

Approved Responses

IEEE P802.3ca D2.1 25/50G-EPON Task Force 1st Working Group recirculation ballot comments

Cl **FM** SC **FM** P1 L27 # 585  
 Anslow, Pete Ciena  
 Comment Type **E** Comment Status **A** consent  
 This list should contain all of the amendments assumed to be in front of the P802.3ca draft in the queue as determined by the IEEE 802.3 Chair.  
 SuggestedRemedy  
 Change to: "as amended by IEEE Std 802.3cb-2018, IEEE Std 802.3bt-2018, IEEE Std 802.3cd-2018, IEEE Std 802.3cn-20xx, IEEE Std 802.3cg-20xx, IEEE Std 802.3cq-20xx, IEEE Std 802.3cm-20xx, and IEEE Std 802.3ch-20xx."  
 Response Response Status **C**  
 ACCEPT.

Cl **FM** SC **FM** P7 L3 # 586  
 Anslow, Pete Ciena  
 Comment Type **E** Comment Status **A** consent  
 The first paragraph of "Participants" is not in line with the latest boilerplate.  
 SuggestedRemedy  
 Change to:  
 "The following individuals were officers and members of the IEEE 802.3 Working Group at the beginning of the IEEE P802.3ca Working Group ballot."  
 Response Response Status **C**  
 ACCEPT.

Cl **FM** SC **FM** P7 L20 # 587  
 Anslow, Pete Ciena  
 Comment Type **E** Comment Status **A** consent  
 The list of WG ballot members should not include the officers of the Working Group or the Task Force who are already listed.  
 Also, the column widths are not as per the latest 802.3 FrameMaker template.  
 SuggestedRemedy  
 Remove the 8 officers names from the WG ballot list of names.  
 Change the column widths to be in accordance with the latest 802.3 FrameMaker template (so that Kochuparambil, Elizabeth does not line wrap)  
 Response Response Status **C**  
 ACCEPT.

Cl **FM** SC **FM** P11 L53 # 588  
 Anslow, Pete Ciena  
 Comment Type **E** Comment Status **A** consent  
 The text of the summary for P802.3cg does not match the latest version in P802.3cg D3.2  
 SuggestedRemedy  
 Change "balanced pair copper cable" to: "balanced pair of conductors"  
 Response Response Status **C**  
 ACCEPT.

Cl **FM** SC **FM** P12 L1 # 589  
 Anslow, Pete Ciena  
 Comment Type **E** Comment Status **A** consent  
 IEEE Std 802.3ca is not going to be approved in 2019. Also, it is not likely to be Amendment 5.  
 Amendment numbers should only be added to drafts when the assumed order has been announced by the 802.3 Chair.  
 SuggestedRemedy  
 On line 1 change "201x" to "20xx"  
 On line 3 delete "Amendment 5-"  
 Response Response Status **C**  
 ACCEPT.

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Cl 1 SC 1.3 P24 L5 # 590

Anslow, Pete Ciena  
 Comment Type TR Comment Status A

This draft adds a reference to ITU-T G.652, 2016 in addition to the existing reference to ITU-T G.652, 2009. While all of the references to G.652 in this draft have been changed to dated references to G.652-2016, this would leave the 27 existing references to G.652 in IEEE Std 802.3-2018 ambiguous as to which version is being referenced.

SuggestedRemedy

Either:  
 Change back to the D2.0 text which changes G.652-2009 to G.652-2016  
 or:  
 Bring the 27 existing undated references to G.652 in to the draft and make them all dated references.

Response Response Status W

ACCEPT IN PRINCIPLE.

Change back to the D2.0 text which changes G.652-2009 to G.652-2016. Make all G.652 references undated.

See [http://www.ieee802.org/3/ca/public/meeting\\_archive/2019/09/anslow\\_3ca\\_1\\_0919.pdf](http://www.ieee802.org/3/ca/public/meeting_archive/2019/09/anslow_3ca_1_0919.pdf) for discussion on G.652 use in IEEE Std 802.3-2018.

Cl 1 SC 1.4.90c P24 L34 # 591

Anslow, Pete Ciena  
 Comment Type E Comment Status A consent

1.4.90c should be 1.4.90b as per the editing instruction.

SuggestedRemedy

Re-number 1.4.90c to 1.4.90b

Response Response Status C

ACCEPT.

Cl 1 SC 1.4.334a P26 L13 # 592

Anslow, Pete Ciena  
 Comment Type E Comment Status A consent

The sorting order for definitions in 1.4 is defined at: [http://www.ieee802.org/3/WG\\_tools/editorial/requirements/words.html#sort](http://www.ieee802.org/3/WG_tools/editorial/requirements/words.html#sort)  
 This means that "Multi-Channel Reconciliation Layer (MCRS)" comes before "MultiGBASE-T". Also, "MultiGBASE-T" has been re-numbered to 1.4.333 due to the deletion of 1.4.294 by IEEE Std 802.3bt-2018.

SuggestedRemedy

Change the editing instruction to:  
 "Insert the following new definition after 1.4.332 "modulation error ratio (MER)" (re-numbered from 1.4.333 due to the deletion of 1.4.294 by IEEE Std 802.3bt-2018) as follows:"  
 Re-number the new definition to 1.4.332a

Response Response Status C

ACCEPT.

Cl 1 SC 1.4.334a P26 L15 # 593

Anslow, Pete Ciena  
 Comment Type E Comment Status A consent

"Multi-Channel Reconciliation Layer (MCRS)" should be: "Multi-Channel Reconciliation Sublayer (MCRS)" as per the expansion of the abbreviation in 1.4

SuggestedRemedy

Change "Multi-Channel Reconciliation Layer (MCRS)" to: "Multi-Channel Reconciliation Sublayer (MCRS)"

Response Response Status C

ACCEPT.

Cl 1 SC 1.5 P26 L42 # 594

Anslow, Pete Ciena  
 Comment Type E Comment Status A consent

The expansion of LDPC should be "low-density parity check" rather than "low-density parity code"

SuggestedRemedy

Change "parity code" to "parity check"

Response Response Status C

ACCEPT.

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Cl 30 SC 30.5.1.1.2 P31 L46 # 501

Hajduczenia, Marek Charter Communications

Comment Type TR Comment Status A

A comment against D2.0 requested changes to MAU type description. The changes did introduce an issue, though. For example, 25/10GBASE-PQG-D3 description is correct (1x25G continuous transmission / 1x10G burst mode reception, i.e., OLT MAU with continuous downstream and burst mode upstream); however, descriptions for all U type MAUs are wrong (for example, 25/10GBASE-PQG-U2, reads now 1x25G continuous transmission / 1x10G burst mode reception).

SuggestedRemedy

Change all U type MAU descriptions in 30.5.1.1.2 to indicate they are "burst-mode transmission" and "continuous reception"

Response Response Status C

ACCEPT.

Cl 30 SC 30.5.1.1.2 P31 L54 # 502

Hajduczenia, Marek Charter Communications

Comment Type E Comment Status A consent

Missing space in "1x25G continuous transmission /1x10G burst"

SuggestedRemedy

Should be "1x25G continuous transmission / 1x10G burst"

Response Response Status C

ACCEPT.

Cl 45 SC 45.2.1.23a.1 P35 L28 # 569

Kramer, Glen Broadcom

Comment Type T Comment Status A

Conflicting requirements:  
C142 PMA clause says that "The ONU shall implement automatic detection of receive path differential encoding, and switch in the decoder as appropriate."

on the other hand, PMA control register bit 1.29.15 is R/W and it enables/disables the differential encoding in both the OLT and ONU

SuggestedRemedy

Change "R/W" to  
"R/W in OLT  
RO in ONU"

Response Response Status C

ACCEPT.

Cl 45 SC 45.2.1.23a.2 P35 L40 # 609

Kramer, Glen Broadcom

Comment Type T Comment Status A post-deadline

In January 2019 meeting, we discussed the issue of MDIO addressing for separate instances of PCS and PMA (see hajduczenia\_3ca\_2\_0119.pdf and remain\_3ca\_3\_0119.pdf). We seemed to agree to use DEVAD (MMD) to address individual instances, but that agreement was never reflected in the draft. The existing Table 45-1 does provide a way to address up to 4 instances for the PMA, but there is only a single address for PCS.

It is also not clear whether the "PMA/PMD" grouping makes sense for .3ca. Our model assumes N identical instances of PMA, but only a single instance of multi-wavelength PMD.

SuggestedRemedy

Either change the existing addresses 8 through 11 to read "Separated PCS/PMA (n)" or add a separate set of addresses for PCS instances in the reserved space.

Response Response Status C

ACCEPT IN PRINCIPLE.

Insert a new subclause "143.2.6 MDIO addressing model for multi-channel architecture" with the following content:

The MDIO addressing model for multi-channel architecture is defined as follows:

- Separate physical ports on the OLT are managed by separate Station Management entities (STAs - see 45.1.2).
- Within each physical port, separate channels are addressed via port address (PRTAD - see 45.3.5).
- Within each channel, separate layers (PMA, PCS, etc.) are addressed via device address (DEVAD - see 45.3.6) as shown in Table 45-1.
- A common PMD that spans multiple channels is addressed via the numerically-lowest PRTAD associated with that PMD.

Cl 45 SC 45.2.3.6 P45 L15 # 553

Kramer, Glen Broadcom

Comment Type T Comment Status A

Clause 45 uses terminology incorrect terminology. There is no 25/25GBASE-PQ PCS type.

SuggestedRemedy

Replace 7 occurrences of 25/25GBASE-PQ with 25GBASE-PQ

Response Response Status C

ACCEPT.

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**Cl 45**    **SC 45.2.3.45a**                      **P49**                      **L54**                      # **596**  
 Anslow, Pete                                      Ciena  
*Comment Type*    **E**                      *Comment Status*    **A**                                      *consent*  
 Bottom ruling missing for Table 217a at the foot of page 49  
*SuggestedRemedy*  
 Uncheck "Draw Bottom Ruling on Last Sheet Only"  
*Response*                                      *Response Status*    **C**  
 ACCEPT.

**Cl 45**    **SC 45.5.3.3**                              **P53**                      **L5**                      # **597**  
 Anslow, Pete                                      Ciena  
*Comment Type*    **E**                      *Comment Status*    **A**                                      *consent*  
 This draft is assumed to be applied after P802.3cg and P802.3ch. The P802.3ch draft adds items up to "MM231" in the D2.1 version  
*SuggestedRemedy*  
 Change "MM152" to be "MM232"  
*Response*                                      *Response Status*    **C**  
 ACCEPT.

**Cl 56**    **SC 56.1.2**                                      **P55**                      **L11**                      # **504**  
 Hajduczenia, Marek                              Charter Communications  
*Comment Type*    **T**                      *Comment Status*    **A**  
 A comment against D2.0 added footnotes to 25GMII instances. Footnote a) implies the use of 25GMII and XGMII halves to achieve assymmetric data rates. Yet 25GMII is defined as capable of 25G and 10G operation, hence the reference to XGMII is not needed and may be considered confusing.  
 To further add to confusion, we have also heavily used the term "xMII" to imply the 25GMII or XGMII when the actual clock rate across the MII does not matter for the purpose of description. There are in total 85 instances where xMII is used in the draft (drawings and text alike).  
 To avoid discussion on actual physical implementation of 25GMII and XGMII, it might be best to use a generic term we already define (xMII) where referring to a generic MII between RS and PCS and not distinguish the speed unless specifically needed.  
*SuggestedRemedy*  
 Suggest to change "25GMII" with "xMII" in Figures 141-1, 142-1, 144-1, Figure 56-5a, and Figure 143-17  
*Response*                                      *Response Status*    **C**  
 ACCEPT IN PRINCIPLE.  
  
 In 143.4.1, change "The 25GMII interfaces have the following characteristics" to "The 25GMII interface is defined in Clause 106." - mark the cross reference accordingly. Strike the following list (3 items).  
  
 Editor has license to verify the use of 25GMII and XGMII terms in the draft and align them as necessary.

**Cl 67**    **SC 67.1**    **P64**                      **L16**                      # **557**  
 Kramer, Glen    Broadcom  
*Comment Type*    **E**                      *Comment Status*    **A**    *consent*  
 In table 67-1, link types 25/25PQ and 25/10PQ are missing hyphen before the "PQ"  
*SuggestedRemedy*  
 Add hyphen in 4 places  
*Response*    *Response Status*    **C**  
 ACCEPT.

Cl 141 SC 141.1.3 P65 L34 # 562

Kramer, Glen Broadcom  
 Comment Type E Comment Status A consent

"Nx25G-EPON PHY Link Types supporting 50 Gb/s use wavelength division multiplexing on two wavelengths; two wavelengths are listed for these links in Table 141-1 through Table 141-5."

This sentence is confuisng, as it seems like to unrelated sentences joined into one. The original text came as comment #356 against D2.0 and it had the two senetences linked properly.

*SuggestedRemedy*

Link the two sentences as it was in the original comment:  
 "Nx25G-EPON PHY Link Types supporting 50 Gb/s use wavelength division multiplexing on two wavelengths \*and hence\* two wavelengths are listed for these links in Table 141-1 through Table 141-5."

Response Response Status C  
 ACCEPT IN PRINCIPLE.

Link the two sentences as it was in the original comment:  
 "Nx25G-EPON PHY Link Types supporting 50 Gb/s use wavelength division multiplexing on two wavelengths \*and hence\* two wavelengths are listed for these links in Table 141-1 through Table 141-5."

Cl 141 SC 141.2.6 P69 L12 # 561

Kramer, Glen Broadcom  
 Comment Type T Comment Status A

Table 144-6 has several issues:  
 1) Some rows refer to singular PMD, some refere to plural PMDs.  
 2) "PMDs use a PON P2MP protocol" is wrong. PMDs do not use any protocols. They convert serial optical stream to electrical and vise versa.  
 3) the only table with a caption "Explanation". Most other tables use caption "Description"  
 4) "PMD power budget class" should be called "PMD power class"  
 5) Descriptions for most rows properly point to the relevant PMD class, except the description for the coexistence parameter. This description just repeats the already given definition.

*SuggestedRemedy*

Modify the table 141-6 as shown in kramer\_3ca\_4\_0919.pdf. Make cross-references live.

Response Response Status C  
 ACCEPT.

Cl 141 SC 141.3.1.1 P71 L51 # 598

Anslow, Pete Ciena  
 Comment Type ER Comment Status A XREF

"see 142.x.x.x" renders this draft unready for progression to SA ballot - hence a required comment

*SuggestedRemedy*

Change "see 142.x.x.x" to a suitable cross-reference

Response Response Status W  
 ACCEPT IN PRINCIPLE.

See comment #565

Cl 141 SC 141.3.1.1 P71 L51 # 565

Kramer, Glen Broadcom  
 Comment Type T Comment Status A XREF

Rereference to 142.x.x.x

*SuggestedRemedy*

Use142.4.1. make it live.

Response Response Status C  
 ACCEPT.

Cl 141 SC 141.3.1.1 P71 L52 # 599

Anslow, Pete Ciena  
 Comment Type T Comment Status A

"shall be as illustrated in Table 141-10" is conflicting language.  
 "shall" is appropriate for a normative requirement.  
 "illustrated" is appropriate for something informative.

*SuggestedRemedy*

Change "shall be as illustrated in Table 141-10" to: "shall be as given in Table 141-10"

Response Response Status C  
 ACCEPT IN PRINCIPLE.

Change "shall be as illustrated in Table 141-10" to: "shall be as defined in Table 141-10"

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Cl 141 SC 141.3.1.1 P71 L52 # 503  
 Hajduczenia, Marek Charter Communications  
 Comment Type ER Comment Status A XREF  
 Cross reference is missing (marked in red)  
 SuggestedRemedy  
 Not sure where the piinter should be do, but x.x.x.x will not work for sure :)  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 See comment #565

Cl 141 SC 141.3.1.3 P72 L41 # 600  
 Anslow, Pete Ciena  
 Comment Type E Comment Status A consent  
 In "PMD\_UNITDATA[i].request(tx\_bit) (where i = 0 or 1)" i is a variable and should be italic  
 SuggestedRemedy  
 Change "I" to be in italic font here (2 places) and anywhere else in the draft that this occurs  
 Response Response Status C  
 ACCEPT.

Cl 141 SC 141.5.1 P76 L19 # 506  
 Hajduczenia, Marek Charter Communications  
 Comment Type ER Comment Status A MASK  
 Editor's note with no text at this time.  
 SuggestedRemedy  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 See comment #601

Cl 141 SC 141.5.1 P76 L19 # 601  
 Anslow, Pete Ciena  
 Comment Type TR Comment Status A MASK; 143.4.4  
 The editor's note in 141.5.1, the reference to non-existent 143.4.4, and the editor's note in 143.4.1.2 render this draft unready for progression to SA ballot - hence a required comment  
 SuggestedRemedy  
 Include a new eye mask definition and remove editor's note in 141.5.1.  
 Populate 143.4.4 with suitable "details" in 143.4.4 and remove editor's note in 143.4.1.2  
 Response Response Status W  
 ACCEPT IN PRINCIPLE.

Remove the editor's note page 76, line 19.  
 The commenter's position (see comment #417 against D2.0) was that the proposed eye masks are tighter than they needed to be for the FEC we are using. The view of 802.3ca optics suppliers is that they are consistent with existing 25G EML and DML technology and are not burdensome. Note also that the purpose of higher FEC gain is to allow a smaller eye opening at the RX at worst case loss/noise, not to allow for or encourage a significantly more closed eye at the TX.  
 For proposed text for 143.4.4, see post-deadline comment #608.

Cl 141 SC 141.5.2 P78 L11 # 513  
 Lee, Han Hyub ETRI  
 Comment Type ER Comment Status A  
 Missing Unit of channel wavelengths  
 SuggestedRemedy  
 Insert 'nm' as Unit  
 Response Response Status W  
 ACCEPT.

Cl 141 SC 141.5.2 P78 L11 # 512  
 Lee, Han Hyub ETRI  
 Comment Type E Comment Status A consent  
 To be consistent with other tables, the first parameter should be Signaling rate (range)  
 SuggestedRemedy  
 Change the order of Channel wavelength ranges and Signaling rate  
 Response Response Status C  
 ACCEPT.

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IEEE P802.3ca D2.1 25/50G-EPON Task Force 1st Working Group recirculation ballot comments

Cl 141 SC 141.6.1 P82 L12 # 514  
 Lee, Han Hyub ETRI  
 Comment Type ER Comment Status A  
 Missing Unit of channel wavelengths  
 SuggestedRemedy  
 Insert 'nm' as Unit  
 Response Response Status W  
 ACCEPT.

Cl 141 SC 141.6.1 P82 L18 # 515  
 Lee, Han Hyub ETRI  
 Comment Type ER Comment Status A  
 Missing Unit of Average launch power, each channel (max)  
 SuggestedRemedy  
 Insert 'dBm' as Unit  
 Response Response Status W  
 ACCEPT.

Cl 141 SC 141.6.1 P83 L11 # 516  
 Lee, Han Hyub ETRI  
 Comment Type E Comment Status A consent  
 To be consistent with other tables, the first parameter should be Signaling rate (range)  
 SuggestedRemedy  
 Change the order of Channel wavelength ranges and Signaling rate  
 Response Response Status C  
 ACCEPT.

Cl 141 SC 141.7.13.2 P89 L26 # 517  
 Lee, Han Hyub ETRI  
 Comment Type T Comment Status A  
 TP4 should be change to TP4 [i]  
 SuggestedRemedy  
 Change TP4 to TP4 [i]  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Change per comment and also change TP4 to TP4 [i] in 141.7.13.2

Cl 141 SC 141.10.4.1 P98 L24 # 602  
 Anslow, Pete Ciena  
 Comment Type T Comment Status A  
 Comment #101 against D2.0 clarified the rules for the PICS "Support" column:  
 for items with status of:  
 "M" change the Support entry to "Yes [ ]"  
 "O" change the Support entry to "Yes [ ] No [ ]"  
 "Something:M" change the Support entry to "Yes [ ] N/A [ ]"  
 "Something:O" change the Support entry to "Yes [ ] No [ ] N/A [ ]"  
 "O.Number" change the Support entry to "Yes [ ] No [ ]"  
 "O/Number" change the Support entry to "Yes [ ] No [ ]"  
 SuggestedRemedy  
 For Items FN7, FN8, and FN9 change the entry to "Yes [ ] No [ ]"  
 In 141.10.4.42 item OM10 change the entry to "Yes [ ] No [ ]"  
 Response Response Status C  
 ACCEPT.

Cl 142 SC 142.1.1.2 P111 L40 # 507  
 Hajduczenia, Marek Charter Communications  
 Comment Type E Comment Status A consent  
 "... the following conventions are used in this clause" - well, it is not just in Clause 142,  
 really.  
 SuggestedRemedy  
 Change to "the following conventions are used:"  
 Response Response Status C  
 ACCEPT.





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Cl 142 SC 142.1.3.1 P116 L52 # 576  
 Kramer, Glen Broadcom  
 Comment Type TR Comment Status A SBD  
 The transmisson order of SBD needs further clarification. For various numeric constants in PCS, we show transmission order as LSB to MSB.  
 The SBD pattern is different (for consistency with 802.3av). The SBD pattern is constructed using BD and SP values defined in 802.3av( SBD257 = 1 + BD[64] + SP[64] + <inv>BD[64] + <inv>SP[64], see slide 11 in [http://www.ieee802.org/3/ca/public/meeting\\_archive/2018/01/kramer\\_3ca\\_2\\_0118.pdf](http://www.ieee802.org/3/ca/public/meeting_archive/2018/01/kramer_3ca_2_0118.pdf). The SP and BD are transmitted most-significant byte first, each byte is transmitted LSB first.

SuggestedRemedy  
 There are two options:  
 #1) To clarify SBD transmission order, add a binary sequence, as it was done in 802.3av.  
 #2) Don't define SBD value in 802.3ca, just reference SP and BD in 802.3av.

The commenter prefers option #1. Both options are shown in [kramer\\_3ca\\_7\\_0919.pdf](http://www.ieee802.org/3/ca/public/meeting_archive/2019/09/kramer_3ca_7_0919.pdf)  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Use option #1 per [http://www.ieee802.org/3/ca/public/meeting\\_archive/2019/09/kramer\\_3ca\\_7\\_0919.pdf](http://www.ieee802.org/3/ca/public/meeting_archive/2019/09/kramer_3ca_7_0919.pdf), but change SP2 to SP3.

Cl 142 SC 142.1.3.1 P116 L54 # 540  
 Lynskey, Eric Broadcom  
 Comment Type T Comment Status A SBD  
 The SBD is written with its LSB on the left, and MSB on the right. The bit order should be specified, similar to how it was done in Clause 76.  
 SuggestedRemedy  
 The transmission bit sequence is binary 1 followed by:  
 1111 1101 0000 0010 0001 1000 1010 0111 1010 0011 1001 0010 1101 1101 1001 1010  
 1101 0110 0001 1111 0001 1011 0100 1000 0001 1011 0001 1010 0010 0111 1101 0101  
 0000 0010 1111 1101 1110 0111 0101 1000 0101 1100 0110 1101 0010 0010 0110 0101  
 0010 1001 1110 0000 1110 0100 1011 0111 1110 0100 1110 0101 1101 1000 0010 1010  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 See comment #576

Cl 142 SC 142.2.2 P119 L12 # 499  
 Hajduczenia, Marek Charter Communications  
 Comment Type E Comment Status A consent  
 "64B/66B encoder" should be "64B/66B Encoder" (capitalization issue)  
 "LDPC FEC encoder" should be "LDPC FEC Encoder" (capitaliation issue)  
 SuggestedRemedy  
 per comment  
 Response Response Status C  
 ACCEPT.

Cl 142 SC 142.2.2 P119 L23 # 498  
 Hajduczenia, Marek Charter Communications  
 Comment Type E Comment Status A consent  
 Different capitalizations of XBUFFER. There are 4 instances of XBUFFER and 13 instances of xBuffer (which is what I believe to be the right capitalization)  
 SuggestedRemedy  
 Change all instances (cap sensitive) of XBUFFER to xBuffer (all seem to be limited to Figure 142-5)  
 Response Response Status C  
 ACCEPT.

Cl 142 SC 142.2.2 P119 L33 # 500  
 Hajduczenia, Marek Charter Communications  
 Comment Type E Comment Status A consent  
 I do not believe INPUT\_FIFO and TX\_FIFO exist (are defined) anymore.  
 SuggestedRemedy  
 Change INPUT\_FIFO to InputFifo  
 Change TX\_FIFO to TxFifo  
 Response Response Status C  
 ACCEPT.

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Cl 142 SC 142.2.4.1 P120 L16 # 577  
 Wienckowski, Natalie General Motors  
 Comment Type E Comment Status A consent  
 In text, where this improves clarity, follow the IEEE Editorial Style Manual: Use spaces instead of commas between numbers in tens or hundreds of thousands (e.g., 62 000, 100 000, but 4000). The groups should be separated by a space, and not a comma, period, or dash.  
 SuggestedRemedy  
 Change: = 3072 x 17664  
 To: = 3 072 x 17 664  
 Response Response Status C  
 ACCEPT.

Cl 142 SC 142.2.4.2 P123 L11 # 580  
 Wienckowski, Natalie General Motors  
 Comment Type E Comment Status A consent  
 In text, where this improves clarity, follow the IEEE Editorial Style Manual: Use spaces instead of commas between numbers in tens or hundreds of thousands (e.g., 62 000, 100 000, but 4000). The groups should be separated by a space, and not a comma, period, or dash.  
 SuggestedRemedy  
 Change: 14392  
 To: 14 392  
 Response Response Status C  
 ACCEPT.

Cl 142 SC 142.2.4.2 P123 L8 # 578  
 Wienckowski, Natalie General Motors  
 Comment Type E Comment Status A consent  
 In text, where this improves clarity, follow the IEEE Editorial Style Manual: Use spaces instead of commas between numbers in tens or hundreds of thousands (e.g., 62 000, 100 000, but 4000). The groups should be separated by a space, and not a comma, period, or dash.  
 SuggestedRemedy  
 Change: 14592  
 To: 14 592  
 Also on P123 L12  
 Response Response Status C  
 ACCEPT.

Cl 142 SC 142.2.4.2 P123 L17 # 581  
 Wienckowski, Natalie General Motors  
 Comment Type E Comment Status A consent  
 In text, where this improves clarity, follow the IEEE Editorial Style Manual: Use spaces instead of commas between numbers in tens or hundreds of thousands (e.g., 62 000, 100 000, but 4000). The groups should be separated by a space, and not a comma, period, or dash.  
 SuggestedRemedy  
 Change: 16962  
 To: 16 962  
 Response Response Status C  
 ACCEPT.

Cl 142 SC 142.2.4.2 P123 L10 # 579  
 Wienckowski, Natalie General Motors  
 Comment Type E Comment Status A consent  
 In text, where this improves clarity, follow the IEEE Editorial Style Manual: Use spaces instead of commas between numbers in tens or hundreds of thousands (e.g., 62 000, 100 000, but 4000). The groups should be separated by a space, and not a comma, period, or dash.  
 SuggestedRemedy  
 Change: 17664  
 To: 17 664  
 Response Response Status C  
 ACCEPT.

Cl 142 SC 142.2.4.3 P123 L49 # 550

Laubach, Mark Broadcom

Comment Type T Comment Status A

Change to improve clarity based on feedback from previous comment resolution against D2.0.

*SuggestedRemedy*

Insert new paragraph after sub-clause title and before paragraph beginning with "For the purposes here":

The Interleaver and De-interleaver are realized by using Omega Networks and Reverse-Omega Networks. An Omega network is a multistage interconnection network that uses multiple stages of switches. At each stage, the switches can be controlled independently to "pass-through" or "cross". The outputs from each stage are connected to the inputs of the next stage using an interconnection system. The details of interconnection and switch programming are shown in Figure 142-9.

Response Response Status C

ACCEPT IN PRINCIPLE.

Insert new paragraph after sub-clause title and before paragraph beginning with "For the purposes here":

The Interleaver and De-interleaver are realized by using Omega Networks and Reverse-Omega Networks. An Omega network is a multi-stage interconnection network that uses multiple stages of switches. At each stage, the switches may be controlled independently to "pass-through" or "cross". The outputs from each stage are connected to the inputs of the next stage using an interconnection system. The details of interconnection and switch programming are shown in Figure 142-9.

Cl 142 SC 142.2.4.3 P123 L50 # 551

Laubach, Mark Broadcom

Comment Type T Comment Status A

Change to improve clarity based on feedback from previous comment resolution against D2.0.

*SuggestedRemedy*

Replace paragraph beginning with "For the purposes here" with the following paragraph:

For the purposes here: "De-interleaver" refers to the mapping from transmitted sequence to encoding/decoding sequence (including user and parity). This is implemented using "Reverse-Omega (R->L)" (i.e., data input from the right side and output from the left). "Interleaver" refers to the mapping from encoding/decoding sequence to transmitted sequence. This is implemented as "Omega (L->R)" (i.e., data input from the left side and output from the right). Note that the Interleaver and De-interleaver area reverse mapping (permutation) of each other. That is, the Omega and Reverse-Omega Networks are just the reverse of the data flow of each other.

Response Response Status C

ACCEPT IN PRINCIPLE.

Replace paragraph beginning with "For the purposes here" with the following paragraph:

"De-interleaver" refers to the mapping from transmitted sequence to encoding/decoding sequence (including user and parity). This is implemented using "Reverse-Omega (R->L)" (i.e., data input from the right side and output from the left). "Interleaver" refers to the mapping from encoding/decoding sequence to transmitted sequence. This is implemented as "Omega (L->R)" (i.e., data input from the left side and output from the right). Note that the Interleaver and De-interleaver area reverse mapping (permutation) of each other. That is, the Omega and Reverse-Omega Networks are just the reverse of the data flow of each other.

Cl 142 SC 142.2.4.3 P127 L1 # 548

Laubach, Mark Broadcom

Comment Type T Comment Status A

Change to improve clarity based on feedback from previous comment resolution against D2.0.

*SuggestedRemedy*

Change "57 independent user interleavers" to "57 independent user omega networks"

Response Response Status C

ACCEPT IN PRINCIPLE.

Change "57 independent user interleavers" to "57 independent user Omega Networks"

Make the capitalization of "Omega Network" consistent in the text and figures.

Cl 142 SC 142.2.4.3 P128 L48 # 549  
 Laubach, Mark Broadcom  
 Comment Type T Comment Status A  
 Change to improve clarity based on feedback from previous comment resolution against D2.0.  
 SuggestedRemedy  
 Change "10 independent parity Interleavers" to "10 independent parity omega networks"  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Change "10 independent parity Interleavers" to "10 independent parity Omega Networks"

Cl 142 SC 142.2.5.3 P133 L24 # 560  
 Kramer, Glen Broadcom  
 Comment Type T Comment Status A  
 In D2.1, we have renamed FecDecode to PassToFecDecoder (see comment #358) to more accurately reflect the behavior of the function. We should do the same with its counterpart function FecEncode. These functions do not perform any action of encoding or decoding (which take relatively long time in LDPC). These functions only pass the data from one functional block to another and return immediately.  
 SuggestedRemedy  
 Rename FecEncode to PassToFecEncoder in 142.2.5.3 and in SD 142-10, Also move the lines that set TxInput<256:0> and TxInput<257> to be next to each other.  
 The exact changes are shown in kramer\_3ca\_3\_0919.pdf.  
 Response Response Status C  
 ACCEPT.

Cl 142 SC 142.2.5.3 P133 L32 # 555  
 Kramer, Glen Broadcom  
 Comment Type T Comment Status A  
 Definition of function PassToPMA(v) mentions PMA\_UNITDATA[i].request( v ), which is in a different clause. A reference would be very helpful here.  
 SuggestedRemedy  
 Add "(see 142.4.1.1)" after "PMA\_UNITDATA[i].request( v )"  
 Response Response Status C  
 ACCEPT.  
 Comment is against page 132, line 51.

Cl 142 SC 142.2.5.3 P133 L35 # 563  
 Kramer, Glen Broadcom  
 Comment Type TR Comment Status A  
 Definition of ResetScrambler() function is wrong. We don't reset to IEI\_EQ anymore. Also, the definition said that function resets both scrambler and descrambler. This is not correct. It only resets one, depending on whether it is called in the ONU or the OLT.  
 SuggestedRemedy  
 1) Use the following definition of ResetScrambler() function in 142.2.5.3:  
 ResetScrambler()  
 Description: This function resets the scrambler to the value of 0x3-(FF)<sub>7</sub>, i.e., each of the bits S0 through S57 of the scrambler shift register is set to 1 (see Figure 49–8).  
 2) Replace the definition of ResetScrambler() function in 142.3.5.3 with a new function ResetDescrambler  
 ResetDescrambler()  
 Description: This function resets the descrambler to the value of 0x3-(FF)<sub>7</sub>, i.e., each of the bits S0 through S57 of the descrambler shift register is set to 1 (see Figure 49–10).  
 3) In SD 142-18, replace ResetScrambler() with ResetDescrambler().  
 4) In 142.2.2, replace the sentence "In the ONU, at the beginning of each burst, the scrambler is initialized with the value of 0x3-(FF)7, i.e., each of the bits S0 through S57 is set to 1 (see Figure 49–8)." with  
 "In the ONU, at the beginning of each burst, the scrambler is reset to a known initialization value (see the definition of ResetScrambler() function in 142.2.5.3)."  
 5) In 142.3.3, replace the sentence "In the OLT, at the beginning of each burst, the descrambler is initialized with the value of 0x3-(FF)7, i.e., each of the bits S0 through S57 is set to 1 (see Figure 49–8)." with  
 "In the OLT, at the beginning of each burst, the descrambler is reset to a known initialization value (see the definition of ResetDescrambler() function in 142.3.5.3)."  
 Response Response Status C  
 ACCEPT.

Approved Responses

IEEE P802.3ca D2.1 25/50G-EPON Task Force 1st Working Group recirculation ballot comments

Cl 142 SC 142.3.5.1 P139 L16 # 582  
 Wienckowski, Natalie General Motors  
 Comment Type ER Comment Status A  
 In text, where this improves clarity, follow the IEEE Editorial Style Manual: Use spaces instead of commas between numbers in tens or hundreds of thousands (e.g., 62 000, 100 000, but 4000). The groups should be separated by a space, and not a comma, period, or dash.  
 SuggestedRemedy  
 Change: 16,962  
 To: 16 962  
 Response Response Status W  
 ACCEPT.

Cl 142 SC 142.3.5.4 P144 L1 # 558  
 Kramer, Glen Broadcom  
 Comment Type TR Comment Status A  
 Comment #485 against D2.0 was correct. The state GET\_NEXT\_BLOCK contains a blocking function that takes 257 bit times to execute. While this function is executing, no exit conditions from this block are tested. This causes the SignalFail and MatchFound conditions to be tested simultaneously. So, we need to handle the case when both conditions evaluate to true.  
 SuggestedRemedy  
 change the State diagram 142-15 as shown in kramer\_3ca\_2\_0919.pdf.  
 Response Response Status C  
 ACCEPT.

Cl 142 SC 142.4 P144 L47 # 564  
 Kramer, Glen Broadcom  
 Comment Type T Comment Status A  
 The text under 142.4 is out of place. This section should be an introduction to the entire PMA. Instead it focuses only of the deifferential encoding, which is a small part of PMA.  
 The following text is confusing and serves no purpose:  
 "(output bits represent changes to succeeding input values rather than in respect to a given reference)"  
 SuggestedRemedy  
 Use the following text:

The PMA adopts the serial PMD service interface (PMD\_UNITDATA, see 141.3.3 and 141.34) to the 257-bit wide interface of the PCS (PMA\_UNITDATA, see 142.4.1). Where Nx25G-EPON operates over multiple channels, the PMA sublayer includes multiple identical instances of the transmit data path and/or the receive data path.

In the downstream direction (from the OLT to the ONUs), the PMA includes a differential encoding option (see 142.4.2 and 142.4.3). This encoding technique facilitates the use of lower bandwidth receivers at the ONUs.

Response Response Status C  
 ACCEPT IN PRINCIPLE.

Use the following text:

The PMA adopts the serial PMD service interface (PMD\_UNITDATA, see 141.3.3 and 141.3.4) to the 257-bit wide interface of the PCS (PMA\_UNITDATA, see 142.4.1). Where Nx25G-EPON operates over multiple channels, the PMA sublayer includes multiple identical instances of the transmit data path and/or the receive data path.

In the downstream direction (from the OLT to the ONUs), the PMA includes a differential encoding option (see 142.4.2 and 142.4.3). This encoding technique facilitates the use of lower bandwidth receivers at the ONUs.

Cl 142 SC 142.4.1.1.1 P146 L52 # 566  
 Kramer, Glen Broadcom  
 Comment Type E Comment Status A consent  
 In "PCS Transmit State Diagram", the "state diagram" should be lower case  
 SuggestedRemedy  
 Change to lower case  
 Response Response Status C  
 ACCEPT.

Approved Responses

IEEE P802.3ca D2.1 25/50G-EPON Task Force 1st Working Group recirculation ballot comments

Cl 142 SC 142.4.1.2.1 P146 L45 # 603  
 Anslow, Pete Ciena  
 Comment Type E Comment Status A consent  
 "Figure 142-15" should be a cross-reference  
 SuggestedRemedy  
 Change "Figure 142-15" to be a cross-reference  
 Response Response Status C  
 ACCEPT.

Cl 142 SC 142.4.2 P148 L1 # 546  
 Powell, William Nokia  
 Comment Type T Comment Status A  
 A D2.0 commenter expressed concern over this section:  
 - Not sure if we're dealing with serial bits or 257b vectors  
 - Not happy with Fig. 142-19 Figure output going to the PMA (already in the PMA)  
 SuggestedRemedy  
 Implement the proposed Fig. 142-19 and 142-20 changes shown in RED in  
 powell\_3ca\_1\_0919.pdf  
 Response Response Status C  
 ACCEPT.

Cl 142A SC 142A.2 P266 L22 # 534  
 Lynskey, Eric Broadcom  
 Comment Type T Comment Status A  
 Table 142A-6 shows the bits Post Interleaver.  
 SuggestedRemedy  
 Change Pre to Post.  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Changes per comment + change "Pre Interleaver" to "pre-Interleaver" + change "Post Interleaver" to "post-Interleaver" in Annex 142A.

Cl 143 SC 143.3.1.2.3 P165 L36 # 509  
 Hajduczenia, Marek Charter Communications  
 Comment Type E Comment Status A consent  
 Inconsistent primitive formatting. We had rules on variable formatting, etc. but right now it seems that primitives are formatted inconsistently. In some locations, the whole primitive is italicised, in others it is not.  
 SuggestedRemedy  
 For consistency, it seems a better approach would be to italicize names of primitives as a whole.  
 Response Response Status C  
 ACCEPT.

Cl 143 SC 143.3.3.3 P170 L32 # 510  
 Hajduczenia, Marek Charter Communications  
 Comment Type E Comment Status A consent  
 Compound adjective: application specific  
 SuggestedRemedy  
 Change to "application-specific"  
 Response Response Status C  
 ACCEPT.

Cl 143 SC 143.3.3.4 P170 L36 # 537  
 Lynskey, Eric Broadcom  
 Comment Type T Comment Status A Encryption  
 Add Encryption Enable and Encryption Key variables in the correct alphabetical order.  
 SuggestedRemedy  
 E  
 Type: integer  
 Description: Reserved for encryption.  
 K  
 Type: integer  
 Description: Reserved for encryption.  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 See comment #536

CI 143 SC 143.3.3.4 P171 L41 # 547  
 Powell, William Nokia  
 Comment Type E Comment Status A consent  
 rRow Variable:  
 Current Last Sentence:  
 The value of this variable is synchronized to wRow and is equal  
 wRow - 1.  
 Missing preposition "to"  
 SuggestedRemedy  
 Change wording to:  
 The value of this variable is synchronized to wRow and is equal to wRow - 1.  
 -or-  
 The value of this variable is synchronized to wRow and equals wRow - 1.  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Change wording to:  
 The value of this variable is synchronized to wRow and is equal to wRow - 1.

CI 143 SC 143.3.3.5 P172 L20 # 568  
 Kramer, Glen Broadcom  
 Comment Type TR Comment Status A  
 Conventions in Table 142-1 are not applied consistently to code fragments throughout the  
 draft.  
 SuggestedRemedy  
 Apply conventions to:  
 1) EnvContHeader() function, page 172  
 2) EnvStartHeader() function, page 172  
 3) GetMacBlock() function, page 173  
 4) IsHeader() function, page 179  
 5) IsMisaligned() function, page 179  
 6) OutputToMac() function, page 179  
 7) ProcessTimestamp() function, page 198  
 8) RegAllowed variable, page 227  
 9) GetResponseCode() function, page 249  
 10) UpdateChState() function, page 250  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Change in Table 142-1  
 - title from "State diagram operators" to "Operators used in state diagrams and functions"  
 - change "=" to "==" (equals)  
 - add "=" after "<=" (same row)  
 - change "Assignment operator" to "Assignment operator (in state diagrams)" + add a new  
 entry in the same row "Assignment operator (in function code)"  
 Update in state diagrams: change "=" to "==".  
 Update DeregistrationTrigger and RegAllowed functions to match new conventions. Scrub  
 other functions for potential conflicts.

CI 143 SC 143.3.3.5 P172 L25 # 535  
 Lynskey, Eric Broadcom  
 Comment Type T Comment Status A  
 Earlier in the draft, it is stated that bit 17 is set to 0 by the transmitter. That should be  
 shown here.  
 SuggestedRemedy  
 In both EnvContHeader and EnvStartHeader, add:  
 hdr<17> = 0; // Reserved  
 Response Response Status C  
 ACCEPT.

Cl 143 SC 143.3.3.5 P172 L27 # 536

Lynskey, Eric Broadcom  
 Comment Type T Comment Status A Encryption

The E and K bits are previously defined in 143.3.2, but there is no way to set either of these bits in the ESH or ECH.

*SuggestedRemedy*

In both EnvContHeader and EnvStartHeader, add:  
 hdr<46> = E; // Encryption enable  
 hdr<47> = K; // Encryption Key

Response Response Status C

ACCEPT IN PRINCIPLE.

In both EnvContHeader and EnvStartHeader, add:  
 hdr<46> = EncEnable; // Encryption enabled flag  
 hdr<47> = EncKey; // Encryption key index

In Figure 143-10, change "E" to "E - Encryption enabled flag (see EncEnable in 143.3.3.4)", change "K" to "K - Encryption key index (see EncKey in 143.3.3.4)"

Add variables in 143.3.3.4 as follows:

EncEnable  
 Type: Boolean  
 Description: Encryption enabled flag, not for use by IEEE Std 802.3.

EncKey  
 Type: one-bit integer  
 Description: Encryption key index, not for use by IEEE Std 802.3.

Cl 143 SC 143.3.3.6.1 P175 L23 # 556

Kramer, Glen Broadcom  
 Comment Type T Comment Status A

MCRS Input Process has a transition labelled "LinkId[wCol] != 0x00-00". We have defined a names constant for 0x00-00. It is called ESC\_LLID.

*SuggestedRemedy*

- 1) Replace the SD 143-12 with the one shown in kramer\_3ca\_1\_0919.pdf
- 2) Add the following definition to 143.3.3.3:  
 ESC\_LLID  
 See Table 144-1

Response Response Status C

ACCEPT.

Cl 143 SC 143.3.4.4 P179 L42 # 511

Hajduczenia, Marek Charter Communications  
 Comment Type E Comment Status A consent

Comment #366 fixed one location in the draft; one more instance is missing

*SuggestedRemedy*

Change "octet\_index = 0; octet\_index < 8," to "octet\_index = 0; octet\_index < 8;"

Response Response Status C

ACCEPT.

Cl 143 SC 143.3.4.4 P180 L7 # 567

Kramer, Glen Broadcom  
 Comment Type T Comment Status A

We provided a very precise definition for GetMacOctet function, giving the exact details of how a data octet is constructed from multiple PLS\_DATA.requests. But we only have very high-level, imprecise definition for the SetMacOctet function. No details are given on how 8 bit values are passed to MAC 1 bit at a time.

*SuggestedRemedy*

Replace the definition of SetMacOctet with the definition provided in kramer\_3ca\_5\_0919.pdf. Observe the italics and make the links live.

Response Response Status C

ACCEPT.

Cl 143 SC 143.3.4.5.2 P182 L17 # 538

Lynskey, Eric Broadcom  
 Comment Type T Comment Status A

Bit ordering in the PROCESS\_HEADER state of Figure 143-16 should be flipped.

*SuggestedRemedy*

Change to OutEQ<63:48> and OutEQ<39:18>.

Response Response Status C

ACCEPT.



Approved Responses

IEEE P802.3ca D2.1 25/50G-EPON Task Force 1st Working Group recirculation ballot comments

Cl 143 SC 143.3.4.5.2 P182 L22 # 559  
 Kramer, Glen Broadcom  
 Comment Type TR Comment Status A  
 State diagram 143-16 misses a label in a transition from INSERT\_PREAMBLE to CHECK\_ENV\_SIZE  
 SuggestedRemedy  
 Add label UCT  
 Response Response Status C  
 ACCEPT.

Cl 143 SC 143.4.1.2 P185 L8 # 608  
 Kramer, Glen Broadcom  
 Comment Type TR Comment Status A post-deadline; 143.4.4  
 Editor's note requires a new sub-clause 143.4.4 on Asymmetric rate operation to be provided.  
 SuggestedRemedy  
 1) Add sub-clause 143.4.4 as shown in kramer\_3ca\_8\_0919.pdf.  
 2) Make cross-reference link live  
 3) Remove editor's note  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.

1) Add sub-clause 143.4.4 as shown in  
[http://www.ieee802.org/3/ca/public/meeting\\_archive/2019/09/kramer\\_3ca\\_8\\_0919.pdf](http://www.ieee802.org/3/ca/public/meeting_archive/2019/09/kramer_3ca_8_0919.pdf), with the following changes  
 - insert the following sentence before "The usage of the placeholder ...": "The padding EQs are interleaved with information EQs using the following pattern:  
 <information EQ> <padding EQ> <padding EQ> <information EQ> <padding EQ>."  
 - change "2 or 3 EQs" to "alternating 2/3 EQs"  
 - replace "placeholder" with "padding"  
 2) Make cross-reference link live  
 3) Remove editor's note

Cl 143 SC 143.4.1.2 P186 L8 # 505  
 Hajduczenia, Marek Charter Communications  
 Comment Type ER Comment Status A  
 Editor's note with no text at this time.  
 SuggestedRemedy

Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 See comment #608.

Cl 143 SC 143.5.4.2 P189 L17 # 539  
 Lynskey, Eric Broadcom  
 Comment Type T Comment Status A  
 Missing PICS. There are four shall statements in 143.4.1.1, but only three PICS entries.

SuggestedRemedy  
 EPON4 - Channel bonding - 143.4.1.1 - Device supports channel bonding - 50G10G:M or 50G25G:M or 50G50G:M - Yes  N/A   
 Response Response Status C  
 ACCEPT.

Cl 144 SC 144.3.1.1 P202 L31 # 605  
 Anslow, Pete Ciena  
 Comment Type E Comment Status A consent  
 The IEEE style manual has:  
 "Only one occurrence of any level of an ordered list may be presented in any subclause to avoid confusing cross-references [e.g., it is OK to have an a) level list followed by a 1) level list , etc., but there should not be more than one a) level list in the same clause or subclause]."  
 SuggestedRemedy  
 Change the second numbered list (starting at line 31) to a lettered list.  
 Response Response Status C  
 ACCEPT.

Approved Responses

IEEE P802.3ca D2.1 25/50G-EPON Task Force 1st Working Group recirculation ballot comments

Cl 144 SC 144.3.1.1 P202 L33 # 604  
 Anslow, Pete Ciena  
 Comment Type E Comment Status A consent  
 IEEE uses an en-dash as a minus sign  
 SuggestedRemedy  
 Change the minus signs to en-dashes (Ctrl-q Shft-p) (5 instances)  
 Response Response Status C  
 ACCEPT.

Cl 144 SC 144.3.1.2 P204 L3 # 610  
 Kramer, Glen Broadcom  
 Comment Type TR Comment Status A post-deadline; 573  
 Since the reference for MPCPDU timestamp is the ESH time, an MPCPDU cannot be split over multiple envelopes, either separated in time or overlapping in time on multiple channels. Doing so will cause the Timestamp to reference the first ESH at the Tx side, but to be compared to the second ESH at the receiving side (since by the time the frame is completely received and parsed and timestamp is checked, the second ESH time will be latched and it will overwrite the first ESH time)  
 SuggestedRemedy  
 Add clarifications and specific requirements to avoid splitting MPCPDUs over multiple envelopes. Specific changes are shown in kramer\_3ca\_9\_0919.pdf.  
 This comment is intended to supersede comment #573 and it provides a more complete solution.  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.

Implement changes per  
[http://www.ieee802.org/3/ca/public/meeting\\_archive/2019/09/kramer\\_3ca\\_9\\_0919.pdf](http://www.ieee802.org/3/ca/public/meeting_archive/2019/09/kramer_3ca_9_0919.pdf), with the following changes:  
 - change "In case the ONU receives partially overlapping PLID envelope allocations" to "In case the ONU is given partially overlapping PLID envelope allocations"

Cl 144 SC 144.3.6.1 P208 L44 # 612  
 Kramer, Glen Broadcom  
 Comment Type T Comment Status A post-deadline  
 The response to comment #213 against D2.0 stated:  
 "- Definitions of timestamp should be corrected and will therefore be different."  
 and  
 "Timestamps in GATEs are not the same as the content of MPCP Local time counter. Each timestamp is pre-compensated by the RTT value of the destination ONU."  
 This comment addresses the above issues.  
 SuggestedRemedy  
 Change the definitions of Timestamp fields in GATE and REGISTER\_ACK as shown in kramer\_3ca\_12\_0919.pdf.  
 The definitions for rest of the fields appears correct.  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Change the definitions of Timestamp fields in GATE and REGISTER\_ACK as shown in [http://www.ieee802.org/3/ca/public/meeting\\_archive/2019/09/kramer\\_3ca\\_12\\_0919.pdf](http://www.ieee802.org/3/ca/public/meeting_archive/2019/09/kramer_3ca_12_0919.pdf).

Cl 144 SC 144.3.6.1 P209 L12 # 571  
 Kramer, Glen Broadcom  
 Comment Type E Comment Status A consent

Where a subset of bits is taken to represent a single field or a single numeric value, we should use the notation "M:N" instead of "N to M". This will make it consistent with C45 and vector notation used throughout the draft.

*SuggestedRemedy*

Apply the following changes:

- 1) Table 144-2: change "2 to 7" to "7:2"
- 2) Table 144-4: change "3 to 4" to "4:3"
- 3) Table 144-4: change "7 to 15" to "15:7"
- 4) Table 144-7: change "3 to 4" to "4:3"
- 5) Table 144-7: change "7 to 13" to "13:7"
- 6) Table 144-8: change "0 to 1" to "1:0"
- 7) Table 144-8: change "3 to 4" to "4:3"
- 8) Table 144-8: change "5 to 6" to "6:5"
- 9) Table 144-8: change "8 to 14" to "14:8"
- 10) Table 144-11: change "0 to 3" to "3:0"
- 11) Table 144-11: change "4 to 6" to "6:4"
- 12) Table 144-12: change "0 to 3" to "3:0"
- 13) Table 144-12: change "4 to 7" to "7:4"

Response Response Status C  
 ACCEPT.

Cl 144 SC 144.3.6.1 P209 L39 # 573  
 Kramer, Glen Broadcom  
 Comment Type TR Comment Status A 573

MPCPDUs are not allowed to be fragmented, as this breaks the timestamping reference.

A fragmented MPCPDU would be transmitted in two or more PLID envelopes. Every time an ESH is received, a new MPCP time is latched, overwriting the previous time. A timestamp in fragmented MPCPDU may reference the time of the first ESH, but this timestamp is parsed out of an MPCPDU and checked after the entire MPCPDU is received, which means the MPCP time will already be overwritten by the later ESH.

*SuggestedRemedy*

The draft shall specify that MPCPDU shall not be fragmented. Add the following statement at the end of definition of "Fragmentation" flag (new paragraph):

"If the value of <i>LLID</i> field represents a PLID, the <i>Fragmentation</i> flag shall be equal zero."

Add PICS.

Response Response Status C  
 ACCEPT IN PRINCIPLE.

See post-deadline comment #610

Cl 144 SC 144.3.6.1 P210 L31 # 533  
 Lynskey, Eric Broadcom  
 Comment Type T Comment Status A

Figure 144-12 shows extra EnvAlloc[7].

*SuggestedRemedy*

Remove EnvAlloc[7].

Response Response Status C  
 ACCEPT.

Approved Responses

IEEE P802.3ca D2.1 25/50G-EPON Task Force 1st Working Group recirculation ballot comments

Cl 144 SC 144.3.6.1 P210 L31 # 570  
 Kramer, Glen Broadcom  
 Comment Type TR Comment Status A  
 GATE and REPORT MPCPDU figures are showing 8 EnvAlloc/LlidStatus elements instead of 7.  
 SuggestedRemedy  
 Remove EnvAlloc[7] from figure 144-12  
 Remove LlidStatus[7] element from figure 144-13  
 Response Response Status C  
 ACCEPT.

Cl 144 SC 144.3.6.2 P211 L35 # 531  
 Lynskey, Eric Broadcom  
 Comment Type T Comment Status A  
 Figure 144-13 shows incorrect LlidStatus[0] length.  
 SuggestedRemedy  
 Change to 5 octets.  
 Response Response Status C  
 ACCEPT.

Cl 144 SC 144.3.6.2 P211 L47 # 532  
 Lynskey, Eric Broadcom  
 Comment Type T Comment Status A  
 Figure 144-13 shows extra LlidStatus[7].  
 SuggestedRemedy  
 Remove LlidStatus[7].  
 Response Response Status C  
 ACCEPT.

Cl 144 SC 144.3.6.3 P213 L39 # 530  
 Lynskey, Eric Broadcom  
 Comment Type T Comment Status A  
 Figure 144-14 shows the incorrect pad length.  
 SuggestedRemedy  
 Change to 33 octets.  
 Response Response Status C  
 ACCEPT.

Cl 144 SC 144.3.6.7 P219 L46 # 606  
 Kramer, Glen Broadcom  
 Comment Type T Comment Status A post-deadline  
 Allowing the SYNC\_PATTERN MPCPDUs to be sent to registered ONUs creates a lot of ambiguity wrt the time of switching and handling of lost messages. It also may require dual comparators in the OLT PCS to simultaneously hunt for the old and new patterns. If we keep this capability, we need to add a significant amount of details on how the ONU and OLT should process the switch (wait for all SPs and swich once? Switch on each SYNC\_PATTERN one SPn at a time?) To clarify this we probably will need 2 new state diagrams.  
 SuggestedRemedy  
 Disallow pattern change after Discovery. To do that, delete the text "(unless changed by the OLT)" on line 46 and delete the paragraph on lines 48-50.  
 Response Response Status C  
 ACCEPT.

Cl 144 SC 144.3.6.7 P221 L14 # 613

Kramer, Glen Broadcom

Comment Type TR Comment Status A post-deadline

Figure 144-18 SYNC\_PATTERN MPCPDU shows field sizes that do not match the description. We should decide whether we want to show the second octet of PatternInfo to be in PatternInfo or to be the first octet in the filed Pattern (this is what the figure assumed). Moving it to the Pattern field may make it more aligned with the state diagrams 144-20 and 144-22, where we have these statements  
'MsgSyncPattern.Value <== MsgBurstSync.Value[SpSeq]'

'MsgBurstSync.Value[SpSeq] MsgSyncPattern.Value'

(both 'Value' fields are 257-bit patterns.)

SuggestedRemedy

Two options are suggested:

The first option is shown in kramer\_3ca\_11\_0919.pdf. It moves the last octet of PatternInfo to be part of Pattern field.

The second option is shown in kramer\_3ca\_13\_0919.pdf. This solution keeps PatternInfo as is. It adds extra text to tie last bit of PatternInfo and 32 bytes of Pattern into a single 257-bit field called Value, which is used in state diagrams 144-20 and 144-22.

The author prefers the first solution.

Response Response Status C

ACCEPT IN PRINCIPLE.

Implement changes per [http://www.ieee802.org/3/ca/public/meeting\\_archive/2019/09/kramer\\_3ca\\_11a\\_0919.pdf](http://www.ieee802.org/3/ca/public/meeting_archive/2019/09/kramer_3ca_11a_0919.pdf)

Cl 144 SC 144.3.7 P221 L32 # 607

Kramer, Glen Broadcom

Comment Type TR Comment Status A post-deadline

Field (structure) SpValue is not used anywhere in the draft. The correct name is MsgSyncPattern structure.

SuggestedRemedy

Replace <i>SpValue</i> with <i>MsgSyncPattern</i> (3 instances)

Response Response Status C

ACCEPT.

Cl 144 SC 144.3.7 P222 L32 # 572

Kramer, Glen Broadcom

Comment Type T Comment Status A

The last paragraph is 144.3.7 is very confusing and does not reflect the behavior specified in state diagrams.

When an ONU wants to deregister, it deregisters unconditionally. Sending REGISTER\_REQ/NACK to the OLT is just a courtesy call.

SuggestedRemedy

Replace the last paragraph in 144.3.7 with the text provided in kramer\_3ca\_6\_0919.pdf. Observe italics.

Response Response Status C

ACCEPT IN PRINCIPLE.

Use the following text, make sure ACK, Flag, and NACK are in italics:

There may exist situations when the OLT requires an ONU to re-register. The OLT initiates such reregistration by transmitting a REGISTER MPCPDU to the ONU. This MPCPDU is transmitted in an envelope with unicast PLID assigned to this ONU.

If the Flag field in the REGISTER MPCPDU has the value of ACK, the ONU performs a fast registration sequence where it simply responds with the REGISTER\_ACK MPCPDU, while remaining registered at all times. If the Flag field in the REGISTER MPCPDU has the value of NACK, the ONU deregisters and goes through a complete discovery sequence, as outlined above.

There may also be situations when the MPMC Client (MPCP) in the ONU determines that this ONU needs to deregister. The ONU transmits a REGISTER\_REQ MPCPDU with the Flag field equal to NACK before unconditionally deregistering itself. Depending on the causes for such a deregistration, the MPMC Client (MPCP) determines whether the ONU is allowed to participate in a new discovery sequence or not; the criteria for such a determination is outside the scope of this standard.

Cl 144 SC 144.3.7.7 P230 L27 # 554

Kramer, Glen Broadcom

Comment Type TR Comment Status A

State diagram 144-21 uses not-existent flag value "Deregister"

SuggestedRemedy

Replace "Deregister" with "NACK"

Response Response Status C

ACCEPT.

Approved Responses

IEEE P802.3ca D2.1 25/50G-EPON Task Force 1st Working Group recirculation ballot comments

Cl 144 SC 144.3.8 P232 L3 # 575  
 Kramer, Glen Broadcom  
 Comment Type E Comment Status A consent  
 A couple of missing commas in sub-clause 144.3.8  
 SuggestedRemedy  
 Insert the following commas:  
 1) After "As noted in 144.1.1.1", line 3  
 2) Before "which" in "state diagram (see 144.3.8.11) which results", line 25  
 Response Response Status C  
 ACCEPT.

Cl 144 SC 144.3.8 P232 L28 # 574  
 Kramer, Glen Broadcom  
 Comment Type E Comment Status A consent  
 Sentence "In the OLT transmission is continuous,..." either needs a comma after the OLT, or better, should be re-phrased.  
 Missing comma after "In the case of the OLT"  
 The text includes a reference to the OLT Envelope Commitment process, but is missing a reference to the Envelope Activation process  
 SuggestedRemedy  
 Change the paragraph starting with "Grants are not explicitly used by the OLT..." with  
 "Since the OLT transmits continuously, grants are not explicitly used by the OLT in the downstream direction. However, the OLT does use the envelope descriptors, OLT Envelope Commitment process (see 144.3.8.9), and Envelope Activation process (see 144.3.8.11) in a manner similar to how these processes are used in the ONUs. In the case of the OLT, the transition from Inter-Envelope Idle to data transmission begins with the issuing of an envelope descriptor by the OLT MPMC Client (MPCP). The envelope descriptor is processed by the OLT Envelope Commitment state diagram and Envelope Activation state diagram as described for the ONU."  
 Response Response Status C  
 ACCEPT.

Cl 144 SC 144.3.8.1 P232 L42 # 583  
 Wienckowski, Natalie General Motors  
 Comment Type ER Comment Status A  
 In text, where this improves clarity, follow the IEEE Editorial Style Manual: Use spaces instead of commas between numbers in tens or hundreds of thousands (e.g., 62 000, 100 000, but 4000). The groups should be separated by a space, and not a comma, period, or dash.  
 SuggestedRemedy  
 Change: 6,400  
 To: 6 400 or 6400 as 4 digit numbers don't have to have the space unless they are in a column with larger numbers.

Response Response Status W  
 ACCEPT IN PRINCIPLE.  
 Change: 6,400  
 To: 6 400

Cl 144 SC 144.3.8.1 P232 L49 # 584  
 Wienckowski, Natalie General Motors  
 Comment Type ER Comment Status A  
 In text, where this improves clarity, follow the IEEE Editorial Style Manual: Use spaces instead of commas between numbers in tens or hundreds of thousands (e.g., 62 000, 100 000, but 4000). The groups should be separated by a space, and not a comma, period, or dash.  
 SuggestedRemedy  
 Change: 19,531,250  
 To: 19 531 250  
 Response Response Status W  
 ACCEPT.

Cl 144 SC 144.4.3.1 P245 L17 # 552

Remein, Duane independent

Comment Type TR Comment Status A

Persistently disabling all downstream or all upstream channels to an ONU results in that ONU being unusable. The user should be warned of this.

This comment is submitted as an alternative solutio to unsatisfied comment # 249 and # 253

*SuggestedRemedy*

Add a note to Table 144-11 to read as follows:

NOTE - Persistently disabling all downstream or all upstream channels of an ONU results in that ONU being unusable requiring replacement or repair.

Response Response Status W

ACCEPT IN PRINCIPLE.

Add a note to Table 144-11 to read as follows:

NOTE-Persistently disabling all downstream and/or all upstream channels in an ONU makes that ONU non-operational.

Cl A SC A P27 L1 # 595

Anslow, Pete Ciena

Comment Type ER Comment Status A

Amendments to IEEE 802.3-2018 place all of the annexes at the end after all of the clauses (as was the case in D2.0 for Annex 31A)

*SuggestedRemedy*

Move Annex A and Annex 31A between Clause 144 and Annex 142A

Response Response Status W

ACCEPT.