shall provide a user-configurable option to indicate an uncorrectable FEC codeword (due to an excess of symbols containing errors) to higher layers. If this user-configurable option is enabled and the calculated value of CRC40 does not match the value of CRC40 retrieved from the received FEC codeword, the FEC decoder replaces bit <0> and <1> in the sync headers in all 64B/66B blocks with the binary value of “11”. If this user-configurable option is enabled and the calculated value of CRC40 does not match the value of CRC40 retrieved from the received FEC codeword the FEC decoder indicates an error to the PCS by replacing bit <0> and <1> in the sync header with the binary value of “11” in the first 64B/66B block and every 8th 64B/66B block, e.g. 1st, 9th, 17th, 25th, etc. as well as the last 64B/66B block from the errored FEC codeword.

To:

The FEC decoder in the CNU shall provide a user-configurable option (variable CRC40ErrCtrl) to indicate an uncorrectable FEC codeword (due to an excess of symbols containing errors) to higher layers. If CRC40ErrCtrl is enabled and the calculated value of CRC40 does not match the value of CRC40 retrieved from the received FEC codeword, the FEC decoder replaces bit <0> and <1> in the sync headers in all 64B/66B blocks with the binary value of “11”. If CRC40ErrCtrl is enabled and the calculated value of CRC40 does not match the value of CRC40 retrieved from the received FEC codeword the FEC decoder indicates an error to the PCS by replacing bit <0> and <1> in the sync header with the binary value of "11" in the first 64B/66B block and every 8th 64B/66B block, e.g. 1st, 9th, 17th, 25th, etc. as well as the last 64B/66B block from the errored FEC codeword.

**Response**

ACCEPT IN PRINCIPLE.

Add text in draft that this is for testing purposes.

Update Fig 101-12 to account for this variable (ML & MH)

### Comment ID 2643

**Comment Type:** T  **Comment Status:** A  
**Remein, Duane**  
**Huawei Technologies**  

**Comment**

Need mdio register to reflect FecCodeWordCount, FecCodeWordFail, & FecCodeWordSuccess (see 101.3.3.1.4 pg 117 ln 31).

**Suggested Remedy**

Add per remein_3bn_15_1114.pdf

Also add to MDIO Mapping table (see comment against 101.3.3.1.4 pg 117 ln 31)

**Response**

ACCEPT.

**Fec Counters**

**Remein, Duane**  
**Huawei Technologies**

**Comment**

Seems odd that FecCodeWordCount, FecCodeWordFail, & FecCodeWordSuccess get reset on every FEC codeword that is decoded.

**Suggested Remedy**

Move these assignments to INIT state. Author to verify these then don’t get reset if we lose FEC alignment.

**Response**

ACCEPT.  
See cmt 2668

### Comment ID 2644

**Comment Type:** T  **Comment Status:** A  
**Remein, Duane**  
**Huawei Technologies**  

**Comment**

This sentence makes it sound like we use burst transmission in the DS direction: “In the downstream direction, the burst received by the CNU is always a single FEC codeword of size FEC_DS_CodeWordSize bits.”

**Suggested Remedy**

Reword to:

"In the downstream direction, the continuous data stream received by the CNU is always composed of single FEC codewords of size FEC_DS_CodeWordSize bits."

**Response**

ACCEPT.
### IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 2nd Task Force review comments

#### Draft 1.1

<table>
<thead>
<tr>
<th>Comment</th>
<th>Type</th>
<th>Comment Status</th>
<th>Response</th>
<th>Response Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>CI 101  SC 101.4.3.1</td>
<td>T</td>
<td>A</td>
<td>Remove the parenthetical.</td>
<td>C</td>
</tr>
<tr>
<td>CI 101  SC 101.4.3.9</td>
<td>T</td>
<td>A</td>
<td>This statement should refer to a system variable not the whole register: &quot;Once the CNU detects the downstream PHY Link and receives the DS_freqCh1 variable (see Table ref), the CNU knows the location of k = 0.&quot;</td>
<td>C</td>
</tr>
<tr>
<td>CI 101  SC 101.4.3.10</td>
<td>T</td>
<td>A</td>
<td>This statement should refer to a system variable &quot;NCP represents the DS cyclic prefix parameter [Tsd] as select from 10GPASS-XR DS OFDM control register (see 45.2.1.108) for the CLT.&quot; Nor should we use another name (Tsd) to refer to the same variable. Lastly we need to distinguish US from DS.</td>
<td>C</td>
</tr>
</tbody>
</table>
IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 2nd Task Force review comments

Comment #2650

Cl 101 SC 101.4.2.5 P 124 L 52 # 2650
Remein, Duane Huawei Technologies

Comment Type T Comment Status A

It is not clear what is meant by the statement "PMA_UNITDATA.indication is used by the client's synchronization process."

SuggestedRemedy

Add ed note after the para: EDITORS NOTE (to be removed prior to publication): a precise description of what is meant by "PMA_UNITDATA.indication is used by the client's synchronization process" is needed.

Response Response Status C

ACCEPT.

Att Mark

Comment #2651

Cl 102 SC 102.1.9 P 175 L 38 # 2651
Remein, Duane Huawei Technologies

Comment Type T Comment Status A

Updates to Table 102–3—10GPASS-XR MDIO/PHY Link variable mapping

SuggestedRemedy

See remein_3bn_13_1114.pdf

Response Response Status C

ACCEPT.

Comment #2652

Cl 102 SC 102.1.9 P 176 L 26 # 2652
Remein, Duane Huawei Technologies

Comment Type T Comment Status A

Allowed CNU_ID or Next CNU_ID?

SuggestedRemedy

Go with Allowed CNU ID in Cl 45 and AllwdCNU_ID in Cl 102 (change in 4 places including Table 102–3).

Response Response Status C

ACCEPT.
Cl 102 SC 102.3.3 P 186 L 50 # 2655
Remein, Duane Huawei Technologies

Comment Type T Comment Status A
Why is this statement here? There is not data in a FR response.
"For Fine Ranging data transfers the upstream PHY Link shall use a (362,272) binary punctured LDPC code described in 102.1.4.2.3"

SuggestedRemedy
Remove the statement and all text and figures regarding the (362,272) binary punctured LDPC code described in 102.1.4.2.3

Response Response Status C
ACCEPT IN PRINCIPLE.
Per comment, verify each described FEC in Cl 101 & 102 is used. Add Editors note to remove FEC description for any codes not used.

Cl 100 SC 100.2.8.1.1 P 74 L 46 # 2656
Laubach, Mark Broadcom Corporation

Comment Type ER Comment Status A
editors note no longer needed

SuggestedRemedy
remove editors note

Response Response Status C
ACCEPT IN PRINCIPLE.
Add a section on Test modeled after Cl 75

Cl 100 SC 100.2.8.2 P 77 L 28 # 2660
Laubach, Mark Broadcom Corporation

Comment Type ER Comment Status A
Change "ceil[]" to appropriate symbol brackets for ceiling lines 28/29 and 32/33. Missing right parens line 32.

SuggestedRemedy
Either find an acceptable symbol font that has ceiling brackets or convert equation to Framemaker unnumbered equation. On lin 32, change was looks like a double quote to a single quote and right parens: )

Response Response Status C
ACCEPT.
Comment ID 2661

Laubach, Mark

IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 2nd Task Force review comments

Approved Resolution

Laubach, Mark

This is an editor’s comment: there are previously embedded conditionals in this clause file.

SuggestedRemedy

Confirmed with Joe Solomon. Can remove all conditional tags and any text in Clause 100 fm file.

ACCEPT.

Response

Laubach, Mark

This is an editor’s comment: there are previously embedded conditionals in this clause file.

SuggestedRemedy

Confirmed with Joe Solomon. Can remove all conditional tags and any text in Clause 100 fm file.

ACCEPT.

Response

Note this comment affects cl 101 & cl 100 so editor changed from Cl 101 to Cl 00.

Modification to Fig 101-7 is available in file remein_3bn_02_1114.pdf

Modification to Fig 101-11 is available in file remein_3bn_03_1114.pdf
IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 2nd Task Force review comments

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Laubach, Mark
Broadcom Corporation

Comment Type TR  Comment Status A

Update figure for the following:
1) "+" was mistakenly put at bottom of PMA when it should be in PMD and part of PMD Functions (implementation dependent)
2) Scrambler and FCP (old NCP) require use of PMA start of frame for alignment, should be in PMA

Suggested Remedy
1) Remove multiple channel summation lines and "+". Replace with individual paths from each channel to PMD Functions. Combining is implementation dependent.
2) Scrambler and FCP (old NCP) into Symbol Mapper of PMA. Scrambler can become a subfunction of the downstream symbol mapper, FCP provides and to the PHY Link for the FCP field. The Scrambler and FCP changes are link to the approval of the text changes in comment XXXX, also by Mark Laubach. Figure in laubach_3bn_10_1114.pdf (fm)

Response Response Status C
ACCEPT.

Comment Type TR  Comment Status A

Suggested Remedy
- frequencies ranges should point to preferred table for both downstream and upstream.

Suggested Remedy
Section 100.2.7.1 first paragraph, change "The CLT transmitter and CNU receiver shall support a range that includes from 54 MHz to 1212 MHz." to "The CLT transmitter and CNU receiver shall support a range included in the frequency band of 54 MHz to 1212 MHz as defined in Table 100-2."

Section 100.2.7.2 first paragraph, change "The CNU transmitter and CLT receiver shall support a range that includes from 5 MHz to 234 MHz." to "The CNU transmitter and CLT receiver shall support a range that included in the frequency band of 5 MHz to 234 MHz as defined in Table 100-xx.

Response Response Status C
ACCEPT IN PRINCIPLE.

Comment Type TR  Comment Status A

Suggested Remedy
Retitle 100.2.6.1 as new 100.2.7 "Data Rates". Create sections 100.2.7.1 Downstream, and 100.2.7.2 Upstream. Use text from laubach_3bn_11_1114.pdf

Note: the draft text is based on laubach_3bn_08_0914.pdf pages 7 and 9.

Response Response Status C
ACCEPT.

Comment Type TR  Comment Status A

Suggested Remedy
Subsection no longer needed, subcarrier nulling is defined elsewhere.

Suggested Remedy
Remove subsection "100.2.7.2.1 Carrier Nulling"

Response Response Status C
ACCEPT.
IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 2nd Task Force review comments

Cl 101 SC 101.3.2.6 P 113 L 39 # 2667

Laubach, Mark
Broadcom Corporation

Comment Type TR Comment Status A

Scrambler being moved from PCS to PMA. Need to clarify synchronization and initialization to downstream frame.

Section 101.4.3.6 Symbol Mapper introduction, needs to be updated for PMA_UNITDATA.request information, as well as symbol mapper use and initialization, as well as NCP calculation.

Suggested Remedy
As per laubach_3bn_12_1114.pdf:
1) Section 101.3.2.6 moved to Section 101.4.3.6.4
2) 101.4.3.6.1 Introduction updated
3) 101.4.3.6.5 "NCP calculation" added

Response

ACCEPT.

Comment ID 2667
Page 46 of 56

Laubach, Mark
Broadcom Corporation

Cl 100 SC 100.2.8.1 P 73 L 44 # 2670

Laubach, Mark
Broadcom Corporation

Comment Type ER Comment Status A

Typos and editor note no longer needed

Suggested Remedy
1) Change ".Occupiedbandwidth" to "Occupied bandwidth" in equation on line 44.
2) Remove editor's note on line 46.

Response

ACCEPT.

Comment ID 2671
Page 46 of 56

Laubach, Mark
Broadcom Corporation

Cl 101 SC 101.4.4.3.2 P 150 L 45 # 2671

Laubach, Mark
Broadcom Corporation

Comment Type TR Comment Status A

"OFDMA transmission may be interrupted" can be interpret as interrupting the RF transmission energy (the transmission of an OFDMA symbol).

Suggested Remedy
Suggest replacing: "However, an OFDMA transmission may be interrupted for various reasons." with "An OFDMA transmission may straddle excluded and unused subcarriers."

Response

ACCEPT.

Comment ID 2671
Page 46 of 56
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Cl  SC</th>
<th>Comment Type</th>
<th>Comment Status</th>
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<tr>
<td>2672</td>
<td>101.4.3.4</td>
<td>T</td>
<td>A</td>
<td>Text and figure for DS framing</td>
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<td></td>
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<td>SuggestedRemedy: see remein_3bn_16_1114.pdf</td>
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<tr>
<td>2673</td>
<td>45.2.1.100</td>
<td>E</td>
<td>D</td>
<td>0 0 0 = 0 samples (windowing disabled)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SuggestedRemedy: Replace by: &quot;0 0 0 = 0 samples (windowing disabled)&quot;</td>
</tr>
<tr>
<td>2674</td>
<td>100.2.8.1</td>
<td>E</td>
<td>D</td>
<td>Why there is a dot in front &quot;. Occupiedbandwidth&quot;?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SuggestedRemedy: If it is an error, remove dot.</td>
</tr>
<tr>
<td>2675</td>
<td>100.2.8.1</td>
<td>T</td>
<td>A</td>
<td>There is up to 3800 active subcarriers out 4096 subcarriers. At least 296 subcarriers have zero bit loading. That is 148 on each side.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SuggestedRemedy: The example should use the max number of subcarriers. That is 3800 subcarriers for an encompassed spectrum of 190 MHz.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Response: ACCEPT IN PRINCIPLE. Editor changed from E to T</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Note that this is similar to the change to Page 73, lines 7-12 made in previous comment round.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>For example, provided the OFDM channel of 204.8 MHz, subcarrier spacing of 50 kHz and 148 lower band edge subcarriers and 148 upper band edge subcarriers (a total of 302 subcarriers in two band edge exclusion sub-bands), the encompassed spectrum is equal to 789.05 - 600.00 + 0.050 = 190.00 MHz</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>See also cmt 2435</td>
</tr>
<tr>
<td>2676</td>
<td>45.2.1.111.1</td>
<td>T</td>
<td>A</td>
<td>Replace TBD for min frequency and register</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SuggestedRemedy: Replace &quot;frequency from TBD to 3.27675 GHz&quot; by &quot; frequency from 5 MHz to 3.27675 GHz&quot;. Replace &quot;The minimum value for this register is TBD&quot; by &quot;The minimum value for this register is 100&quot;.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The register value of 100 is for 50 KHz subcarrier spacing and a value of 0 correspond to 0 Hz.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Response: ACCEPT.</td>
</tr>
</tbody>
</table>

**Additional Notes:**

- Editor change from E to T when changing with **Comment Status A**.
- Note that this change is consistent with previous changes at Page 73, lines 7-12 made in previous comment round.
- For example, consider the OFDM channel of 204.8 MHz, subcarrier spacing of 50 kHz and 148 lower band edge subcarriers and 148 upper band edge subcarriers (total of 302 subcarriers in two band edge exclusion sub-bands), the encompassed spectrum is equal to 789.05 - 600.00 + 0.050 = 190.00 MHz.
In Table 100-1, Channel bandwidth cover a range of 24 to 192 MHz. However, min encompassed spectrum is specified.

**Suggested Remedy**
Change "Minimum encompassed spectrum = 22 MHz" to "Encompassed spectrum = 22 to 190 MHz".

**Response**
ACCEPT.
Editor changed from E to T

---

In figure 102-5, Byte 1 use upper case A

**Suggested Remedy**
A15 to A8 should be lower case a15 to a8.

**Response**
ACCEPT.

---

0 KHz to 100 KHz is wrong

**Suggested Remedy**
Should it be 10 KHz to 100 KHz?

**Response**
ACCEPT IN PRINCIPLE.
Change "0 kHz" to "10 kHz".
Editor changed from ER to TR.

---

The occupied bandwidth is a multiple of 6 MHz, with a minimum of 24 MHz, and consists of all 6 MHz channels ...

**Suggested Remedy**
Remove step 3 and 4

**Response**
ACCEPT IN PRINCIPLE.
Keep 3 worded as "Known region of interference"

---

The occupied bandwidth is calculated per equation 100-1 which produces results in increments of 6 MHz. Removing the "multiple of 6 MHz" here, does not change this behaviour.

**Response**
REJECT.
The occupied bandwidth is calculated per equation 100-1 which produces results in increments of 6 MHz. Removing the "multiple of 6 MHz" here, does not change this behaviour.

---

In Table 100-1, what is the allowable degradation of 1.5 dB

**Suggested Remedy**
Need clarification

**Response**
ACCEPT IN PRINCIPLE.
Delete phrase
IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 2nd Task Force review comments

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Approved Resolution

<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Cl 102</th>
<th>SC 102.1.3</th>
<th>P 170</th>
<th>L 19</th>
<th># 2686</th>
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<td>Kliger, Avi</td>
<td>Broadcom</td>
<td></td>
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</tbody>
</table>

Comment Type: ER Comment Status: R

Also probes are PHY to PHY signaling in the upstream PHY Link

Suggested Remedy

add "and wideband probes" to the end of text in line 9.

Response

Response Status: C

REJECT.

If we remove PHY Discovery Response (see Cmt 2696) as a PHY Link signaling type it seems unreasonable to keep Probing as a PHY Link signaling type.

<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Cl 102</th>
<th>SC 102.1.3</th>
<th>P 170</th>
<th>L 34</th>
<th># 2687</th>
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<td>Broadcom</td>
<td></td>
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</tbody>
</table>

Comment Type: ER Comment Status: A

Figure 102-5 A15 to A8 are capitalized while a7 to a0 are not

Suggested Remedy

change "A" to "a" where required

Response

Response Status: C

ACCEPT.

Bit numbering (lsb to msb) is consistent with the rest of 802.3. Change all "A" and "a" to "b".

<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Cl 102</th>
<th>SC 102.2.3.1</th>
<th>P 181</th>
<th>L 26</th>
<th># 2684</th>
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<td>Broadcom</td>
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</table>

Comment Type: E Comment Status: D

subclause title is DS fixed header - however header is not fixed.

Suggested Remedy

change title to "DS header"

Proposed Response

Response Status: W

PROPOSED ACCEPT IN PRINCIPLE.

Assuming comment #4 refers to cmts 2696, 2698 or 2694

Add to 102.4.1.4 PHY Link Discovery Response

at pg 190 line 18

"The PHY duplicates symbols of the upstream PHY Discovery response transmission. This duplication is accomplished by duplicating the time domain samples at the output of the IFFT in the upstream data path for these signals, and adding cyclic prefix and windowing. Control of the duplication process is conveyed using the TxType in the CNU (see Figure 102-4)."

<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Cl 102</th>
<th>SC 102.3.2.1</th>
<th>P 185</th>
<th>L 44</th>
<th># 2685</th>
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<td>Broadcom</td>
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</tbody>
</table>

Comment Type: E Comment Status: D

US header is not fixed

Suggested Remedy

Change title to US header

Proposed Response

Response Status: W

PROPOSED ACCEPT IN PRINCIPLE.

See Cmt 2616 and remein_3bn_02b_1014.pdf (pg 2).
**Comment ID 2689**

**Comment Type:** ER  
**Comment Status:** A  
**Response Status:** C

The LDPC (362,272) code is not required. It has been proposed to encode data carried by the fine ranging signal, however fine ranging does not carry data any more.

**Suggested Remedy**
Remove section 102.1.4.2.3

**Response**
ACCEPT.

**Comment ID 2690**

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

this paragraph uses the term pilot tones, while elsewhere in the text the term continuous pilots is used.

**Suggested Remedy**
replace "pilot tones" with "continuous pilots" in subclause 10.2.1.1

**Response**
ACCEPT.

**Comment ID 2691**

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

"Each CNU contains two profiles in each direction, copy "A" and copy "B"; only one of which is active at any given time"  
It is not clear that the profiles in each direction are identical to all CNUs.

**Suggested Remedy**
Add text that clarifies the above  
"Each CNU contains two profiles in each direction, copy "A" and copy "B"; only one of which is active at any given time. The active profile in each direction is identical to all CNUs"

**Response**
ACCEPT IN PRINCIPLE.  
Editor changed comment type from ER to TR  
Add "The CLT shall ensure that the inactive profile in all CNUs is identical prior to making it the active profile."  
Note that the indexed variable only address the inactive profile so the active profile will always be identical if the above requirement is true.
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Comment ID: 2694
Kliger, Avi
Broadcom

Comment Type: TR
Comment Status: A
Symbol duplication block shown in Figure 102-3 is not performed in the downstream direction only in the upstream direction. Block diagram doesn't show the symbol mapper (transition from bit domain to frequency domain).

Suggested Remedy:
Change block title to "symbol mapping"

Response Status: C
ACCEPT IN PRINCIPLE.

Also see proposed changes in Cmt 2624 and updated figures in remein_3bn_19b_1114.pdf

Change block title to "Symbol Mapper"
Will also change title for section "102.1.7 Symbol Mapper" and add text in this section that reads "EDITORS NOTE (to be removed prior to publication); text for this section needed."

Note that this will also require a change to Cl 100 block diagrams and/or text of Clause 101 to include this function in CI 101.

Add Cl 100 Pg 69 In 53 "EDITORS NOTE (to be removed prior to publication): US Block diagram needs to reflect symbol duplication for PHY Link Discovery Response message."
Add Cl 101 pg 158 In 28 "EDITORS NOTE (to be removed prior to publication): Cyclic prefix and windowing function needs to reflect symbol duplication for PHY Link Discovery Response message."

Comment ID: 2695
Kliger, Avi
Broadcom

Comment Type: TR
Comment Status: A
PHY Discovery Response and Fine Ranging moved to the probe period. Do we still want to make it a part of the upstream PHY Link signaling?

Suggested Remedy:
Remove the wording: "including PHY Discovery Response and Fine Ranging Response" in line 4

Response Status: C
ACCEPT.

Comment ID: 2696
Kliger, Avi
Broadcom

Comment Type: TR
Comment Status: A
The factor 1/sqrt(10) is only correct for QAM-16.

Suggested Remedy:
reference the table of factors instead of 1/sqrt(10)

Response Status: C
ACCEPT IN PRINCIPLE.
Change:
"1/sqrt(10)"
to:
"the appropriate factor in Table 101–22"

Comment ID: 2697
Kliger, Avi
Broadcom

Comment Type: TR
Comment Status: A
"This duplication is accomplished by duplicating the data (including FEC parity) in the upstream data path for these signals."
This is not accurate as cyclic prefix and cyclic suffix are also added and the duplication is done on the time domain samples.

Suggested Remedy:
Change the wording of the sentence as follows:
This duplication is accomplished by duplicating the time domain samples at the output of the IFFT in the upstream data path for these signals, and adding cyclic prefix and cyclic suffix as described in section 102.4.1.4

Response Status: C
ACCEPT IN PRINCIPLE.
See cmt 2683
Comment Type: TR
Comment Status: R
Response

Kliger, Avi
Broadcom

Suggested Remedy:
A place holder at this time
No suggested change.

Comment Type: TR
Comment Status: A
Response

Kliger, Avi
Broadcom

Suggested Remedy:
Correct the sentence as follows:
"If the DA does not match the assigned address or the broadcast address then the EMBs in the frame are discarded and no response is made".

Response

ACCEPT.

Comment Type: TR
Comment Status: A
Response

Kliger, Avi
Broadcom

Suggested Remedy:
The same OFDM Symbol size and cyclic prefix duration as the upstream MAC data channel
There is a single OFDM symbol size in the upstream. US PHY must use the same window size

Response

ACCEPT.

Comment Type: TR
Comment Status: A
Response

Kliger, Avi
Broadcom

Suggested Remedy:
For Fine Ranging data transfers the upstream PHY Link shall use a (362,272) binary punctured LDPC code described in 102.1.4.2.3

Response

ACCEPT IN PRINCIPLE.
Remove this subclause

Comment Type: TR
Comment Status: A
Response

Kliger, Avi
Broadcom

Suggested Remedy
Indicate in the text

Response

ACCEPT IN PRINCIPLE.
Changed from pg 187 line 1 to pg 188 line 43
Per 45.2.1.114.5 DS PHY Link Search Count (1.1914.12:0)
Register bits 1.1914.12 through 1.1914.0 specify the integer number of search steps through which to search for a PHY Link.
Change "searches" to "search steps".
IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 2nd Task Force review comments

Approved Resolution

Cl 102 SC 102.4.1.4 P 190 L 3 # 2704
Kliger, Avi Broadcom

Comment Type TR Comment Status A
Random backoff should be on PD window opportunities and not on time
Also, more details shold be added on transmission power of the PDR (probably in a different section but referenced here)

Suggested Remedy

correct the sentence as follows:
"Each CNU waits a random amount of PHY Discovery window opportunities before transmitting the PHY Discovery Response"

Response Response Status C
ACCEPT IN PRINCIPLE.
See cmt 2628

Cl 102 SC 102.4.2 P 191 L 48 # 2706
Kliger, Avi Broadcom

Comment Type T Comment Status A
FR purpose was to provide better accuracy to measurements of power and timing offset than PDR before probe could be transmitted, under the assumptions that PDR are send in frames that also contain data, using a relatively small number of subcarriers and with a low transmission power to not interfere with the data, hence received with low SNRs. This has been required under the assumption that PD windows should be opened over several OFDMA frames (due to an RTT in order of a mSec) and that data cannot be halted for this amount of time.

Recently we've made some substantial changes to the ranging requirements for EPoC:
1. RTT dynamic range is now less than one OFMD symbol
2. PDR signal is not mixed with data any more. Whole symbol can be dedicated to one or more PDRs. There is no leakage from PDR to data subcarriers
3. PDR can be transmitted in a high SNR with more BW available (could use same number of subcarriers used for Fine Ranging).
4. There is no timing ambiguity of a symbol after the PDR reception as RTT is always less than a symbol (<20 uSec)
5. Fine Ranging does not carry any data

With these changes to PDR there is no more a reason to use FR signal. Fine and periodic ranging can be done using the probes.

Suggested Remedy

Remove this section. Remove all other references to fine ranging in the text

Response Response Status C
ACCEPT IN PRINCIPLE.

ON SECOND THOUGHT: REWORD AS THERE ARE NEEDED REQUIREMENTS IN THIS SECTION SUCH AS:
Before declaring a CNU is in the link-up state the CLT shall ensure that a CNU joining the EPoC network is properly aligned to the US OFDMA timing and is cognizant of all necessary provisioning parameters needed to properly operate in the OFDMA network without adverse impact to the EPoC network or other services operating in RF spectrum unused by the EPoC network. A list of required parameters is given in Table 102–12.

When the CNU receives the PhyTimingOffset variable it shall add the new value of PhyTimingOffset to the RangingOffset.

Here is a list of potentially impacted areas
pg  line
37  46
150 5
151 36
170 4 & 9
175 3, 12, 15, & 23

Comment ID 2706 Page 53 of 56
11/5/2014 4:37:42 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
IEEE 802.3bn EPON Protocol over Coax (EPoC) TF 2nd Task Force review comments

Approved Resolution

Cl  101  SC 101.4.8.4  P  156  L  47  # 2710
Kliger, Avi  Broadcom

Comment Type  E  Comment Status  D
Subclause includes a text on rotation of the marker sequence that is not use in the text

Suggested Remedy
Withdraw or make this text for information only

Proposed Response  Response Status  W
PROPOSED REJECT.
The text is required to ensure interoperability. If one vendor rotates without zeros (as described) and another rotates with them, they will not be compatible.

Cl  101  SC 101.4.5  P  159  L  20  # 2711
Kliger, Avi  Broadcom

Comment Type  E  Comment Status  D
Mapping is done after scrambling the output of the LDPC encoder
Use "QAM symbols" instead of "QAM subcarriers"

Suggested Remedy
Change sentence to:
"After LDPC encoding and scrambling for downstream and upstream transmissions, the output bit stream of the scrambler must be mapped to QAM symbols ..."

Proposed Response  Response Status  W
PROPOSED ACCEPT.

Cl  100  SC 100.2.11.1  P  83  L  43  # 2709
Kliger, Avi  Broadcom

Comment Type  T  Comment Status  A
List of constellations include only constellations above 256-QAM and 16-QAM

Suggested Remedy
Add 64-QAM and 128-QAM to the list of constellations

Response  Response Status  C
ACCEPT.
This subclause is being converted to a table as per a comment based on remein_3bn_11_1114.pdf. These constellation are included in that table. See comment 2599
Cl 100 SC 100.2.6 P 72 L 46 # 2713
Kliger, Avi
Broadcom

Comment Type T Comment Status A
List of constellations include only constellations above 256-QAM and 16-QAM

Suggested Remedy
Add QPSK, 8-QAM, 32-QAM, 64-QAM and 128-QAM to the list of constellations

Response Response Status C
ACCEPT IN PRINCIPLE.
This subclause is being converted to a table as per a comment based on remain_3bn_11_1114.pdf. These constellation are included in that table. See comment 2599

Cl 100 SC 100.2.8.1.1 P 75 L 32 # 2714
Kliger, Avi
Broadcom

Comment Type T Comment Status A
"Allowable degradation: 1.5 dB" - is not clear, degradation in what and on what conditions it is allowed?

Suggested Remedy
Add more details

Response Response Status C
ACCEPT IN PRINCIPLE.
See 2682

Cl 101 SC 101.3.2.4 P 103 L 18 # 2716
Kliger, Avi
Broadcom

Comment Type T Comment Status A
In the US/DS column in Table 101-4 the two lower codes should be US and not DS

Suggested Remedy
Correct DS/US in Table 101-4 accordingly

Response Response Status C
ACCEPT.

Cl 101 SC 101.4.4.7 P 152 L 35 # 2717
Kliger, Avi
Broadcom

Comment Type T Comment Status A
Table allows any repeat value between 0 to 31 and ny start value between 0 to 63. This amount of flexibility is unnecessary large. I proposed to limit allowed repeat values to: 1,2,4,8 (2 bits) and correspondingly start values between 0 and 7 (3 bits).

Suggested Remedy
Change table 101-16 and corresponding text accordingly

Response Response Status C
ACCEPT IN PRINCIPLE.
Use 3 bits for Repeat and add a code for 1,2,4,8, 16.
Use 4 bits (0-15) for Start

Cl 101 SC 101.4.4.12.1 P 158 L 15 # 2718
Kliger, Avi
Broadcom

Comment Type T Comment Status A
PDR should be transmitted un-equalized

Suggested Remedy
Change sentence to:

"Always pre-equalize all transmissions other than probe and PHY Discovery Response signals"

Response Response Status C
ACCEPT.
The upstream frequencies are up to 234 MHz. The diplexer needs about 25% transition bandwidth. The available frequency for the downstream on a 6 MHz grid is 294 MHz.

Suggested Remedy

Change "> 6 dB (258 MHz – 1218 MHz)" to "> 6 dB (294 MHz – 1218 MHz)"

Response

ACCEPT IN PRINCIPLE.
In addition to suggested remedy search the draft for upper freq. range of 1212 and change to 1218 (check cl 45).