

CI **FM** SC **FM** P1 L26 # 1 [REDACTED]  
 Anslow, Pete Ciena  
 Comment Type **E** Comment Status **D** EZ  
 IEEE Std 802.3cd-2018 is now approved  
 SuggestedRemedy  
 Change "IEEE Std 802.3cd-201x" to "IEEE Std 802.3cd-2018"  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

CI **FM** SC **FM** P2 L3 # 2 [REDACTED]  
 Anslow, Pete Ciena  
 Comment Type **E** Comment Status **D** EZ  
 The abstract should not contain "Draft D1.1 is prepared for Task Force Review."  
 SuggestedRemedy  
 Delete "Draft D1.1 is prepared for Task Force Review."  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

CI **FM** SC **FM** P21 L1 # 3 [REDACTED]  
 Anslow, Pete Ciena  
 Comment Type **E** Comment Status **D** EZ  
 "2019Draft Standard for Ethernet" contains a spurious "2019"  
 SuggestedRemedy  
 Delete "2019"  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

CI **44** SC **44.1.3** P28 L3 # 4 [REDACTED]  
 Anslow, Pete Ciena  
 Comment Type **E** Comment Status **D** EZ  
 Item d of 44.1.3 contains five external cross-references that are not in forest green  
 SuggestedRemedy  
 Apply character tag "External" to "Clause 53", "Clause 54", "Clause 55", "Clause 68", and "Clause 52"  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

CI **45** SC **45.2.1.18.aa** P32 L33 # 5 [REDACTED]  
 Anslow, Pete Ciena  
 Comment Type **E** Comment Status **D** EZ  
 In the editing instruction "before 45.2.1.18a (added by IEEE Std 802.3cb-2018)" the reference "45.2.1.18a" should be "45.2.1.18.a"  
 SuggestedRemedy  
 In the editing instruction, change "45.2.1.18a" to "45.2.1.18.a"  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

CI **45** SC **45.2.1.192.4** P35 L25 # 6 [REDACTED]  
 Anslow, Pete Ciena  
 Comment Type **ER** Comment Status **D** EZ  
 Comment #16 against D1.0 was:  
 In the heading of 45.2.1.192.4, "(1.2309.14)" should be "(1.2309.10:9)"  
 The response was:  
 ACCEPT IN PRINCIPLE.  
 This is covered by Comment #85.  
 but comment #85 made no change to the draft.

SuggestedRemedy  
 In the heading of 45.2.1.192.4, change "(1.2309.14)" to "(1.2309.10:9)"  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

CI **45** SC **45..2.3** P40 L23 # 7 [REDACTED]  
 Anslow, Pete Ciena  
 Comment Type **ER** Comment Status **D** EZ  
 Part of the suggested remedy for Comment #27 against D1.0 was:  
 In the editing instruction, change: "1.2318 - 1.2320" to: "1.2318 to 1.2324"  
 The response was:  
 ACCEPT  
 but the text in the editing instruction is "1.2318 to 1.2320" where the second number is still incorrect.  
 SuggestedRemedy  
 In the editing instruction, change: "1.2318 to 1.2320" to: "1.2318 to 1.2324"  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

CI 45 SC 45.2.3.72.5 P42 L15 # 8  
Anslow, Pete Ciena

Comment Type E Comment Status D Editorial

In the second line of text "8 octet" has been changed to "8-octet".  
However, the text in the base standard is "8 octet".  
If it is intended that this amendment changes "8 octet" to "8-octet" then this has to be shown with strikethrough and underline font, preferably with "8 octet" in strikethrough and "8-octet" in underline for clarity.

*SuggestedRemedy*

If it is intended that this amendment changes "8 octet" to "8-octet" then this has to be shown with strikethrough and underline font, preferably with "8 octet" in strikethrough and "8-octet" in underline for clarity.

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 45 SC 45.2.3.74 P43 L12 # 9  
Anslow, Pete Ciena

Comment Type E Comment Status D EZ

In the "Description" for bit 3.2313.15, "This bit shall self clear when register 3.2317 is read." has been changed to "See 45.2.3.74.1 for self-clearing behavior".  
However, this is text in the base standard being changed via a "Change" editing instruction so this change has to be shown with strikethrough and underline font.

*SuggestedRemedy*

In the "Description" for bit 3.2313.15:  
show "This bit shall self clear when register 3.2317 is read." in strikethrough font.  
and show "See 45.2.3.74.1 for self-clearing behavior." in underline font. Note the addition of "." at the end of this.

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 45 SC 45.2.3.75 P44 L3 # 10  
Anslow, Pete Ciena

Comment Type E Comment Status D Editorial

While the addition of the hyphen in "8-octet" is shown with underline, the removal of the space is not shown with strikethrough.

*SuggestedRemedy*

Show "8 octet" in strikethrough and "8-octet" in underline for clarity.

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 45 SC 45.2.3.78.1 P46 L1 # 11  
Anslow, Pete Ciena

Comment Type E Comment Status D EZ

Extra ")" at the end of "45.2.3.78.1 PCS reset (3.2322.15))"

*SuggestedRemedy*

Delete the extra ")"

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 45 SC 45.2.9.2.7 P49 L51 # 12  
Anslow, Pete Ciena

Comment Type E Comment Status D EZ

As noted in Comment #38 against D1.0, space missing before "(" in the editing instruction.

*SuggestedRemedy*

Add the space.

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 45 SC 45.2.9.3.2 P50 L30 # 13  
Anslow, Pete Ciena

Comment Type E Comment Status D EZ

As noted in Comment #39 against D1.0, space missing before "(" in the editing instruction.

*SuggestedRemedy*

Add the space.

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 104 SC 104.7.2.4 P60 L1 # 14  
Anslow, Pete Ciena

Comment Type E Comment Status D EZ

The heading for Table 104-9 has a grey background.

*SuggestedRemedy*

Make it white.

Proposed Response Response Status W  
PROPOSED ACCEPT.

Cl 149 SC 149.2 P73 L5 # 15  
 Anslow, Pete Ciena  
 Comment Type E Comment Status D EZ  
 "Clause 98.4" should be just "98.4"  
 SuggestedRemedy  
 Change "Clause 98.4" to "98.4"  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.3.2.2.15 P90 L39 # 16  
 Anslow, Pete Ciena  
 Comment Type E Comment Status D EZ  
 Equation (149-1) is truncated  
 Is this a "Medium" equation?  
 SuggestedRemedy  
 If it is not already, make this a "Medium" equation.  
 "Shrink-wrap" the equation.  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.3.2.3.3 P98 L24 # 17  
 Anslow, Pete Ciena  
 Comment Type E Comment Status D EZ  
 Two instances of "Table 149-1" (in b) and c)) should be cross-references.  
 SuggestedRemedy  
 Make the two instances of "Table 149-1" cross-references.  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.4.2.4 P136 L13 # 18  
 Anslow, Pete Ciena  
 Comment Type E Comment Status D EZ  
 In the third paragraph of 149.4.2.4, "149.4.2.4.2" and "149.4.2.4.8" should be cross-references and "Figure 149-27" has a spurious extra "F"  
 SuggestedRemedy  
 Make "149.4.2.4.2" and "149.4.2.4.8" cross-references and delete the spurious "F" in "Figure 149-27".  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.4.3.1 P146 L27 # 19  
 Anslow, Pete Ciena  
 Comment Type E Comment Status D EZ  
 In "{-1, -1/3, 1/3, 1}" the hyphen should be an en dash  
 SuggestedRemedy  
 In "{-1, -1/3, 1/3, 1}" change the hyphen to an en dash  
 Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.

Change: {-1, -1/3, 1/3, 1}  
 To: {-1, -1/3, +1/3, +1}  
 See comment 181

CI 149 SC 149.9.1 P164 L5 # 20  
 Anslow, Pete Ciena

Comment Type TR Comment Status D Desc

This now says "shall conform to IEC 62368-1 (former IEC 60950-1)".  
 This would be ok if IEC 60950-1 had simply been re-numbered to become IEC 62368-1,  
 but I do not believe that this is the case. I believe that these are different standards with  
 different contents, in which case this text is inappropriate.

SuggestedRemedy

Delete "(former IEC 60950-1)"

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD

Comment 41 on D1.0 changed "IEC 60950-1" to "IEC 62368-1 (former IEC 60950-1)".

Is it okay to remove the reference to the former spec?

CI 00 SC 0 P2 L5 # 21  
 Maguire, Valere The Siemon Company

Comment Type E Comment Status D EZ

Incorrect capitalization

SuggestedRemedy

Replace "physical layer" with "Physical Layer"

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 00 SC 0 P2 L5 # 22  
 Maguire, Valere The Siemon Company

Comment Type E Comment Status D EZ

MASTER-SLAVE could be added to the keywords

SuggestedRemedy

Insert " MASTER-SLAVE;" after "IEEE 802.3chTM; "

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 44 SC 44.1.3 P27 L3 # 23  
 Maguire, Valere The Siemon Company

Comment Type E Comment Status D Editorial

Correct grammatical of the word "which"

SuggestedRemedy

Insert a comma after the last word coming before "which" in these locations: page 27 - line  
 3, page 35 - line 31, page 61 - line 8, page 69 - line 37, page 70 - line 2, page 80 - line 5,  
 and page 90 - line 51.

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 149 SC 149.3.6.2.2 P102 L49 # 24  
 Maguire, Valere The Siemon Company

Comment Type E Comment Status D Editorial

Consistency with other text in clause

SuggestedRemedy

Replace "which" with "that"

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 149 SC 149.3.2.2.11 P89 L37 # 25  
 Maguire, Valere The Siemon Company

Comment Type E Comment Status D EZ

Correct grammatical of the word "which"

SuggestedRemedy

Replace "(which is reserved)" with ", which is reserved"

Proposed Response Response Status W

PROPOSED ACCEPT.

**Cl 00**    **SC 0**    **P1**    **L25**    # **26**  
 Maguire, Valere    The Siemon Company  
**Comment Type** **E**    **Comment Status** **D**    **EZ**  
 IEEE Std 802.3cd-201x has published.  
**SuggestedRemedy**  
 Replace all occurrences of "IEEE Std 802.3cd-201x" with "IEEE Std 802.3cd-2018"  
**Proposed Response**    **Response Status** **W**  
 PROPOSED ACCEPT.

**Cl 149**    **SC 149.1.3.4**    **P70**    **L11**    # **27**  
 Benyamin, Saied    Aquantia  
**Comment Type** **TR**    **Comment Status** **D**    **EEE**  
 We are using link synchronization as Alert, add a paragraph to end of the link synchronization description to mention this  
**SuggestedRemedy**  
 Add the following paragraph:  
 When EEE is active, the same link synchronization pattern is used as an alert sequence.  
 When rx\_lpi\_active is true, the send\_s\_sigdet variable which detects the SEND\_S pattern is used as alert detect.  
**Proposed Response**    **Response Status** **W**  
 PROPOSED ACCEPT.

**Cl 149**    **SC 149.3.2.2.21**    **P96**    **L46**    # **28**  
 Benyamin, Saied    Aquantia  
**Comment Type** **TR**    **Comment Status** **D**    **EEE**  
 Alert description is yellowed out, and needs to mention that we use link synchronization.  
 Current paragraph:  
 When the lpi\_tx\_mode variable takes the value <TBD: ALERT and the PMA asserts SEND\_N, the PCS passes the ALERT vector to the PMA.>  
**SuggestedRemedy**  
 When the lpi\_tx\_mode variable takes the value ALERT, the PMA transmits the link synchronization sequence onto the MDI as provided by the link synchronization block via sync\_tx\_symb  
**Proposed Response**    **Response Status** **W**  
 PROPOSED ACCEPT IN PRINCIPLE.  
 Remove highlighting and  
 Change: When the lpi\_tx\_mode variable takes the value <TBD: ALERT and the PMA asserts SEND\_N, the PCS passes the ALERT vector to the PMA.>  
 To: When the lpi\_tx\_mode variable takes the value ALERT, the PMA transmits the link synchronization sequence onto the MDI as provided by the link synchronization block via sync\_tx\_symb.

**Cl 149**    **SC 149.3.2.2.21**    **P96**    **L51**    # **29**  
 Benyamin, Saied    Aquantia  
**Comment Type** **TR**    **Comment Status** **D**    **EEE**  
 Alert has a yellow tag around it <TBD Alert>  
**SuggestedRemedy**  
 remove yellow and <TBD> and change to upper case ALERT  
**Proposed Response**    **Response Status** **W**  
 PROPOSED ACCEPT.

CI 149 SC 149.3.2.2.1 P97 L4 # 30  
Benjamin, Saied Aquantia

Comment Type TR Comment Status D EEE

There is a yellow tag on this line awaiting some description

*SuggestedRemedy*

Please add the following:

After the alert signal, the PCS completes the transition from LPI mode to normal mode by sending a wake signal containing lpi\_wake\_time RS-FEC frames composed of IDLE 64B/65B blocks.

Lpi\_wake\_time is a fixed parameter that is defined in Table 149-1000. Please see attached word doc

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Delete: <TBD Alert>

Replace with: After the alert signal, the PCS completes the transition from LPI mode to normal mode by sending a wake signal containing lpi\_wake\_time RS-FEC frames composed of IDLE 64B/65B blocks.

Lpi\_wake\_time is a fixed parameter that is defined in Table 149-1000.

Add the table on page 3 of Benjamin\_3ch\_1\_0319.pdf after the text being added by this comment.

Editorial license to use the appropriate table number.

CI 149 SC 149.3.2.3 P98 L2 # 31  
Benjamin, Saied Aquantia

Comment Type TR Comment Status D EEE

There is a yellow TBD as follows

The quiet-refresh cycle continues until the PMA asserts <TBD Alert> .

*SuggestedRemedy*

The quiet-refresh cycle continues until the link synchronization detect asserts send\_s\_sigdet to indicate that the alert (link synchronization) sequence has been reliably detected. After the alert sequence the link partner transmits repeated // characters, representing a wake signal. The PHY receive function sends // to the XGMII for 8 RS-Frame periods (wake duration) and then resumes normal operation.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Remove yellow highlighting.

Change: PMA asserts <TBD Alert> .

To: link synchronization detect asserts send\_s\_sigdet to indicate that the alert (link synchronization) sequence has been reliably detected. After the alert sequence the link partner transmits repeated // characters, representing a wake signal. The PHY receive function sends // to the XGMII for 8 RS-Frame periods (wake duration) and then resumes normal operation.

CI 149 SC 149.3.5 P100 L34 # 32  
Benjamin, Saied Aquantia

Comment Type E Comment Status D Editorial

We space alerts so they do not overlap by forcing their start times. It is more clear to refer to alert start time as opposed to alert signal. Also in the same sentence we refer to the link partner. See following text and changes in bold on the right  
lpi\_offset is a fixed value equal to lpi\_qr\_time / 2 + 4 (52 RS-FEC frame periods) that is used to ensure refresh signals and alert signals are appropriately offset by the link partner's.

*SuggestedRemedy*

lpi\_offset is a fixed value equal to lpi\_qr\_time / 2 + 4 (52 RS-FEC frame periods) that is used to ensure refresh signals and alert start times are appropriately offset from the link partner's.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change "alert signals" to "alert start times" on P100 L34.

CI 149 SC 149.3.5.1 P101 L10 # 33  
Benjamin, Saied Aquantia

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

Frame counts are based on RS-Frames, not partial frames

*SuggestedRemedy*

Remove the word partial in three places on line 10 and line 11

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

Not needed if comment #65 implemented as proposed.

CI 149 SC 149.3.5.1 P101 L13 # 34  
Benjamin, Saied Aquantia

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

The offset between two link partners is not exactly half cycle, it is 4 frames more than half cycle, change the wording

*SuggestedRemedy*

Replace the word "half cycle" with "properly"

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change to " the refresh periods are about a half cycle offset." per comment 196.

CI 149 SC 149.3.5.1 P101 L19 # 35  
Benjamin, Saied Aquantia

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

We need to establish limitation for alert starts so that it does not overlap with the link partner's alert.

*SuggestedRemedy*

Add the following paragraph:

The four RS-Frame long Alert may start at the beginning of every eighth PHY frame boundary starting at the beginning of the frame following the refresh PHY frame. This sets alert\_period to 4 PHY frames and provides the following two benefits: The MASTER and SLAVE allowable alert transmissions do not overlap and Alert does not overlap device's own refresh. The MASTER and SLAVE shall derive the tx\_refresh\_active and tx\_alert\_start signals from the transmitted PHY frames (tx\_rsfc) as shown in Table 149-5 and Table 149-6.

Proposed Response Response Status **Z**

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

CI 149 SC 149.3.5.1 P101 L27 # 36  
Benjamin, Saied Aquantia

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

The table is erroneously referring to wake\_period for alert calculation

*SuggestedRemedy*

Change wake\_period to alert\_period

Proposed Response Response Status **W**

PROPOSED ACCEPT.

CI 149 SC 149.3.5.1 P101 L36 # 37  
Benjamin, Saied Aquantia

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

The table is erroneously referring to wake\_period for alert calculation

*SuggestedRemedy*

Change wake\_period to alert\_period

Proposed Response Response Status **W**

PROPOSED ACCEPT.

CI 149 SC 149.3.5.3 P101 L47 # 38  
 Benjamin, Saied Aquantia

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

During LPI, we still need to send the OAM, the following text does not include this, it only mentions that we do not send any infocfield data during refresh with the exception that the infocfield consists of a sequence of 128 zeros.

*SuggestedRemedy*

with the exception that the infocfield consists of a sequence of 128 zeros and, in addition, the 10-bit OAM symbol to be transmitted is XORed with the last 10 bits of the PAM2 refresh transmission

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

Add the following sentence after ...128 zeros.

The 10-bit OAM symbol to be transmitted is XORed with the last 10 bits of the PAM2 refresh transmission.

CI 149 SC 149.3.8.4.3 P128 L16 # 39  
 Benjamin, Saied Aquantia

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

rx\_boundary description has yellow highlighted

*SuggestedRemedy*

Remove the yellow as the text is correct

Proposed Response Response Status **W**

PROPOSED ACCEPT.

CI 149 SC 149.3.8.4.3 P129 L30 # 40  
 Benjamin, Saied Aquantia

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

tx\_boundary description has yellow highlighted

*SuggestedRemedy*

Remove the yellow as the text is correct

Proposed Response Response Status **W**

PROPOSED ACCEPT.

CI 149 SC 149.4.2.2 P135 L12 # 41  
 Benjamin, Saied Aquantia

Comment Type **TR** Comment Status **D** *State diagrams*

To allow ALERT to transmit link synchronization, we need to add it to the following statement:  
 when sync\_link\_control = ENABLE

*SuggestedRemedy*

when sync\_link\_control = ENABLE or lpi\_tx\_mode = ALERT

Proposed Response Response Status **W**

PROPOSED ACCEPT.

CI various SC various P0 L0 # 42  
 Benjamin, Saied Aquantia

Comment Type **G** Comment Status **D** *Editorial*

There are a zillion places where 1000Base-T1 is mentioned; on some, we have crossed out the "1000"

*SuggestedRemedy*

They all need to change to MGBase-T1

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

OAM registers used for both 1000BASE-T1 and MultiGBASE-T1 are named BASE-T1.

The following are the places where "1000" does not have strikethrough but it should.

P119 L38, P127 L35

CI 149 SC 149.1.3.4 P71 L1 # 43  
 Benjamin, Saied Aquantia

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

link synchronization detect needs to be added to PCS since it is used as ALERT detect now

*SuggestedRemedy*

Functional block diagram 149-2 in the attached word document, erroneously numbered 149-3 because I looked at the wrong document

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

Update Figure 149-2 (number in D1.1) with the changes indicated on page 2 of Benjamin\_3ch\_1\_0319.pdf.



**Cl 149**    **SC 149.4.1**                      **P134**            **L1**            # **44**  
 Benjamin, Saied                              Aquantia  
*Comment Type*    **TR**            *Comment Status*    **D**                              *PMA*  
 PMA reference diagram shows alert detect, this is replaced by link synchronization  
*SuggestedRemedy*  
 See attached word document for Figure 149-24 erroneously numbered as 149-34 because I was looking at the wrong pdf  
*Proposed Response*                      *Response Status*    **W**  
 PROPOSED ACCEPT IN PRINCIPLE.  
  
 Accept changes as shown on page 3 of Benjamin\_3ch\_1\_0319.pdf with editorial license while modifying the figure.

**Cl 149**    **SC 149.3.8.2.14**                      **P119**            **L39**            # **47**  
 Lo, William                                      Axonne Inc.  
*Comment Type*            **ER**            *Comment Status*    **D**                              *Editorial*  
 Title heading incorrect  
*SuggestedRemedy*  
 Delete 1000BASE-T1  
*Proposed Response*                      *Response Status*    **W**  
 PROPOSED ACCEPT IN PRINCIPLE.  
  
 Change: 1000BASE-T1  
 To: BASE-T1

**Cl 149**    **SC 149.3.8.4.2**                      **P128**            **L16**            # **45**  
 Lo, William                                      Axonne Inc.  
*Comment Type*            **E**            *Comment Status*    **D**                              *EZ*  
 Highlighted sentence is accurate  
*SuggestedRemedy*  
 Remove highlight  
*Proposed Response*                      *Response Status*    **W**  
 PROPOSED ACCEPT.

**Cl 149**    **SC 149.3.2.2.20**                      **P95**            **L43**            # **48**  
 Lo, William                                      Axonne Inc.  
*Comment Type*            **ER**            *Comment Status*    **D**                              *EEE*  
 Refresh is PAM2 so we can delete highlightd paragraph.  
*SuggestedRemedy*  
 delete highlightd paragraph.  
*Proposed Response*                      *Response Status*    **W**  
 PROPOSED ACCEPT.

**Cl 149**    **SC 149.3.8.4.2**                      **P129**            **L30**            # **46**  
 Lo, William                                      Axonne Inc.  
*Comment Type*            **E**            *Comment Status*    **D**                              *EZ*  
 Highlighted sentence is accurate  
*SuggestedRemedy*  
 Remove highlight  
*Proposed Response*                      *Response Status*    **W**  
 PROPOSED ACCEPT.

**Cl 149**    **SC 149.3.4.4**                                      **P100**            **L8**            # **49**  
 Lo, William                                      Axonne Inc.  
*Comment Type*            **ER**            *Comment Status*    **D**                              *EZ*  
 Section duplicated  
*SuggestedRemedy*  
 Delete section.  
*Proposed Response*                      *Response Status*    **W**  
 PROPOSED ACCEPT.

Cl 149 SC 149.3.8.2.1 P115 L3 # 50  
 Lo, William Axonne Inc.  
 Comment Type ER Comment Status D OAM  
 Clarification on the dummy symbol  
 SuggestedRemedy  
 Add new paragraph at line 3 as follows:  
 The dummy OAM symbol is all 0s and its value is ignored at the receiver.  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.3.8.4.4 P130 L17 # 51  
 Lo, William Axonne Inc.  
 Comment Type ER Comment Status D Editorial  
 rx\_cnt incorrectly defined  
 SuggestedRemedy  
 Change:  
 A count of received OAM frames  
 To:  
 A count of received OAM frame symbols  
 Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.

Change:  
 A count of received OAM frames.  
 To:  
 A count of received OAM frame symbols.

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Cl 149 SC 149.4.4.1 P147 L42 # 52  
 Lo, William Axonne Inc.  
 Comment Type ER Comment Status D Refresh  
 Incorrect reference  
 SuggestedRemedy  
 Change 149.4.3 to 149.4.2.7  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.4.4.1 P147 L3 # 53  
 Lo, William Axonne Inc.  
 Comment Type ER Comment Status D State diagrams  
 The following variables are correct and should be un-indented and un highlighted. See list below  
 SuggestedRemedy  
 Fix indentation and un-highlighted the text associated with the following variables:  
 en\_slave\_tx  
 infofield\_complete  
 loc\_phy\_ready  
 loc\_countdown\_done  
 PMA\_state  
 rem\_phy\_ready  
 sync\_link\_control  
 Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.  
 Accept Suggested Remedy except delete loc\_phy\_ready and rem\_phy\_ready as they are not used.

Cl 149 SC 149.4.4.1 P148 L14 # 54  
 Lo, William Axonne Inc.  
 Comment Type ER Comment Status D EZ  
 rem\_countdown\_done variable  
 SuggestedRemedy  
 Change PAM3 to PAM4  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.4.4.2 P148 L50 # 55  
 Lo, William Axonne Inc.

Comment Type ER Comment Status D State diagrams

Name of states incorrect for minwait\_timer  
 Timer is ok

SuggestedRemedy

Change:  
 PMA\_Training\_Init\_S, PCS\_Test and PCS\_Data  
 To:  
 SILENT, TRAINING, PCS TEST, and SEND DATA

Timer value is ok ans should be un-highlighted

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Make proposed change and remove highlighting.

Cl 149 SC 149.3.8.2.13 P118 L13 # 56  
 Lo, William Axonne Inc.

Comment Type T Comment Status D OAM

The RS(16, 14) is unnecessary circuitry for PHYs that does not implement EEE. The following changes allows the simplification to be made.  
 See Lo\_3ch\_01\_0319.pdf slide 3 for the rationale for this change.

SuggestedRemedy

See Lo\_3ch\_01\_0319.pdf slide 4 for the text changes

Proposed Response Response Status W

PROPOSED ACCEPT.

This also resolves comment #288.

Cl 45 SC 45.2.3.76 P44 L50 # 57  
 Lo, William Axonne Inc.

Comment Type TR Comment Status D OAM

OAM status message.  
 It is not clear whether registers 3.2319 and 3.2319 should be R/W or RO.  
 Referring to page 117 (159.3.8.2.12)  
 I think 3.2318.7:2,0 and 3.2319 should be RO since the status is from somewhere else.  
 3.2318.1 should be R/W since the user will go in to make a request to clear.

Is the intent that these registers are automatic, or is the expectation that the user has to manually write in all these statuses?

SuggestedRemedy

If the intent is these registers are automatic then  
 3.2318 and 3.2319 should all be changed to RO with the exception of 3.2318.1.  
 Also the footnote should be changed to include RO.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD

If these are made RO we must clearly define how the PHY sets and clears each bit. We wanted to keep these definitions flexible for the PHY vendors to chose the implementation.

Cl 45 SC 45.2.3.77 P45 L23 # 58  
 Lo, William Axonne Inc.

Comment Type TR Comment Status D OAM

3.2320 and 2.2321 should be RO since these are statuses from the link partner.

SuggestedRemedy

Change R/W to RO for 3.2320 and 2.2321  
 Change the footnote from R/W to RO

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 149 SC 149.4.2.4.10 P140 L28 # 59  
 Lo, William Axonne Inc.

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

Infofield text is correct.  
 No more scrambler seed exchange so need to delete sentence.  
 Section reference

*SuggestedRemedy*

Line 28) Unhighlight text  
 Line 29) Delete:  
 , and the Seed value used by the localdevice for the data mode scrambler initialization  
 Line 30) Change TBD to 149.4.2.4.5

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

Requested changes are accomplished with the proposal in comment 231.

Cl 149 SC 149.4.2.4.10 P141 L16 # 60  
 Lo, William Axonne Inc.

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

Text modification to conform to state machine.  
 Rest of highlighted text is correct

*SuggestedRemedy*

Un highlight lines 16 to 26  
 Change rem\_phy\_ready to PCS\_status in line 17

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

Requested changes are accomplished with the proposal in comment 231.

Cl 149 SC 149.4.2.7 P146 L4 # 61  
 Lo, William Axonne Inc.

Comment Type **TR** Comment Status **D** State diagrams

No state diagram so no reference  
 Update to correct time

*SuggestedRemedy*

Delete:  
 The Refresh monitor shall comply with the state diagram of Figure TBD.

Change:  
 16.384/S ms to 1.536/S ms

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

Do not delete the Figure reference, Comment 77 adds the missing figure.

Remove highlighting on page 146, lines 5 to 7.

Change: 16.384/S ms

To: 1.536/S ms

Cl 149 SC 149.5.1 P152 L28 # 62  
 Lo, William Axonne Inc.

Comment Type **TR** Comment Status **D** Test modes

Dividing a clock down does not change the clock jitter.  
 Recommended divide by 32 or 64 so TX\_TCLK\_DIV is 175.8 or 87.9MHz.

Note that I am ok with either 32 or 64 depending on what people like.

See Lo\_3ch\_01\_0319.pdf slide 5 for a intuitive diagram.

*SuggestedRemedy*

Change divided by 16 to divided by 32

Proposed Response Response Status **W**

PROPOSED ACCEPT.

Cl 149 SC 149.3.2.2.19 P95 L41 # 63  
 Lo, William Axonne Inc.

Comment Type **TR** Comment Status **D** State diagrams

The first PAM4 state entered is TX SWITCH

*SuggestedRemedy*

Change PAM4 PCS Test to TX SWITCH state

Proposed Response Response Status **W**

PROPOSED ACCEPT.

Cl 149 SC 149.3.2.2.21 P96 L23 # 64  
 Lo, William Axonne Inc.

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

Data are processed in units of superframes.

It makes no sense if the 8 RS-FEC partially fill the final superframe.

A related issue is once the LP\_IDLE is sent, the transmitter is committed to sending the complete sleep signal (8 RS-FEC frames worth) and not abort early.

Add the sentences below to clarify how the 8 RS-FEC frames of LP\_IDLE are packed at the end of line 23.

*SuggestedRemedy*

The 8 RS-FEC frames of LP\_IDLE completely fill two superframes in L=4 interleave or four superframes in L=2 interleave. Once initiated, the complete sleep signal consisting of 8 RS-FEC frames of LP\_IDLE shall be transmitted.

Proposed Response Response Status **W**

PROPOSED ACCEPT.

Cl 149 SC 149.3.5.1 P101 L4 # 65  
 Lo, William Axonne Inc.

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

The method to synchronize the master as slave as described in this section defeats the entire purpose of partial frame count during training as shown in Figure 149-12 and introduces uncertainty in the timing.

*SuggestedRemedy*

Delete:

The transition to PCS\_Test is used as a fixed timing reference for the link partners. Refresh signaling is derived by counting RS-FEC frames from the transition to PCS\_Test. At the Master RS-FEC frame count of zero and all multiples of 96 RS-FEC frames thereafter denote the start of the cycle.

Replace with:

Refresh signaling is derived by tracking the partial frame count as shown in Figure 149-12.

Delete (lines 16, 17):

Following the transition to PAM4, the PCS continues to count transmitted RS-FEC frames (tx\_rsfc), and uses the counter to generate refresh, ALERT, and wake control signals for the transmit functions.

Replace with:

Following the transition to PAM4, the PCS continues to count partial frames and uses the count to generate refresh, ALERT, and wake control signals for the transmit functions.

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

Delete all text in Clause 149.3.5.1.

Editorial license to format correctly.

Replace with: To maximize power savings, maintain link integrity, and ensure interoperability, EEE-capable PHYs must synchronize refresh intervals during the LPI mode. An EEE-capable PHY in SLAVE mode is responsible for synchronizing its Partial PHY frame Count (PFC24) to the MASTER's PFC24 during PAM2 training. For 10GBASE-T1, 5GBASE-T1, and 2.5GBASE-T1 the SLAVE's PFC24 should be +0/-4, +0/-2, and +0/-1 partial frames respectively with respect to the MASTER's PFC24.

Refresh signaling is derived by tracking the RS-FEC frame count as shown in Figure 149-12, where:

RS-FEC frame count = (PFC24 / 4) mod 96.

The start of the SLAVE quiet-refresh cycle is delayed from the MASTER by 52 RS-FEC frames. This offset ensures that the MASTER and SLAVE ALERT windows are offset from each other and that the refresh periods are close to half cycle offset.

Following the transition to PAM4, the PCS continues with the RS-FEC frame count and uses the count to generate refresh, ALERT, and wake control signals for the transmit functions.

Also resolves Comment #33.

Cl 149 SC 149.3.8.4.6 P131 L26 # 66  
Lo, William Axonne Inc.

Comment Type TR Comment Status D OAM

State machine issues:  
Typo from modifying from 1000BASE-T1 and missing transitions and not quite correct exit condition

*SuggestedRemedy*

Change:  
Parity\_Check(rx\_oam\_field<8:0>) = Even  
To:  
frame\_boundary = True \* (rx\_cnt != 16)

Change:  
RECEIVE INIT to CHECK READ transition should be rx\_boundary (currently it is blank)

Change:  
In the LOAD SYMBOL state change  
rx\_boundary To:  
rx\_boundary | (rx\_cnt = 16)

Add:  
rx\_cnt <= 0 at the bottom of the LOAD RECEIVE PAYLOAD state

Delete in 2 places  
\* (frame\_boundary = False)

Proposed Response Response Status W  
PROPOSED ACCEPT IN PRINCIPLE.

P131 L 26 Change: Parity\_Check(rx\_oam\_field<8:0>) = Even

To: frame\_boundary = True \* (rx\_cnt != 16)

P131 L 7 Change: RECEIVE INIT (state name)

To: CHECK READ transition should be

Add transition condition to middle arrow out of RECEIVE INIT: rx\_boundary

P131 L 37 Change transition out of LOAD SYMBOL state

From: rx\_boundary

To: rx\_boundary + (rx\_cnt = 16)

P 131 L 30 Add:

rx\_cnt <= 0 as the first line in the LOAD RECEIVE PAYLOAD state

Delete in 2 places (P 131 L 27 (on left) & P 131 L 38 (on right)):

\* (frame\_boundary = False)

Cl 149 SC 149.4.4.2 P148 L45 # 67

Lo, William Axonne Inc.

Comment Type TR Comment Status D State diagrams

Time way too long for acceptable startup in automotive applications.  
Change to match 1000BASE-T1.

SuggestedRemedy

Change:  
2000 ms +/- 10ms  
To:  
97.5 ms +/- 0.5 ms

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 149 SC 149.4.5 P151 L18 # 68

Lo, William Axonne Inc.

Comment Type TR Comment Status D State diagrams

Missing watchdog conditions and refresh status link down conditions

SuggestedRemedy

See Lo\_3ch\_01\_0319.pdf slide 2 for correct state machine.

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 149 SC 149.4.4.1 P147 L53 # 69

Lo, William Axonne Inc.

Comment Type TR Comment Status D State diagrams

PMA\_watchdog\_status definition needs updating

SuggestedRemedy

See Lo\_3ch\_01\_0319.pdf slide 2 for text

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 149 SC 149.3.5.1 P101 L28 # 70

Graba, Jim Broadcom

Comment Type TR Comment Status D EEE

Need tx\_lpi\_full\_refresh condition in Table 149-3

SuggestedRemedy

Add row to Table 149-3. First column: tx\_lpi\_full\_refresh=true. Second column: mod(u, lpi\_qr\_time) = lpi\_offset - lpi\_refresh\_time

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 149 SC 149.3.5.1 P101 L38 # 71

Graba, Jim Broadcom

Comment Type TR Comment Status D EEE

Need tx\_lpi\_full\_refresh condition in Table 149-4

SuggestedRemedy

Add row to Table 149-4. First column: tx\_lpi\_full\_refresh=true. Second column: mod(v, lpi\_qr\_time) = lpi\_quiet\_time

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 149 SC 149.3.5.1 P101 L19 # 72  
 Graba, Jim Broadcom

Comment Type TR Comment Status D EEE

Establish a limitation for alert starts so that it does not overlap with the link partner's alert.

SuggestedRemedy

Insert the following paragraph:  
 The four RS-Frame long Alert shall start at the beginning of any eighth PHY frame boundary starting at the beginning of the frame following the refresh PHY frame. This offsets the master and slave alert start times by alert\_period/2 = 4 PHY frames and provides the following two benefits: The MASTER and SLAVE allowable alert transmissions do not overlap and Alert does not overlap device's own refresh. The MASTER and SLAVE shall derive the tx\_refresh\_active and tx\_alert\_start signals from the transmitted PHY frames (tx\_rsfc) as shown in Table 149-3 and Table 149-4.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Insert on page 101 line 19.

ALERT, a four RS-FEC frame, shall start at the beginning of any eighth PHY frame boundary starting at the beginning of the frame following a refresh PHY frame. This offsets the MASTER and SLAVE ALERT start times by alert\_period/2 = 4 PHY frames and provides the following two benefits: The MASTER and SLAVE allowable ALERT transmissions do not overlap and ALERT does not overlap the device's own refresh. The MASTER and SLAVE shall derive the tx\_refresh\_active and tx\_alert\_start signals from the transmitted PHY frames (tx\_rsfc) as shown in Table 149-3 and Table 149-4.

Cl 78 SC 78.2 P52 L42 # 73  
 Graba, Jim Broadcom

Comment Type TR Comment Status D EEE

Tq is 95 frames.

SuggestedRemedy

Change Tq from [126.72, 63.36, 31.68] us to [121.6, 60.8, 30.4] us for 2.5G/5G/10G respectively in Table 78-2..

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 149 SC 149.3.6.2.3 P104 L2 # 74  
 Graba, Jim Broadcom

Comment Type E Comment Status D EZ

SuggestedRemedy

Proposed Response Response Status Z

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Cl 149 SC 149.4.2.7 P146 L5 # 75  
 Graba, Jim Broadcom

Comment Type TR Comment Status D EZ

Update the moving time window length to be equivalent to 2.5G/5G/10GBASE-T

SuggestedRemedy

Change 50 to 256. Change 16.384/S ms to 7.864/S ms

Proposed Response Response Status Z

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.



CI 149 SC 149.4.5.x P151 L27 # 76  
 Graba, Jim Broadcom

Comment Type **TR** Comment Status **D** State diagrams  
 Add EEE Refresh monitor state diagram

*SuggestedRemedy*

Use same EEE Refresh monitor state diagram from 802.3bz (Figure 126-30)

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

In addition to adding the Figure, on P148 L 55 insert the following text, with editorial license:

The following timer is required only for PHYs that support the EEE capability:

`lpi_refresh_rx_timer`

This timer is used to monitor link quality during the LPI receive mode. If the PHY does not reliably

detect reliable refresh signaling before this timer expires then a full retrain is performed.

Values: The condition `lpi_refresh_rx_timer_done` becomes true upon timer expiration.

Duration: This timer shall have a period equal to 50 complete quiet-refresh signal periods, equivalent to 1.536/S ms.

CI 149 SC 149.4.2.7 P146 L5 # 77  
 Graba, Jim Broadcom

Comment Type **TR** Comment Status **D** State diagrams  
 Update TBD

*SuggestedRemedy*

Point to figure containing EEE Refresh monitor state diagram

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

Point to Figure added by comment 76 as shown in Graba\_3ch\_1\_0319.pdf.

CI 149 SC 149.3.6.3 P112 L44 # 78  
 Graba, Jim Broadcom

Comment Type **TR** Comment Status **D** State diagrams  
 Add EEE transmit state diagram

*SuggestedRemedy*

Insert EEE transmit state diagram with changes as shown in EeeTransmitStateDiagramMarkUp\_Graba\_20190222.pdf

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

In addition to adding the Figure, on P148 L 37 insert the following text, with editorial license:

The following variable is required only for PHYs that support the EEE capability:

`lpi_refresh_detect`

Set TRUE when the receiver has reliably detected refresh signaling and FALSE otherwise.

The exact criteria left to the implementer.

`pcs_data_mode`

Generated by the PMA PHY Control function and indicates whether or not the local PHY may transition its PCS state diagrams out of their initialization states. The current value of the `pcs_data_mode` is passed to the PCS via the `PMA_PCSDATAMODE.indicate` primitive. In the absence of the optional EEE and fast retrain capabilities, the PHY operates as if the value of this variable is TRUE.

CI 149 SC 149.3.6.2.2 P103 L29 # 79  
 Graba, Jim Broadcom

Comment Type **ER** Comment Status **D** EEE  
 Yellow highlighting is no longer needed

*SuggestedRemedy*

Remove highlighting

Proposed Response Response Status **W**

PROPOSED ACCEPT.

Cl 149 SC 149.3.6.2.3 P104 L40 # 80  
 Graba, Jim Broadcom  
 Comment Type ER Comment Status D  
 Yellow highlighting is no longer needed  
 SuggestedRemedy  
 Remove highlighting from lines 40 - page 105 line 7  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.3.6.2.3 P104 L45 # 81  
 Graba, Jim Broadcom  
 Comment Type TR Comment Status D  
 lpi\_tx\_sleep\_timer is wrong  
 SuggestedRemedy  
 Replace 6 RS-FEC with 8 RS-FEC  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.3.2.2.21 P96 L18 # 82  
 Graba, Jim Broadcom  
 Comment Type TR Comment Status D  
 Update TBD  
 SuggestedRemedy  
 Point to figure containing EEE transmit state diagram  
 Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.  
 Remove highlighting on "Figure 149-TBD".  
 Change: Figure 149-TBD  
 To: The correct Figure reference for the figure added by comment #78.

Cl 98 SC 98.5.1 P56 L8 # 83  
 Tu, Mike Broadcom  
 Comment Type ER Comment Status D  
 The editor note should refer to 98.5.1, not 98.1.5.  
 SuggestedRemedy  
 Change the editor note from "... dashed list of 98.1.5 after ..."  
 to  
 "... dashed list of 98.5.1 after ..."  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 125 SC 125.1.2 P62 L14 # 84  
 Tu, Mike Broadcom  
 Comment Type E Comment Status D  
 Change the name of the PCS layer to be consistent with the other 5G/2.5G standards.  
 SuggestedRemedy  
 For 2.5GBASE-T1, change "64B/65B RS-FEC PCS" to "2.5GBASE-T1 PCS".  
 For 5GBASE-T1, change "64B/65B RS-FEC PCS" to "5GBASE-T1 PCS".  
 Proposed Response Response Status W  
 PROPOSED REJECT.

This was changed by comment 151 on D1.0 for Figure 149-1. This same text was then used for Figure 125-1 and 44-1. These names should remain consistent between the three figures.

D1.1 comment 151 rationale.  
 If we name the PCS (say, e.g., "RS-FEC PCS") we can collapse all of the 3 stacks into 1 and make the figure much simpler, with a single stack showing the commonality of all 3 PHYs.

Cl 149 SC 149.5.2.6 P156 L40 # 85  
 Tu, Mike Broadcom

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

The transmission rate should scale by the factor "S".

*SuggestedRemedy*

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

No suggested remedy provided. Comment 272 is related to this and provides a suggested remedy so implement that.

Cl 149 SC 149.3.2.3 P97 L38 # 86  
 Tu, Mike Broadcom

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

There are 450 PAM2 symbols per partial frame.

*SuggestedRemedy*

Within the highlighted text, change "180" to "450". Then remove the highlights.

Proposed Response Response Status **W**

PROPOSED ACCEPT.

Cl 149 SC 149.4.2.4.10 P140 L28 # 87  
 Tu, Mike Broadcom

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

Remove the editorial highlights

*SuggestedRemedy*

Remove the editorial highlights

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

Requested changes are accomplished with the proposal in comment 231.

Cl 149 SC 149.4.2.4.10 P140 L29 # 88  
 Tu, Mike Broadcom

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

There is no need to exchange the Seed values. There are no user configurable register bits either. However the PHY shall indicate the precoder and the interleaver selections.

*SuggestedRemedy*

Change the last sentence to "The PHY Control also sets PMA\_state = 00 and sends the PHY capability bits, and select the precoder and the interleaver depth".

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

Requested changes are accomplished with the proposal in comment 231.

Cl 149 SC 149.4.2.4.10 P141 L16 # 89  
 Tu, Mike Broadcom

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

The paragraph should be revised in order to match Figure 149-31 PHY Control state diagram.

*SuggestedRemedy*

Change the paragraph to "Upon expiration of the minwait\_timer and when the condition loc\_rcvr\_status = OK and PCS\_status = OK is satisfied, PHY control transitions to the SEND\_DATA state."

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

Requested changes are accomplished with the proposal in comment 231.

Cl 149 SC 149.4.2.4.10 P141 L19 # 90  
 Tu, Mike Broadcom

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

This paragraph needs to be revised to match to the PHY Control state diagram.

*SuggestedRemedy*

Change the paragraph to "Upon entering the SEND\_DATA state, PHY Control starts the minwait\_timer and stops the maxwait\_timer."

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

Requested changes are accomplished with the proposal in comment 231.

Cl 149 SC 149.4.2.4.10 P141 L22 # 91  
 Tu, Mike Broadcom  
 Comment Type **TR** Comment Status **D** Startup  
 Remove editorial highlights in this paragraph.  
 SuggestedRemedy  
 Remove editorial highlights in this paragraph.  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT IN PRINCIPLE.  
 Requested changes are accomplished with the proposal in comment 231.

Cl 149 SC 149.4.5 P150 L42 # 92  
 Tu, Mike Broadcom  
 Comment Type **TR** Comment Status **D** State diagrams  
 The tx\_mode has already been set to "SEND\_N" in the "TX\_SWITCH" state. There is no need to set it again.  
 SuggestedRemedy  
 1. In the "PCS\_TEST" block, remove "tx\_mode <= SEND\_N"  
 2. In the "SEND\_DATA" block, remove "tx\_mode <= SEND\_N"  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT IN PRINCIPLE.  
 Implement the suggested remedy.  
 In addition, tx\_mode does not need to be set to SEND\_T in COUNTDOWN as it was set that way in TRAINING.  
 3. In the "COUNTDOWN" block, remove "tx\_mode <= SEND\_T"

Cl 149 SC 149.3.7.3 P112 L50 # 93  
 Tu, Mike Broadcom  
 Comment Type **TR** Comment Status **D** Editorial  
 Change "TBD" to "65B RS-FEC"  
 SuggestedRemedy  
 Change "TBD" to "65B RS-FEC"  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

Cl 149 SC 149.2.2 P74 L28 # 94  
 Tu, Mike Broadcom  
 Comment Type **TR** Comment Status **D** State diagrams  
 Variable "rem\_phy\_ready" is no longer used  
 SuggestedRemedy  
 1. Delete line 28 "PMA\_REMPHYREADY.request(rem\_phy\_ready)"  
 2. Delete references to "rem\_phy\_ready" at the following location:  
 2.1 Page 71, line 34, Figure 149-2, change from "rem\_rcvr\_status / rem\_phy\_ready" to "rem\_rcvr\_status".  
 2.2 Page 80, delete 149.2.2.10, 149.2.2.10.1, 149.2.2.10.2, and 149.2.2.10.3.  
 2.3 Page 82, line 24, Figure 149-4, change from "rem\_rcvr\_status / rem\_phy\_ready" to "rem\_rcvr\_status".  
 2.4 Page 134, line 11, Figure 149-24, change from "rem\_rcvr\_status / rem\_phy\_ready" to "rem\_rcvr\_status".  
 2.5 Page 148, delete line 14 to line 20.  
 2.6 Page 75, line 26, delete "PMA\_REMPHYREADY.request" and the associated ARROW.  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT IN PRINCIPLE.  
 Comments 130, 94, 274, 276, 273 all discuss removing loc\_phy\_ready and/or rem\_phy\_ready. Need to determine a coherent solution for these comments.

Cl 149 SC 149.3.2.2.16 P93 L33 # 95  
 Tu, Mike Broadcom  
 Comment Type **ER** Comment Status **D** EZ  
 Line 33 to line 37 are the same as line 27 to line 31.  
 SuggestedRemedy  
 Delete line 33 to line 37.  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

Cl 149 SC 149.3.2.2.16 P94 L19 # 96  
 Tu, Mike Broadcom  
 Comment Type **TR** Comment Status **D** Editorial  
 Wrong indices. "m\_L" should be "m\_0" at both the input and the output of the Lth encoder.  
 SuggestedRemedy  
 Change "m\_L" to "m\_0" at both the input and the output of the Lth RS Encoder.  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

Cl 149 SC 149.3.2.2.18 P95 L1 # 97  
 Tu, Mike Broadcom

Comment Type ER Comment Status D PCS

This paragraph seems to be the redundant. Keep line 4 and 5.

*SuggestedRemedy*

Delete Line 1 and line 2.

Proposed Response Response Status W

PROPOSED REJECT.

This is not redundant as G(j) and {A,B} are both used elsewhere in the document and are the names for the different parts of the mapping.

If this comment is accepted, we would also need to delete P94, L42&43 to be consistent.

Cl 149 SC 149.3.2.2.20 P96 L3 # 98  
 Tu, Mike Broadcom

Comment Type TR Comment Status D Editorial

"P(r,t)" probably should be "P(u)"

*SuggestedRemedy*

Replace "P(r,t)" on line 3 and line 6 by "P(u)"

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 149 SC 149.3.2.3 P97 L14 # 99  
 Tu, Mike Broadcom

Comment Type ER Comment Status D EZ

Change "65B-RS-FEC" to "65B RS-FEC", same as the convention used in 149.3.2.2.2

*SuggestedRemedy*

Change "65B-RS-FEC" on line 14 and line 15 to "65B RS-FEC".

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 149 SC 149.4.2.4.10 P140 L46 # 100  
 Tu, Mike Broadcom

Comment Type ER Comment Status D Startup

Change "65B-RS-FEC" to "65B RS-FEC", same as the convention used in 149.3.2.2.2

*SuggestedRemedy*

Change "65B-RS-FEC" on line 14 and line 15 to "65B RS-FEC".

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Make change in existing text or in proposed text of comment 231.

Cl 149 SC 149.3.6.3 P107 L17 # 101  
 Tu, Mike Broadcom

Comment Type TR Comment Status D State diagrams

The RFER monitor state diagram is missing.

*SuggestedRemedy*

1. Copy Figure 97-13 as RFER monitor state diagram
2. On line 17, change Figure 149-TBD to the figure number of this inserted figure.
3. Before 149.3.6.3, add "149.3.6.2.6 Messages", with content:

RX\_FRAME

A signal sent to PCS Receive indicating that a full Reed-Solomon frame has been decoded and the variable rf\_valid is updated.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Need to reconcile comments 101, 221, 222, 103, and 78.

Cl 149 SC 149.3.6.2.5 P107 L1 # 102  
 Tu, Mike Broadcom

Comment Type TR Comment Status D EZ

Remove editorial highlights from line 1 to line 5.

*SuggestedRemedy*

Remove editorial highlights on line 1 to line 5.

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 149 SC 149.3.6.3 P107 L20 # 103  
 Tu, Mike Broadcom  
 Comment Type **TR** Comment Status **D** State diagrams  
 Remove editorial highlights from line 17 to line 35.  
 SuggestedRemedy  
 Remove editorial highlights from line 17 to line 35.  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT IN PRINCIPLE.  
 Need to reconcile comments 101, 221, 222, 103, and 78.

Cl 149 SC 149.3.7.2 P108 L24 # 104  
 Tu, Mike Broadcom  
 Comment Type **TR** Comment Status **D**  
 There are only 6 bits in MDIO register bits 3.2324.5:0.  
 SuggestedRemedy  
 Change from "X-bit counter that ..." to "6-bit counter that ...".  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

Cl 149 SC 149.4.2.3 P135 L34 # 105  
 Tu, Mike Broadcom  
 Comment Type **T** Comment Status **D** Error rate  
 1. For 1000BASE-T1, RFER = BER ( $<1e-10$ ) \* bits/RS-FEC (3600)  $< 3.6e-7$ . See 97.4.2.3.  
 2. For 10GBASE-T, LFER = BER ( $<1e-12$ ) \* bits/LDPC frame (3200)  $< 3.2e-9$ . See 55.4.2.4.  
 3. So it is reasonable for 802.3ch to set RFER = BER ( $<1e-12$ ) \* bits/RS-FEC (3200)  $< 3.2e-9$ .  
 SuggestedRemedy  
 Change "TBD" to "3.2 x 10<sup>-9</sup>".  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT IN PRINCIPLE.  
 Task force to discuss.

Cl 149 SC 149.4.2.8 P146 L13 # 106  
 Tu, Mike Broadcom  
 Comment Type **ER** Comment Status **D** EZ  
 Remove editorial highlight.  
 SuggestedRemedy  
 Remove editorial highlight.  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

Cl 149 SC 149.4.4.1 P147 L3 # 107  
 Tu, Mike Broadcom  
 Comment Type **TR** Comment Status **D** State diagrams  
 Remove editorial highlight.  
 SuggestedRemedy  
 Remove editorial highlight from line 3 to line 12.  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

Cl 149 SC 149.4.4.1 P147 L19 # 108  
 Tu, Mike Broadcom  
 Comment Type **TR** Comment Status **D** State diagrams  
 Remove editorial highlight.  
 SuggestedRemedy  
 Remove editorial highlight from line 19 to line 30  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT IN PRINCIPLE.  
 Remove highlight from line 27 to 30.  
 Delete lines 19 to 26 as loc\_phy\_ready is not used.

CI 149 SC 149.4.4.1 P147 L47 # 109  
 Tu, Mike Broadcom  
 Comment Type **TR** Comment Status **D** State diagrams  
 Remove editorial highlight.  
 SuggestedRemedy  
 Remove editorial highlight from line 47 to line 54  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

CI 149 SC 149.4.4.1 P148 L1 # 110  
 Tu, Mike Broadcom  
 Comment Type **TR** Comment Status **D** EZ  
 Change "PAM3" to "PAM4"  
 SuggestedRemedy  
 On line 1, 2, 4, 5, 7, 9, change "PAM3" to "PAM4".  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

CI 149 SC 149.4.4.1 P148 L13 # 111  
 Tu, Mike Broadcom  
 Comment Type **TR** Comment Status **D** State diagrams  
 Transition is from PAM2 to PAM4. Also it only depends on the received InfoField PFC24 counter.  
 SuggestedRemedy  
 Change from "... the receiver has transitioned from PAM2 to PAM3 mode and has received a valid PHY frame containing all IDLEs." to "... the receiver has transitioned from PAM2 to PAM4."  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT IN PRINCIPLE.  
 Make proposed changes and remove highlighting on rem\_countdown\_done and description.

CI 149 SC 149.1.3.3 P69 L15 # 112  
 Chen, Steven Broadcom  
 Comment Type **TR** Comment Status **D** Editorial  
 The transmit transition to the LPI transmit mode is based on the TXD[31:0] of the XGMII, not in the last 64B/64B block of a RS frame.  
 SuggestedRemedy  
 Change "... an LPI control character in the last 64B/65B block of a Reed-Solomon frame." to "... an LPI control character in all four lanes of two consecutive transfers of TXD[31:0] that will be mapped into a single 64B/65B block."  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

CI 149 SC 149.1.3.3 P69 L46 # 113  
 Chen, Steven Broadcom  
 Comment Type **ER** Comment Status **D** EEE  
 L46~L49  
 Need to refer to the appropriate Figures.  
 SuggestedRemedy  
 Replace "126-14" with the cross-reference to the figure captioned "PCS 64B/65B Transmit state diagram, part a" currently labelled "149-13".  
 Replace "126-15" with the cross-reference to the figure captioned "PCS 64B/65B Transmit state diagram, part b" currently labelled "149-14".  
 Replace "126-16" with the cross-reference to the figure captioned "PCS 64B/65B Receive state diagram, part a" currently labelled "149-15".  
 Replace "126-17" with the cross-reference to the figure captioned "PCS 64B/65B Receive state diagram, part a" currently labelled "149-16".  
 Replace "126-18" with the cross-reference to the figure captioned "EEE transmit state diagram"  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT IN PRINCIPLE.  
 Implement suggested solution with editorial licence to correct references as needed.

Cl 149 SC 149.2.2.3 P76 L34 # 114  
Chen, Steven Broadcom

Comment Type **ER** Comment Status **D** Editorial  
Using XGMII instead.

*SuggestedRemedy*

Change "to represent GMII data and ..." to "to represent XGMII data and ..."  
Suggest to search and replace it globally.

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

Make the suggested change and also make this change on P148 L34.

Cl 149 SC 149.4.4.1 P148 L37 # 115  
Chen, Steven Broadcom

Comment Type **TR** Comment Status **D** State diagrams  
The variable pcs\_data\_mode is not defined.

*SuggestedRemedy*

Copy from Clause 55.4.5.1 and insert here.

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

Add the following, with the proper formatting, after the tx\_mode definition.

The following variables are required only for PHYs that support the EEE capability:

pcs\_data\_mode

Generated by the PMA PHY Control function and indicates whether or not the local PHY may transition its PCS state diagrams out of their initialization states. The current value of the pcs\_data\_mode is passed to the PCS via the PMA\_PCSDATAMODE.indicate primitive.  
In

the absence of the optional EEE and fast retrain capabilities, the PHY operates as if the value of this variable is TRUE.

Cl 149 SC 149.3.2.2.16 P93 L33 # 116  
Chen, Steven Broadcom

Comment Type **ER** Comment Status **D** EZ  
The L33~L37 seems being a duplicated copy of the L27~L31.

*SuggestedRemedy*

Remove L33~L37.

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

Cl 149 SC 149.3.2.2.16 P94 L19 # 117  
Chen, Steven Broadcom

Comment Type **TR** Comment Status **D** Editorial  
The last message symbol of the input message symbols should be m0, not mL.

*SuggestedRemedy*

In the input message symbols, change "mL" to "m0".

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

Cl 149 SC 149.3.6.2.4 P105 L13 # 118  
Chen, Steven Broadcom

Comment Type **ER** Comment Status **D** State diagrams  
There's no definition for rx\_symb\_vector. The rx\_symb is defined instead.

*SuggestedRemedy*

Change "rx\_symb\_vector" to "rx\_symb".

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



CI 149 SC 149.3.7.1 P107 L46 # 119  
Chen, Steven Broadcom

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

Change PCS\_status to the defined pcs\_status for naming consistency.

*SuggestedRemedy*

Change "PCS\_status" to "pcs\_status"  
Suggest to search and replace it globally.

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

Make suggested change.

Also make change on P150 L46 x2, P151 L12, P151 L18, P48 L35.

CI 149 SC 149.3.7.2 P111 L5 # 120  
Chen, Steven Broadcom

Comment Type **TR** Comment Status **D** State diagrams

The "fr\_active" and "fr\_sigtype" is not defined and should be removed.

*SuggestedRemedy*

```
Change
"if !fr_active
  rx_raw <= LBLOCK_R
else
  rx_raw <= fr_sigtype
end"
to
"rx_raw <= LBLOCK_R"
```

Proposed Response Response Status **W**

PROPOSED ACCEPT.

CI 149 SC 149.3.8 P113 L14 # 121  
Chen, Steven Broadcom

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

The OAM10 is not defined.

*SuggestedRemedy*

Change "the OAM10 field" to "the OAM 10-bit field"  
Also replace the same issue in page 113 line 30.

Proposed Response Response Status **W**

PROPOSED ACCEPT.

CI 149 SC 149.3.8.2.12 P117 L31 # 122  
Chen, Steven Broadcom

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

The definition of "not receiving transmit message from the MAC" needs to be clarified.

*SuggestedRemedy*

Change "... not receiving transmit message from the MAC" to "... not receiving valid transmit message from the MAC"

Proposed Response Response Status **W**

PROPOSED ACCEPT.

CI 149 SC 149.3.8.4.3 P125 L27 # 123  
Chen, Steven Broadcom

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

The mr\_rx\_lp\_message[95:0] has 12 Octets.

*SuggestedRemedy*

Change "Eight octet BASE-T1 OAM from ..." to "Twelve octet BASE-T1 OAM from ..."

Proposed Response Response Status **W**

PROPOSED ACCEPT.

CI 149 SC 149.3.8.4.6 P131 L17 # 124  
Chen, Steven Broadcom

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

The downward arrow from RECEIVE INIT state to CHECK READ state is missing the transition condition.

*SuggestedRemedy*

Add conditional label "UCT" for the arrow in the middle.

Proposed Response Response Status **W**

PROPOSED REJECT.

If comment #66 is accepted as the response is written, a condition is added to this transition.

Cl 149 SC 149.4.2.5 P141 L32 # 125  
 Chen, Steven Broadcom  
 Comment Type **ER** Comment Status **D** Editorial  
 Use the Link Synchronization when AN is disabled.  
 SuggestedRemedy  
 Change the "synchronization ..." to "Link Synchronization ...".  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

Cl 149 SC 149.4.5 P150 L37 # 126  
 Chen, Steven Broadcom  
 Comment Type **TR** Comment Status **D** State diagrams  
 The "start minwait\_timer" does not seem needed in the TX\_SWITCH state.  
 SuggestedRemedy  
 Remove "start minwait\_timer".  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

Cl 149 SC 149.3.8.2.12 P118 L7 # 127  
 Chen, Steven Broadcom  
 Comment Type **TR** Comment Status **D** OAM  
 Unclear which RS-FEC block errors since we have different RS-FEC for both RS-FEC frame and OAM message, respectively.  
 SuggestedRemedy  
 Change "... RS-FEC block errors" to "... RS-FEC frame block errors"  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

Cl 149 SC 149.3.8.2.5 P116 L1 # 128  
 Chen, Steven Broadcom  
 Comment Type **TR** Comment Status **D** EEE  
 To exit the LPI would require to change MAC layer.  
 SuggestedRemedy  
 Remove "Request link partner to exit LPI and send idles"  
 Proposed Response Response Status **W**  
 PROPOSED REJECT.

This is text copied from 1000BASE-T1 OAM. This is used to force exit from EEE to ensure link is not lost. If this is not the correct way to state this, a different wording needs to be proposed.

Cl 149 SC 149.3.8.2.12 P117 L42 # 129  
 Chen, Steven Broadcom  
 Comment Type **TR** Comment Status **D** OAM  
 This standard requires single pair cable. There's no pair swap.  
 SuggestedRemedy  
 Remove L42 to L47.  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT IN PRINCIPLE.

While it is true that pairs cannot be swapped as there is only one pair, the conductors in the pair can be swapped. That is what this says.

Change: Pair swapped

To: Polarity inversion

Also on P117 L46 Change: Pair is not swapped  
 To: No polarity inversion detected.

P117 L 47 Change: Pair is swapped  
 To: Polarity inversion detected.

CI 149 SC 149.2.2 P74 L26 # 130  
Chen, Steven Broadcom

Comment Type TR Comment Status D State diagrams  
variable loc\_phy\_ready is not used.

*SuggestedRemedy*

1. Remove "PMA\_PHYREADY.indication(loc\_phy\_ready)".
2. In page 71 line26, remove "loc\_phy\_ready" in Figure 149-2.
3. In page 79, remove lines from 1 to 22.
4. In page 82 line 26, remove "loc\_phy\_ready" in Figure 149-4.
5. In page 134 line 8, remove "loc\_phy\_ready" in Figure 149-24.
6. In page 147, remove lines from 19 to 26.

Proposed Response Response Status W  
PROPOSED ACCEPT IN PRINCIPLE.

Comments 130, 94, 274, 276, 273 all discuss removing loc\_phy\_ready and/or rem\_phy\_ready. Need to determine a coherent solution for these comments.

CI 1 SC 1.3 P22 L6 # 131  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
Change wording of Editor's note.

*SuggestedRemedy*

Change: Insert the following references in 1.3 alphanumeric order as follows:  
To: Insert the following references in 1.3 in alphanumeric order as follows:

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 1 SC 1.4 P22 L26 # 132  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
Missing space

*SuggestedRemedy*

Change: 802.3cb-2018)as  
To: 802.3cb-2018) as

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 1 SC 1.5 P22 L50 # 133  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
Remove note on the type of paragraph to use for Abbreviations.

*SuggestedRemedy*

Remove: [abbreviations use paragraph tag AcrList,ac]

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 45 SC 45.2.1.192.3 P35 L13 # 134  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
typo

*SuggestedRemedy*

Change: the device shall, as a minimum  
To: the device shall, at a minimum

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 45 SC 45.2.1.192.4 P35 L28 # 135  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
verb/noun agreement

*SuggestedRemedy*

Change: Setting these bits force the precoder to the mode set.  
To: Setting these bits forces the precoder to the mode set.

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 45 SC 45.2.1.194.4 P38 L9 # 136  
 Wienckowski, Natalie General Motors

Comment Type E Comment Status D Registers

We don't need to keep repeating MultiGBASE-T1.

*SuggestedRemedy*

Change: When set as a one, this bit indicates to the link partner that the MultiGBASE-T1 PHY is advertising MultiGBASE-T1 OAM capability. When set as a zero, this bit indicates to the link partner that the MultiGBASE-T1 PHY is not advertising MultiGBASE-T1 OAM capability. This bit shall be set to zero if the MultiGBASE-T1 PHY does not support MultiGBASE-T1 OAM.

To: When set as a one, this bit indicates to the link partner that the PHY is advertising MultiGBASE-T1 OAM capability. When set as a zero, this bit indicates to the link partner that the PHY is not advertising MultiGBASE-T1 OAM capability. This bit shall be set to zero if the PHY does not support MultiGBASE-T1 OAM.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

(to correct cut/paste issue in suggested remedy "1 PHY" changed to "PHY" AND to fix "shall" on the user "this bit shall be set to zero" changed to "this bit should be set to zero...")

Change: When set as a one, this bit indicates to the link partner that the MultiGBASE-T1 PHY is advertising MultiGBASE-T1 OAM capability. When set as a zero, this bit indicates to the link partner that the MultiGBASE-T1 PHY is not advertising MultiGBASE-T1 OAM capability. This bit shall be set to zero if the MultiGBASE-T1 PHY does not support MultiGBASE-T1 OAM.

To: When set as a one, this bit indicates to the link partner that the PHY is advertising MultiGBASE-T1 OAM capability. When set as a zero, this bit indicates to the link partner that the PHY is not advertising MultiGBASE-T1 OAM capability. This bit should be set to zero if the PHY does not support MultiGBASE-T1 OAM.

CI 45 SC 45.2.1.194.5 P38 L16 # 137  
 Wienckowski, Natalie General Motors

Comment Type E Comment Status D Registers

We don't need to keep repeating MultiGBASE-T1.

*SuggestedRemedy*

Change: When set as a one, this bit indicates to the link partner that the MultiGBASE-T1 PHY is advertising EEE capability. When set as a zero, this bit indicates to the link partner that the MultiGBASE-T1 PHY is not advertising EEE capability. This bit shall be set to zero if the MultiGBASE-T1 PHY does not support EEE.

To: When set as a one, this bit indicates to the link partner that the PHY is advertising EEE capability. When set as a zero, this bit indicates to the link partner that the PHY is not advertising EEE capability. This bit shall be set to zero if the PHY does not support EEE.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

(to fix "shall" on the user "this bit shall be set to zero" changed to "this bit should be set to zero...")

Change: When set as a one, this bit indicates to the link partner that the MultiGBASE-T1 PHY is advertising EEE capability. When set as a zero, this bit indicates to the link partner that the MultiGBASE-T1 PHY is not advertising EEE capability. This bit shall be set to zero if the MultiGBASE-T1 PHY does not support EEE.

To: When set as a one, this bit indicates to the link partner that the PHY is advertising EEE capability. When set as a zero, this bit indicates to the link partner that the PHY is not advertising EEE capability. This bit should be set to zero if the PHY does not support EEE.

CI 45 SC 45.2.3.76 P44 L42 # 138  
 Wienckowski, Natalie General Motors

Comment Type T Comment Status D OAM

The details on the OAM Status bytes are defined in 149.3.8.2.12. Refer to that section for these bytes.

*SuggestedRemedy*

Replace: The message data is user defined and its definition is outside the scope of this standard.

With: See 149.3.8.2.12 for details on the OAM status message definition.

Proposed Response Response Status W

PROPOSED ACCEPT.

**Cl 45** SC **45.2.3.80.5** P**49** L**13** # **139**  
 Wienckowski, Natalie General Motors  
**Comment Type E** **Comment Status D** *Editorial*  
 There is a carriage return that shouldn't be there. This section should be a single paragraph.  
*SuggestedRemedy*  
 Remove the carriage return after "behavior." to bring the following line into the same paragraph.  
**Proposed Response** **Response Status W**  
 PROPOSED REJECT.  
 In the BASE-T1 bits which are copies, the statement that the bit is a copy is set off by being its own paragraph for readability. See 45.2.3.69.1 and 45.2.3.69.2

**Cl 125** SC **125.1.2** P**62** L**17** # **140**  
 Wienckowski, Natalie General Motors  
**Comment Type E** **Comment Status D** *EZ*  
 alignment of figure elements  
*SuggestedRemedy*  
 Need to align MDI box of 5GBASE-T which overlaps the AN box.  
**Proposed Response** **Response Status W**  
 PROPOSED ACCEPT IN PRINCIPLE.  
 Align MDI and AN boxes, and editorial license to align other boxes and lines in Figure 125-1 to fix overlaps.

**Cl 149** SC **149** P**66** L**2** # **141**  
 Wienckowski, Natalie General Motors  
**Comment Type E** **Comment Status D** *EZ*  
 missing comma  
*SuggestedRemedy*  
 Change: (PMA) sublayer and  
 To: (PMA) sublayer, and  
**Proposed Response** **Response Status W**  
 PROPOSED ACCEPT.

**Cl 149** SC **149.1.3** P**66** L**49** # **142**  
 Wienckowski, Natalie General Motors  
**Comment Type E** **Comment Status D** *EZ*  
 missing space  
*SuggestedRemedy*  
 Change: at least 15 m.The  
 To: at least 15 m. The  
**Proposed Response** **Response Status W**  
 PROPOSED ACCEPT.

**Cl 149** SC **149.1.3** P**67** L**54** # **143**  
 Wienckowski, Natalie General Motors  
**Comment Type T** **Comment Status D** *Nomenclature*  
 We agreed to call the OAM "MultiGBASE-T1 OAM".  
*SuggestedRemedy*  
 Change: 2.5G/5G/10GBASE-T1 OAM  
 To: MultiGBASE-T1 OAM throughout this section and the document.  
**Proposed Response** **Response Status W**  
 PROPOSED ACCEPT IN PRINCIPLE.  
 Change 2.5G/5G/10GBASE-T1 to "MultiGBASE-T1" everywhere in the draft (not just for OAM). (note most references refer to "MultiGBASE-T1 PCS or PMA/PMD", whereas Clause 149 refers to 2.5G/5G/10GBASE-T1 links, PCS, operation, link segment, and OAM.  
 (TFTD - Is there a difference here?)

**Cl 149** SC **149.1.3** P**68** L**7** # **144**  
 Wienckowski, Natalie General Motors  
**Comment Type E** **Comment Status D** *Nomenclature*  
 Use common abbreviation for the combined PHY types.  
*SuggestedRemedy*  
 Change: The 2.5GBASE-T1, 5GBASE-T1, or 10GBASE-T1 PMA  
 To: 2.5G/5G/10GBASE-T1 PMA  
**Proposed Response** **Response Status W**  
 PROPOSED REJECT.

When "2.5GBASE-T1, 5GBASE-T1, or 10GBASE-T1 PMA" (or PCS or PHY) is used, we are talking about behavior of a single-speed, single-instance of a PMA (or PCS or PHY). When we use "MultiGBASE-T1" PMA we are talking about the specification, or the name of a functionality associated with all 3 (such as OAM).

CI 149 SC 149.4.2.1 P135 L7 # 145  
Wienckowski, Natalie General Motors

Comment Type T Comment Status D EZ

Add requirement for time allowed to perform a reset at the end of this section.

*SuggestedRemedy*

Add a new paragraph at the end of this section: The time for the PMA to resume normal transmit and receive functions after pma\_reset transitions to OFF shall not exceed 20 ms.

Proposed Response Response Status Z

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

CI 45 SC 45.2.1.192.1 P34 L28 # 146  
Wienckowski, Natalie General Motors

Comment Type T Comment Status D EZ

Remove timing for restoration of normal operation and refer to 149.4.2.1 instead.

*SuggestedRemedy*

Change: The control and management interface shall be restored to operation within 0.5 s from the setting of bit 1.2309.15.  
To: The control and management interface shall be restored to operation within the time specified in 149.4.2.1 from the setting of bit 1.2309.15.

Proposed Response Response Status Z

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

CI 125 SC 125.1.2 P61 L12 # 147  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ

Incorrect wording for MDI

*SuggestedRemedy*

Change: Media Dependent Interface (MDI)  
To: Medium Dependent Interface (MDI)

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 149 SC 149.1.3.3 P69 L20 # 148  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D Editorial

missing comma

*SuggestedRemedy*

Change: Periodically the transmit  
To: Periodically, the transmit

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

(rewrite, removing need for the comma and improving clarity)

Change: Periodically the transmit function of the local PHY transmits refresh frames that are used by the link partner to update adaptive filters and timing circuits in order to maintain link integrity.

To: The transmit function of the local PHY periodically transmits refresh frames. These are used by the link partner to update adaptive filters and timing circuits in order to maintain link integrity.

CI 149 SC 149.1.3.3 P69 L25 # 149  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ

Duplicate sentence.

*SuggestedRemedy*

Remove one instance of: The PMA Transmit function in the PHY then sends an alert message to the link partner.

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 149 SC 149.1.3.3 P69 L43 # 150  
 Wienckowski, Natalie General Motors

Comment Type E Comment Status D OAM  
 Original OAM bytes are now named "BASE-T1 OAM".

*SuggestedRemedy*

Change: 2.5G/5G/10GBASE-T1 OAM  
 To: BASE-T1 OAM

Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.

The entire phrase is "2.5G/5G/10GBASE-T1 OAM SNR settings" - there are no other references to this - it is called the "PHY Health Indicator" in 149.3.8.2.5 and 149.3.8.2.15 (why it is repeated, with different information is for discussion, and probably another comment - this is what was in Clause 97. First there was a description of the bits, then later the functions. These are all in the same subsection due to the 5 level heading limit. The MultiG-BASET1 specific definitions are all in 149.3.8.2.12 instead of putting each item in a separate section.).

Change: 2.5G/5G/10GBASE-T1 OAM SNR settings indicate

To: PHY Health status received from the link partner indicates

Cl 149 SC 149.1.3.4 P69 L53 # 151  
 Wienckowski, Natalie General Motors

Comment Type E Comment Status D Desc  
 missing comma

*SuggestedRemedy*

Change: The Link Synchronization function is used when Auto-Negotiation is disabled to synchronize between the ...  
 To: The Link Synchronization function is used when Auto-Negotiation is disabled, to synchronize between the ...

Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.

Repeating that "link synchronization" is to "synchronize" has no value, and actually isn't what this function does. It doesn't control the link\_status timer (that's maxwait\_timer in the phy control diagram) - also the case where autoneg is not implemented is left out. Combine the first and second sentences of 149.1.3.4 as follows:

Replace: The Link Synchronization function is used when Auto-Negotiation is disabled to synchronize between the MASTER PHY and SLAVE PHY before training starts. Link Synchronization provides a fast and reliable mechanism for link partners to detect the presence of each other and start the timers used by the link monitor which determines link\_status.

With: The Link Synchronization function is used when Auto-Negotiation is disabled or not implemented to detect the presence of the link partner, time and control link failure, and act as the data source for the PHY control state diagram.

Cl 149 SC 149.1.4 P72 L16 # 152  
 Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
 missing comma before and

*SuggestedRemedy*

Change: refresh, quiet and alert signaling  
 To: refresh, quiet, and alert signaling

Proposed Response Response Status W  
 PROPOSED ACCEPT.

CI 149 SC 149.1.4 P72 L23 # 153  
 Wienckowski, Natalie General Motors

Comment Type E Comment Status D Desc  
 subject/verb agreement

SuggestedRemedy

Change: which enable the receiver  
 To: which enables the receiver

Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.

PAM2 doesn't "enable" the receiver, it might aide it, but best to leave implementation detail out. Also, figure 149-4 isn't really relevant to this statement. 149-31 is.

Change: generate only PAM2 symbols for transmission by the PMA, which enable the receiver at the other end to train until it is ready to operate in normal mode. (See Figure 149-4.)

To: generate only PAM2 symbols for transmission by the PMA for the initial phases of training. (See Figure 149-31.)

CI 149 SC 149.2.2.1.1 P74 L48 # 154  
 Wienckowski, Natalie General Motors

Comment Type T Comment Status D Editorial  
 We removed SEND\_I, but didn't change the number of values to "three" from "four" in the text.

SuggestedRemedy

Change: four  
 To: three

Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.

Change: can take on one of the following four values of the form:

To: can take on one of the following values:

CI 149 SC 149.2.2.3.1 P76 L44 # 155  
 Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
 Formatting of text under SYMB and ALERT does not match the rest of the document.

SuggestedRemedy

Fix the paragraph formatting.

Proposed Response Response Status W  
 PROPOSED ACCEPT.

CI 149 SC 149.3.2.2 P83 L10 # 156  
 Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
 Add commas for readability.

SuggestedRemedy

Change: These bits are then mapped two at a time into a PAM4 symbol.  
 To: These bits are then mapped, two at a time, into a PAM4 symbol.

Proposed Response Response Status W  
 PROPOSED ACCEPT.

CI 149 SC 149.3.2.2 P83 L22 # 157  
 Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
 Missing open parenthesis

SuggestedRemedy

Change: Tn)  
 To: (Tn)

Proposed Response Response Status W  
 PROPOSED ACCEPT.



CI 149 SC 149.3.2.2 P83 L23 # 158  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
Change signal value to +1 for consistency.

## SuggestedRemedy

Change: {-1, 1}  
To: {-1, +1}

Proposed Response Response Status W  
PROPOSED ACCEPT IN PRINCIPLE.

Change: {-1, 1}  
To: {-1, +1}

CI 149 SC 149.3.2.2.1 P84 L4 # 159  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
typo

## SuggestedRemedy

Change: 65B-RS\_FEC  
To: 65B RS-FEC

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 149 SC 149.3.2.3 P97 L14 # 160  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
typo

## SuggestedRemedy

Change: 65B-RS-FEC  
To: 65B RS-FEC  
Also page 97 line 15 and page 140 line 46.

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 149 SC 149.3.2.2.2 P85 L31 # 161  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
extraneous word

## SuggestedRemedy

Remove the word "pair" from Figure 149-6. This is left from the 4-pair figure and isn't needed here.

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 149 SC 149.3.8.4.3 P127 L35 # 162  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
We changed to BASE-T1 OAM

## SuggestedRemedy

Change: 1000BASE-T1 OAM  
To: BASE-T1 OAM

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 149 SC 149.3.8.4.3 P127 L43 # 163  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D Editorial  
missing periods

## SuggestedRemedy

Add periods at the end of both "Values" sentences.

Proposed Response Response Status W  
PROPOSED ACCEPT IN PRINCIPLE.

Add periods at the end of both values, and editorial license to add periods at the end of other Values in 149.3.8.4.3 which may be lacking and are complete sentences (e.g., P127 L21 & 22)

Cl 149 SC 149.3.8.4.3 P127 L49 # 164  
 Wienckowski, Natalie General Motors  
 Comment Type E Comment Status D Editorial  
 missing period  
 SuggestedRemedy  
 Add period at end of "Good" sentence.  
 Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.  
 This is not a sentence.  
 Remove period at the end of the "BAD" statement as it is not a sentence.

Cl 149 SC 149.3.8.4.3 P128 L19 # 165  
 Wienckowski, Natalie General Motors  
 Comment Type E Comment Status D Editorial  
 missing periods  
 SuggestedRemedy  
 Add periods at the end of both "Values" sentences.  
 Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.  
 Change: false: transmit stream not at a boundary end  
 true: transmit stream at a boundary end  
 To: false: transmit stream is not at a boundary end.  
 true: transmit stream is at a boundary end.

Cl 149 SC 149.3.8.4.3 P129 L20 # 166  
 Wienckowski, Natalie General Motors  
 Comment Type E Comment Status D Editorial  
 missing periods  
 SuggestedRemedy  
 Add periods at the end of all 4 "Values" sentences.  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.3.8.4.3 P129 L33 # 167  
 Wienckowski, Natalie General Motors  
 Comment Type E Comment Status D Editorial  
 missing periods  
 SuggestedRemedy  
 Add periods at the end of both "Values" sentences.  
 Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.  
 Change: false: transmit stream not at a boundary end  
 true: transmit stream at a boundary end  
 To: false: transmit stream is not at a boundary end.  
 true: transmit stream is at a boundary end.

Cl 149 SC 149.4.2 P134 L47 # 168  
 Wienckowski, Natalie General Motors  
 Comment Type T Comment Status D EZ  
 Incorrect Figure reference  
 SuggestedRemedy  
 Change: Figure 149-12  
 To: Figure 149-24  
 Make the same change on line 49.  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.4.2.1 P135 L4 # 169  
 Wienckowski, Natalie General Motors  
 Comment Type E Comment Status D EZ  
 missing space  
 SuggestedRemedy  
 Change: hold true.All  
 To: hold true. All  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

CI 149 SC 149.4.2.2 P135 L11 # 170  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D State diagrams  
missing comma

**SuggestedRemedy**

Change: onto the MDI pulses modulated  
To: onto the MDI, pulses modulated

Proposed Response Response Status W  
PROPOSED ACCEPT IN PRINCIPLE.

Sentence is punctuated, correctly, but is confusing - and is incorrect by not covering the autoneg case.

Change: PMA Transmit shall continuously transmit onto the MDI pulses modulated by the symbols given by tx\_symb when sync\_link\_control = ENABLE, or the sync\_tx\_symb output by the PHY Link Synchronization function when sync\_link\_control = DISABLE, after processing with optional transmit filtering, digital-to-analog conversion (DAC) and subsequent analog filtering.

To: When the PHY control state diagram (Figure 149-31) is not in the DISABLE\_TRANSMITTER state, PMA Transmit shall continuously transmit pulses modulated by the symbols given by tx\_symb onto the MDI after processing with optional transmit filtering, digital-to-analog conversion (DAC), and subsequent analog filtering. During Link Synchronization, when sync\_link\_control = DISABLE and Auto-Negotiation is either not enabled or is not implemented, the sync\_tx\_symb output by the PHY Link Synchronization function shall be used in place of tx\_symb as the data source for PMA Transmit.

CI 149 SC 149.4.2.2 P135 L14 # 171  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D State diagrams  
missing comma

**SuggestedRemedy**

Change: (DAC) and subsequent  
To: (DAC), and subsequent

Proposed Response Response Status W  
PROPOSED ACCEPT IN PRINCIPLE.

Resolved by current Response in 170.  
If 170 is not accepted, or if it is accepted but the text in this comment is not changed by 170, change "(DAC) and subsequent" to "(DAC), and subsequent"

CI 149 SC 149.4.2.2.1 P135 L26 # 172  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D Editorial  
improve wording by removing an extra "transmitter".

**SuggestedRemedy**

Change: When the PMA\_transmit\_disable variable is set to true, this function shall turn off the transmitter so that the transmitter Average Launch Power of the Transmitter is less than -53 dBm.

To: When the PMA\_transmit\_disable variable is set to true, this function shall turn off the transmitter so that the Average Launch Power of the Transmitter is less than -53 dBm.

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 149 SC 149.4.2.3 P135 L44 # 173  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
subject/verb agreement

**SuggestedRemedy**

Change: from any other values  
To: from any other value

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 149 SC 149.4.2.4 P136 L14 # 174  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
extra "F"

**SuggestedRemedy**

Change: Ffigure 149-27  
To: Figure 149-27

Proposed Response Response Status W  
PROPOSED ACCEPT IN PRINCIPLE.

Delete leading "F" before cross-reference.

CI 149 SC 149.4.2.4.2 P137 L3 # 175  
 Wienckowski, Natalie General Motors

Comment Type T Comment Status D Editorial  
 The SOF is 3 octets, not 4. Also, fix subject/verb agreement.

*SuggestedRemedy*

Change: The start of Frame Delimiter consist of 4 octets [Octet 1<7:0>, Octet 2<7:0>, Octet 3<7:0>]  
 To: The start of Frame Delimiter consists of 3 octets [Octet 1<7:0>, Octet 2<7:0>, Octet 3<7:0>]

Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.

Change: The start of Frame Delimiter consist of 4 octets [Octet 1<7:0>, Octet 2<7:0>, Octet 3<7:0>]  
 To: The start of Frame Delimiter consists of three octets [Octet 1<7:0>, Octet 2<7:0>, Octet 3<7:0>]

CI 149 SC 149.4.2.4.4 P137 L15 # 176  
 Wienckowski, Natalie General Motors

Comment Type E Comment Status D Editorial  
 Not a sentence

*SuggestedRemedy*

Change: Message Field (1 octet).  
 To: The Message Field is 1 octet.

Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.

Change: Message Field (1 octet).  
 To: The Message Field is one octet.

CI 149 SC 149.4.2.4.5 P138 L17 # 177  
 Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
 Should be the letter "O", not the number "0".

*SuggestedRemedy*

Change: [Oct8<7:0>, Oct9<7:0>, Oct10<7:0>]  
 To: [Oct8<7:0>, Oct9<7:0>, Oct10<7:0>]

Proposed Response Response Status W  
 PROPOSED ACCEPT.

CI 149 SC 149.4.2.4.10 P140 L44 # 178  
 Wienckowski, Natalie General Motors

Comment Type E Comment Status D Startup  
 Add commas for readability.

*SuggestedRemedy*

Change: In SLAVE mode PHY Control transitions to the TRAINING state only after the SLAVE PHY acquires timing, converges its equalizers, acquires its descrambler state and sets loc\_SNR\_margin = OK.  
 To: In SLAVE mode, PHY Control transitions to the TRAINING state only after the SLAVE PHY acquires timing, converges its equalizers, acquires its descrambler state, and sets loc\_SNR\_margin = OK.

Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.

Requested changes are accomplished with the proposal in comment 231.

CI 149 SC 149.4.2.5 P141 L36 # 179  
 Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
 subject/verb agreement

*SuggestedRemedy*

Change: the Auto-Negotiation function set link\_control  
 To: the Auto-Negotiation function sets link\_control

Proposed Response Response Status W  
 PROPOSED ACCEPT.

CI 149 SC 149.4.3.1 P146 L21 # 180  
Wienckowski, Natalie General Motors

Comment Type T Comment Status D MDI  
there is only 1 pair

*SuggestedRemedy*

Change: The modulation scheme used over each pair is PAM4.  
To: The modulation scheme used is PAM4.

Proposed Response Response Status W  
PROPOSED ACCEPT IN PRINCIPLE.

P146 L21 Delete the sentence: The modulation scheme used over each pair is PAM4.

P146 L 33  
Change: Signals received at the MDI can be expressed for each pair as pulse-amplitude modulated

To: Signals received at the MDI can be expressed as pulse-amplitude modulated

CI 149 SC 149.4.3.1 P146 L27 # 181  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
fix "-" and add "+" to be consistent with the rest of the document.

*SuggestedRemedy*

Change: {-1, -1/3, 1/3, 1}  
To: {-1, -1/3, +1/3, +1}

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 149 SC 149.5.1 P151 L37 # 182  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
Add commas for readability.

*SuggestedRemedy*

Change: If MDIO is implemented these test modes shall be enabled by setting a control register 1.2313.15:13 as  
To: If MDIO is implemented, these test modes shall be enabled by setting a control register, 1.2313.15:13, as

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 149 SC 149.5.1 P152 L36 # 183  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
Remove extraneous comma

*SuggestedRemedy*

Change: , or,  
To: , or

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 149 SC 149.5.1.1 P154 L26 # 184  
Wienckowski, Natalie General Motors

Comment Type T Comment Status D EZ

*SuggestedRemedy*

Remove "Link Partner" box in Figure 149-36 over the Figure title.

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 149 SC 149.3.2.2.3 P85 L37 # 185  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
Need to keep this paragraph with the one before it instead of allowing them to be separated by the Figures or the statement "The subscript in the above labels" is out of context.

*SuggestedRemedy*

Keep paragraphs together through formatting.

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 149 SC 149.3.2.2.16 P93 L36 # 186  
 Wienckowski, Natalie General Motors  
 Comment Type E Comment Status D EZ  
 i,r should be subscripts  
 SuggestedRemedy  
 For pi,r, change i,r to a subscript of p.  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

CI 149 SC 149.3.2.2.21 P96 L27 # 187  
 Wienckowski, Natalie General Motors  
 Comment Type E Comment Status D EZ  
 Add comma for readability.  
 SuggestedRemedy  
 Change: After the sleep signal is transmitted LPI control characters shall be  
 To: After the sleep signal is transmitted, LPI control characters shall be  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

CI 149 SC 149.3.2.3 P97 L28 # 188  
 Wienckowski, Natalie General Motors  
 Comment Type E Comment Status D Editorial  
 Add comma for readability.  
 SuggestedRemedy  
 Change: monitors the signal quality asserting hi\_rfer if excessive  
 To: monitors the signal quality, asserting hi\_rfer if excessive  
 Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.  
 Change: monitors the signal quality asserting hi\_rfer if excessive RS-FEC frame errors are detected.  
 To: monitors the signal quality and asserts hi\_rfer to indicate excessive RS-FEC frame errors.

CI 149 SC 149.3.2.3 P97 L51 # 189  
 Wienckowski, Natalie General Motors  
 Comment Type E Comment Status D EZ  
 Add comma for readability.  
 SuggestedRemedy  
 Change: After these frames the link partner  
 To: After these frames, the link partner  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

CI 149 SC 149.3.2.3.2 P98 L16 # 190  
 Wienckowski, Natalie General Motors  
 Comment Type T Comment Status D EZ  
 The equation references are swapped. The Master receive function should use the Slave transmit scrambler to descramble and the Slave receiver should use the Master transmit scrambler to descramble.  
 SuggestedRemedy  
 Swap the references to Equation (149-5) and Equation (149-6) in the following text: For side-stream descrambling, the MASTER PHY shall employ the receiver descrambler generator polynomial per Equation (149-5) and the SLAVE PHY shall employ the receiver descrambler generator polynomial per Equation (149-6).  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

CI 149 SC 149.3.4.4 P100 L8 # 191  
 Wienckowski, Natalie General Motors  
 Comment Type T Comment Status D EZ  
 This is a duplicate of 149.3.4.3.  
 SuggestedRemedy  
 Delete 149.3.4.4.  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.3.5 P100 L25 # 192  
 Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
 Add comma for readability.

*SuggestedRemedy*

Change: Within the LPI mode PHYs use a repeating quiet-refresh cycle  
 To: Within the LPI mode, PHYs use a repeating quiet-refresh cycle

Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.3.5 P100 L30 # 193  
 Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
 Add comma for readability.

*SuggestedRemedy*

Change: lpi\_qr\_time equal to 96 RS-FEC frame periods.  
 To: lpi\_qr\_time, equal to 96 RS-FEC frame periods.

Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.3.5 P100 L29 # 194  
 Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
 grammer - the letter L is "el" which requires an in front of it

*SuggestedRemedy*

Change: a LPI  
 To: an LPI

Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.3.5.1 P101 L6 # 195  
 Wienckowski, Natalie General Motors

Comment Type E Comment Status D EEE  
 Add commas for readability.

*SuggestedRemedy*

Change: At the Master RS-FEC frame count of zero and all multiples of 96 RS-FEC frames thereafter denote the start of the cycle.  
 To: At the Master, a RS-FEC frame count of zero, and all multiples of 96 RS-FEC frames thereafter, denote the start of the cycle.

Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.

This text may be deleted if Comment 65 is implemented.

(should be "an RS-FEC frame count")

Change: At the Master RS-FEC frame count of zero and all multiples of 96 RS-FEC frames thereafter denote the start of the cycle.

To: At the Master, an RS-FEC frame count of zero, and all multiples of 96 RS-FEC frames thereafter, denote the start of the cycle.

Cl 149 SC 149.3.5.1 P101 L13 # 196  
 Wienckowski, Natalie General Motors

Comment Type T Comment Status D EEE  
 The refresh signals are not exactly a half cycle off since one is at 52 and the other is at 96 RS-FEC frames.

*SuggestedRemedy*

Change: the refresh periods are a half cycle offset.  
 To: the refresh periods are about a half cycle offset.

Proposed Response Response Status W  
 PROPOSED ACCEPT.

Not needed if comment #65 implemented as proposed.

CI 149 SC 149.3.6.2.4 P105 L42 # 197  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
Hex alphabetic characters should be capitalized.

*SuggestedRemedy*

Change: 0x1e  
To: 0x1E  
Also on page 105, line 45

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 149 SC 149.3.6.2.4 P105 L53 # 198  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
duplicate sentence.

*SuggestedRemedy*

Delete on instance of: A valid O code is one containing an O code specified in Table 149-1.

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 149 SC 149.3.6.2.4 P105 L25 # 199  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D Editorial  
awkward wording

*SuggestedRemedy*

Change: belonging to the eight types  
To: belonging to one of the eight types  
Also on page 106, line 11

Proposed Response Response Status W  
PROPOSED ACCEPT IN PRINCIPLE.

Change: belonging to the eight types

To: belonging to one or more of the eight types

Also on page 106, line 11

CI 149 SC 149.3.8.2.4 P115 L44 # 200  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
awkward wording

*SuggestedRemedy*

Change: This bit is set by the PHY to for the link partner to echo on Ping RX.  
To: This bit is set by the PHY for the link partner to echo on Ping RX.

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 149 SC 149.3.8.2.12 P117 L17 # 201  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
missing period

*SuggestedRemedy*

Add a period at the end of the sentence.  
Also on page 117, lines 24, 30, 36, 42, and 49.  
Also on page 118, lines 1 and 6.

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 149 SC 149.3.8.2.13 P118 L14 # 202  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D Editorial  
subject/verb agreement

*SuggestedRemedy*

Change: The RS(16, 14) parity symbols is indicated  
To: The RS(16, 14) parity symbols are indicated

Proposed Response Response Status W  
PROPOSED ACCEPT.



CI 149 SC 149.3.8.2.13 P118 L32 # 203  
 Wienckowski, Natalie General Motors  
 Comment Type E Comment Status D EZ  
 missing period  
 SuggestedRemedy  
 Add a period at the end of the sentence.  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

CI 149 SC 149.3.8.2.13 P118 L35 # 204  
 Wienckowski, Natalie General Motors  
 Comment Type E Comment Status D EZ  
 missing period  
 SuggestedRemedy  
 Change: Figure 149–19 Before calculation  
 To: Figure 149–19. Before calculation  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

CI 149 SC 149.3.8.2.14 P118 L41 # 205  
 Wienckowski, Natalie General Motors  
 Comment Type E Comment Status D Editorial  
 missing periods  
 SuggestedRemedy  
 Add periods at the end of the a) and b) statements.  
 Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.  
 (change is on page 119, and a) and b) are not sentences.  
 Change: a) RS(16, 14) uncorrectable error  
 b) Uncorrectable PHY frame on any of the 16 symbols  
 To: a) RS(16, 14) contains an uncorrectable error, or  
 b) there is an uncorrectable PHY frame on any of the 16 symbols.

CI 149 SC 149.3.8..17 P120 L16 # 206  
 Wienckowski, Natalie General Motors  
 Comment Type T Comment Status D OAM  
 It is not required that a user defined OAM message require multiple OAM messages to transmit. It is possible that the user defined OAM message fits within the 8 bytes available.  
 SuggestedRemedy  
 Change: the OAM message exchange operates on a per OAM message basis that will occur over many OAM frames.  
 To: the OAM message exchange operates on a per OAM message basis that may occur over many OAM frames.  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

CI 149 SC 149.3.8.2.17 P120 L22 # 207  
 Wienckowski, Natalie General Motors  
 Comment Type E Comment Status D EZ  
 missing comma  
 SuggestedRemedy  
 Change: After the link partner receives the OAM message it transfers it  
 To: After the link partner receives the OAM message, it transfers it  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

CI 149 SC 149.3.8.2.17 P120 L23 # 208  
 Wienckowski, Natalie General Motors  
 Comment Type E Comment Status D EZ  
 missing comma  
 SuggestedRemedy  
 Change: One OAM message can be loaded into the OAM transmit registers while another OAM message is being transmitted by the PHY to the link partner while yet another OAM message is being read out at the link partner's OAM receive registers.  
 To: One OAM message can be loaded into the OAM transmit registers while another OAM message is being transmitted by the PHY to the link partner, while yet another OAM message is being read out at the link partner's OAM receive registers.  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

CI 149 SC 149.3.8.2.17 P120 L26 # 209  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
subject/verb agreement

*SuggestedRemedy*

Change: The exchange of OAM messages are occurring concurrently and bi-directionally.  
To: The exchange of OAM messages is occurring concurrently and bi-directionally.

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 149 SC 149.3.8.2.17 P120 L27 # 210  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
missing comma

*SuggestedRemedy*

Change: On the transmit side mr\_tx\_valid = 0 indicates that the next OAM message can be written into the OAM transmit registers.  
To: On the transmit side, mr\_tx\_valid = 0 indicates that the next OAM message can be written into the OAM transmit registers.

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 149 SC 149.3.8.2.17 P120 L30 # 211  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
missing comma and subject/verb agreement

*SuggestedRemedy*

Change: Once the registers are written the management entity sets mr\_tx\_valid to 1 to indicate that the OAM transmit registers contains a valid OAM message.  
To: Once the registers are written, the management entity sets mr\_tx\_valid to 1 to indicate that the OAM transmit registers contain a valid OAM message.

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 149 SC 149.3.8.2.17 P120 L33 # 212  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
missing comma

*SuggestedRemedy*

Change: On the receive side mr\_rx\_lp\_valid indicates that valid OAM message can be read from the OAM receive registers.  
To: On the receive side, mr\_rx\_lp\_valid indicates that valid OAM message can be read from the OAM receive registers.

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 149 SC 149.3.8.2.17 P120 L35 # 213  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
missing comma

*SuggestedRemedy*

Change: If mr\_rx\_lp\_valid is not cleared then the OAM  
To: If mr\_rx\_lp\_valid is not cleared, then the OAM

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 149 SC 149.3.8.4.3 P126 L47 # 214  
Wienckowski, Natalie General Motors

Comment Type E Comment Status D Editorial  
missing periods

*SuggestedRemedy*

Add period at the end of the 0 and 1 sentences.

Proposed Response Response Status W  
PROPOSED ACCEPT IN PRINCIPLE.

Change: "0: BASE-T1 OAM message not received and read by the link partner  
1: BASE-T1 OAM message received by the link partner"  
to: "0: BASE-T1 OAM message was not received and read by the link partner.  
1: BASE-T1 OAM message was received by the link partner."

CI 149 SC 149.3.8.4.3 P127 L11 # 215  
 Wienckowski, Natalie General Motors

Comment Type E Comment Status D Editorial  
 improve wording to match other statements

SuggestedRemedy

Change: Don't send request to link partner...  
 To: Don't request link partner...

Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.

Change: false: Don't send request to link partner to clear their REC counter.

To: false: Don't request link partner to clear its REC counter.

CI 149 SC 149.3.8.4.3 P127 L12 # 216  
 Wienckowski, Natalie General Motors

Comment Type E Comment Status D Editorial  
 improve wording to match other statements

SuggestedRemedy

Change: Send request to link partner...  
 To: Request link partner...

Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.

Change: true: Send request to link partner to clear their REC counter.

To: true: Request link partner to clear its REC counter.

CI 149 SC 149.3.8.4.3 P127 L17 # 217  
 Wienckowski, Natalie General Motors

Comment Type E Comment Status D EZ  
 missing periods

SuggestedRemedy

Add periods at the end of all 4 "Values" sentences.

Proposed Response Response Status W  
 PROPOSED ACCEPT.

CI 45 SC 45.2.3.80.2 P48 L38 # 218  
 Zimmerman, George CME:ADI,Aquantia,AP

Comment Type T Comment Status D Registers

"When read as a one, bit 3.2324.9 indicates that the MultiGBASE-T1 PCS receiver is detecting a BER of  $> 4 \times 10^{-4}$ . When read as a zero, bit 3.2324.9 indicates that the MultiGBASE-T1 PCS is not detecting a BER of  $> 4 \times 10^{-4}$ ."  
 hi\_rfer doesn't really correspond well to a BER and this isn't the place to specify it. What BER hi\_rfer corresponds to will depend on the interleaving. Better to rewrite this in terms of the definition of hi\_rfer.

SuggestedRemedy

Change "is detecting a BER of  $> 4 \times 10^{-4}$ " to "is detecting more than 16 or more RS-FEC errored blocks in 312 500 bit times (one rfer\_timer interval)"  
 Change "is not detecting a BER of  $> 4 \times 10^{-4}$ ." to "is detecting fewer than 16 RS-FEC errored blocks in 312 500 bit times."  
 Delete editor's note at line 42

Proposed Response Response Status W  
 PROPOSED ACCEPT.

Either accept this proposal or the one in comment #302.

CI 149 SC 149.3.6.2.3 P104 L35 # 219  
 Zimmerman, George CME:ADI,Aquantia,AP

Comment Type T Comment Status D State diagrams

Need to accept rfer\_timer so that hi\_rfer function (already accepted) works. This is not a EEE variable. The value scales with the bit rate, but not with interleaving, and relates to 312 500 bit times - for monitoring, the variation with interleaving should be acceptable.

SuggestedRemedy

Accept text in yellow at lines 35 through 39 for rfer\_timer.

Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.3.6.2.5 P107 L1 # 220  
 Zimmerman, George CME:ADI,Aquantia,AP

Comment Type T Comment Status D EZ

Accept refer counter logic for refer monitor state machine. These are needed, and should not be controversial.

*SuggestedRemedy*

Accept text in yellow at lines 1 through 6 on page 107, delete editor's note on lines 47 through 51 on page 106.

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 149 SC 149.3.6.3 P107 L17 # 221  
 Zimmerman, George CME:ADI,Aquantia,AP

Comment Type T Comment Status D State diagrams

Need RFER monitor state diagram

*SuggestedRemedy*

Accept text in yellow on P 107 lines 17 & 18. Add figure 97-13 into the draft as the referenced "Figure 149-TBD" in line 17. Editorial license to accept and add any necessary variables, counters, functions or constants for Figure 97-13 from clause 97 into 149.3.6.2, or accept them if missed by other comments (they should all be there in yellow and in other comments)

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Need to reconcile comments 101, 221, 222, 103, and 78.

Cl 149 SC 149.3.6.3 P107 L19 # 222  
 Zimmerman, George CME:ADI,Aquantia,AP

Comment Type E Comment Status D State diagrams

Accept description of state diagrams

*SuggestedRemedy*

Accept text in yellow on page 107 lines 19 through 36 for PCS state diagrams.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Need to reconcile comments 101, 221, 222, 103, and 78.

Cl 149 SC 149.3.7.2 P108 L24 # 223  
 Zimmerman, George CME:ADI,Aquantia,AP

Comment Type T Comment Status D State diagrams

X-bit counter - this is a 6-bit counter, according to the description in clause 45., and the referenced figure for the RFER monitor state diagram is added by another comment.

*SuggestedRemedy*

Change x-bit to six bit, and cross reference to RFER Monitor state diagram if added by the other comment.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change: X-bit counter

To: 6-bit counter

Editorial licesnse to add reference to figure added by comments 101 & 221.

Cl 149 SC 149.3.7.3 P112 L50 # 224  
 Zimmerman, George CME:ADI,Aquantia,AP

Comment Type E Comment Status D Editorial

"a continuous stream of TBD encoded PAM 4 symbols" - the missing word is "RS-FEC"

*SuggestedRemedy*

Replace "TBD" with "RS-FEC"

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change "TBD" to "65B RS-FEC"

Cl 149 SC 149.4.2.3 P135 L34 # 225  
 Zimmerman, George CME:ADI,Aquantia,AP

Comment Type T Comment Status D EZ

RS-FEC error rate specification "The quality of these symbols shall allow RFER of less than TBD after RS-FEC decoding"... 10<sup>-12</sup> BER with an RS-FEC frame of 3260 message bits (with the errored frame replaced by error symbols) means an RFER same as the BER, or 10<sup>-12</sup>.

SuggestedRemedy

Replace "TBD" with "10<sup>-12</sup>" (where ^ indicates superscript)

Proposed Response Response Status Z

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Cl 149 SC 149.5.2.4 P155 L19 # 226  
 Zimmerman, George CME:ADI,Aquantia,AP

Comment Type T Comment Status D Test Modes

Transmit power needs to be constrained, not just less than 3 dBm. A 2 dB range has been acceptable for similar PHYs. For this speed of signal, measuring with a power meter is more appropriate. Then we can delete the peak transmit level.

SuggestedRemedy

Change "less than 3 dBm" to "in the range of 1 dBm to 3 dBm".

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 149 SC 149.5.2.5 P156 L33 # 227  
 Zimmerman, George CME:ADI,Aquantia,AP

Comment Type T Comment Status D PMA

Constraining the transmit power, the distortion and the PSD, specifying peak differential output is unneeded.

SuggestedRemedy

Delete 149.5.2.5 and content (lines 32 to 37)

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 149 SC 149.5.3.2 P157 L7 # 228  
 Zimmerman, George CME:ADI,Aquantia,AP

Comment Type T Comment Status D PMA

Need to rewrite this text so the equivalent noise is added at the MDI. See 802.3cg draft 2.3 or later. Also bandwidth is the bandwidth of the PHY signal, but the noise level will have to be determined when we get a cabling specification.

SuggestedRemedy

Change "-100 dBm/Hz" to "TBD dBm/Hz is present at the MDI of the DUT." Delete "The noise is added at the MDI of the DUT."

Add "Editor's Note - (to be removed prior to Working Group ballot) - the noise level needs to be determined jointly with adding an alien crosstalk coupling specification to the link segment."

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 149 SC 149.7.2 P162 L34 # 229  
 Zimmerman, George CME:ADI,Aquantia,AP

Comment Type T Comment Status D Link Segement

(there is no 149.7.2) the draft needs alien crosstalk coupling specs.

SuggestedRemedy

Insert "149.7.2 Coupling parameters between link segments." with 2 subclauses - 149.7.2.1 Power sum alien near-end crosstalk (PSANEXT), and 149.7.2.2 Power sum alien attenuation to crosstalk ratio far-end (PSAACR-F). Contents of all 3 should be "TBD".

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 149 SC 149.6.1 P157 L38 # 230  
 Zimmerman, George CME:ADI,Aquantia,AP

Comment Type T Comment Status D EZ

Remaining parameters will be communicated via infofields. List is complete at this time.

SuggestedRemedy

Delete editor's note at 157 line 38

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 149 SC 149.4.2.4.10 P140 L1 # 231  
 Zimmerman, George CME:ADI,Aquantia,AP  
 Comment Type E Comment Status D Startup  
 Text rewrite to eliminate requirements in what should be descriptive text.  
 SuggestedRemedy  
 Accept zimmerman\_3cg\_02\_0319.pdf (TFTD)  
 Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.  
 Grant editorial license to correct typos, grammar, etc.

Cl 149 SC 149.3.2.2 P83 L37 # 232  
 Zimmerman, George CME:ADI,Aquantia,AP  
 Comment Type T Comment Status D Editorial  
 aggregation into a superframe is not an option - it is written as if it were.  
 SuggestedRemedy  
 Change "In order to improve error correction capability, the PHY may aggregate L RS-FEC input frames into an interleaved RS-FEC input superframe."  
 to  
 "The PHY aggregates L RS-FEC input frames into an L-interleaved (L=1, 2, or 4) RS-FEC input superframe."  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.3.2.2.15 P91 L15 # 233  
 Zimmerman, George CME:ADI,Aquantia,AP  
 Comment Type E Comment Status D Editorial  
 "This may be computed". "may" is a special word for "is permitted to". In this case, it is describing an implementation.  
 SuggestedRemedy  
 Change "may" to "can"  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.3.3 P98 L43 # 234  
 Zimmerman, George CME:ADI,Aquantia,AP  
 Comment Type E Comment Status D EZ  
 "however there is the possibility that the RS-FEC decoder may have corrected some errors." "may" is a special word for "is permitted to" in this case a fact is being described.  
 SuggestedRemedy  
 Change "however there is the possibility that the RS-FEC decoder may have corrected some errors." to  
 "however there is the possibility that the RS-FEC decoder corrected some errors."  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.3.8.2.1 P114 L41 # 235  
 Zimmerman, George CME:ADI,Aquantia,AP  
 Comment Type E Comment Status D Editorial  
 "it may be possible". "may" means "it is permitted to" - "it is permitted to be possible" doesn't really make sense. If it is, indeed possible, "it is possible", if we are unsure, let's figure it out! (in 2 places, also on line 44)  
 SuggestedRemedy  
 Change "it may be possible" to "it is possible" on lines 41 and 44  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.3.8.2.15 P119 L48 # 236  
 Zimmerman, George CME:ADI,Aquantia,AP  
 Comment Type E Comment Status D Editorial  
 "that may cause the PHY" - it appears "can cause the PHY" would be more appropriate. This is neither permission nor option. Occurs 2 times, also on line 51.  
 SuggestedRemedy  
 Change "may" to "can" on lines 48 & 51  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.3.4 P98 L47 # 237  
 Zimmerman, George CME:ADI,Aquantia,AP

Comment Type T Comment Status D Editorial

"PMA training side-stream scrambler polynomials" - these are also used in data mode.  
 They're not just for breakfast anymore.

*SuggestedRemedy*

Delete "PMA Training" so that the header for 149.3.4 reads "Side-stream scrambler polynomials"

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 149 SC 149.4.2.4.5 P138 L42 # 238  
 Zimmerman, George CME:ADI,Aquantia,AP

Comment Type T Comment Status D Editorial

"data mode precoder" - it's used in training as well. It is not just for data mode.

*SuggestedRemedy*

Change "data mode precoder" to "requested precoder"

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 149 SC 149.4.2.4.5 P138 L41 # 239  
 Zimmerman, George CME:ADI,Aquantia,AP

Comment Type T Comment Status D Capability

The requirements for EEEn and OAM should go here in the description of the fields.  
 These are currently in yellow in the PHY control description.

*SuggestedRemedy*

Insert new first 2 sentences of paragraph beginning with "Interleaver Depth..." to read ""The optional EEE capability shall be enabled only if both PHYs set the capability bit EEEn = 1. The optional BASE-T1 OAM capability shall be enabled only if both PHYs set the capability bit OAMen = 1."

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change: InterleaverDepth indicates the requested data mode interleaving depth and PrecodeSel indicates the requested data mode precoder.

To: The optional EEE capability shall be enabled only if both PHYs set the capability bit EEEn = 1. The optional BASE-T1 OAM capability shall be enabled only if both PHYs set the capability bit OAMen = 1. InterleaverDepth indicates the requested data mode interleaving depth. PrecodeSel indicates the requested data mode precoder.

Cl 149 SC 149.4.5 P150 L37 # 240  
 Zimmerman, George CME:ADI,Aquantia,AP

Comment Type T Comment Status D State diagrams

The minwait\_timer is started again in TX\_SWITCH, but to no purpose, because it is not checked on exit and is started again in both possible subsequent states

*SuggestedRemedy*

delete "start minwait\_timer" in TX\_SWITCH state

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 149 SC 149.4.4.1 P147 L3 # 241  
 Zimmerman, George CME:ADI,Aquantia,AP

Comment Type T Comment Status D EZ

Accept variables for en\_slave\_tx, infofield\_complete, loc\_phy\_ready, loc\_countdown\_done, PMA\_state, rem\_countdown\_done, rem\_phy\_ready, and sync\_link\_control. Do not accept PMA\_watchdog\_status, as this is not used.

SuggestedRemedy

Remove highlighting from en\_slave\_tx, infofield\_complete, loc\_phy\_ready, loc\_countdown\_done, PMA\_state, rem\_countdown\_done, rem\_phy\_ready, and sync\_link\_control.

Delete PMA\_watchdog\_status at P147 L51- P148 L9

Proposed Response Response Status Z

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

CI 149 SC 149.4.4.2 P148 L50 # 242  
 Zimmerman, George CME:ADI,Aquantia,AP

Comment Type T Comment Status D State diagrams

States where minwait\_timer is used need to be entered and aligned with state diagram. Delete highlighted "PMA\_Training\_Init\_S," state (this does not exist, and accept "PCS\_TEST, and PCS\_DATA" currently in yellow, correcting the capitalization

SuggestedRemedy

Delete highlighted "PMA\_Training\_Init\_S," state (this does not exist, and accept "PCS\_TEST, and PCS\_DATA" currently in yellow, correcting the capitalization

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

This change is included in comment #55.

CI 149 SC 149.5.1 P152 L7 # 243  
 Zimmerman, George CME:ADI,Aquantia,AP

Comment Type E Comment Status D Editorial

Table 149-12 - the highlighted text is correct,

SuggestedRemedy

Remove highlighting on Test mode descriptions for modes 1, 5 and 7 in Table 149-12

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 149 SC 149.5.3.2 P157 L12 # 244  
 Zimmerman, George CME:ADI,Aquantia,AP

Comment Type T Comment Status D PMA

"frame loss ratio is less than TBD for TBD-octet packets" should be scalable directly from 1000BASE-T1 since the RS-FEC frame lengths are comparable. Since 10^-10 is the BER for 1000BASE-T1 and 10^-12 is for multigig, two orders of magnitude are needed.

SuggestedRemedy

Change "TBD for TBD-octet" to "10^-9 for 125-octet"

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 149 SC 149.7.1.4 P161 L42 # 245  
 ITO, HIROAKI Yazaki Corporation

Comment Type TR Comment Status D Link Segment

The frequency range for coupling attenuation is remained up to 5500MHz.

SuggestedRemedy

The frequency range for coupling noise should be changed to up to 4000MHz as well as other parameters like IL, RL.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change: 5500

To: 4000 \* S

CI 149 SC 149.5.2.4 P155 L38 # 246  
 Wei, Dong Futurewei Technologie

Comment Type ER Comment Status D Format

Typo

SuggestedRemedy

Change "f is the" to "f is the"

Proposed Response Response Status W

PROPOSED REJECT.

This matches the formatting of existing 802.3 clauses.



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Cl 149 SC 149.5.2.4 P155 L41 # 247  
 Wei, Dong Futurewei Technologie  
 Comment Type **TR** Comment Status **D** Format  
 There is no definition of variable S in equation (149-16).  
 SuggestedRemedy  
 Need to define or make a statement about the meaning of variable S meaning  
 Proposed Response Response Status **W**  
 PROPOSED REJECT.  
 S is defined in 149.1.1.

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Cl 149 SC 149.7.1.1 P158 L24 # 248  
 Wei, Dong Futurewei Technologie  
 Comment Type **ER** Comment Status **D** Format  
 Typo  
 SuggestedRemedy  
 Change "f is the" to "f is the"  
 Proposed Response Response Status **W**  
 PROPOSED REJECT.  
 This matches the formatting of existing 802.3 clauses.

---

Cl 149 SC 149.7.1.1 P158 L27 # 249  
 Wei, Dong Futurewei Technologie  
 Comment Type **ER** Comment Status **D** Editorial  
 Typo  
 SuggestedRemedy  
 Delete the unit of "MHz", Fmax is just the number.  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

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Cl 149 SC 149.7.1.3 P159 L44 # 250  
 Wei, Dong Futurewei Technologie  
 Comment Type **ER** Comment Status **D** Format  
 Typo  
 SuggestedRemedy  
 Change "f is the" to "f is the"  
 Proposed Response Response Status **W**  
 PROPOSED REJECT.  
 This matches the formatting of existing 802.3 clauses.

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Cl 149 SC 149.7.1.3 P160 L10 # 251  
 Wei, Dong Futurewei Technologie  
 Comment Type **ER** Comment Status **D** Format  
 Typo  
 SuggestedRemedy  
 Change "f is the" to "f is the"  
 Proposed Response Response Status **W**  
 PROPOSED REJECT.  
 This matches the formatting of existing 802.3 clauses.

---

Cl 149 SC 149.7.1.3 P160 L13 # 252  
 Wei, Dong Futurewei Technologie  
 Comment Type **ER** Comment Status **D** EZ  
 typo  
 SuggestedRemedy  
 Change "N" to "N = " in the equation (149-21)  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

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Cl 149 SC 149.7.1.3 P160 L30 # 253  
 Wei, Dong Futurewei Technologie  
 Comment Type ER Comment Status D Format  
 Typo  
 SuggestedRemedy  
 Change "f is the" to "f is the"  
 Proposed Response Response Status W  
 PROPOSED REJECT.  
 This matches the formatting of existing 802.3 clauses.

Cl 149 SC 149.7.1.4 P161 L42 # 256  
 Wei, Dong Futurewei Technologie  
 Comment Type ER Comment Status D Format  
 Typo  
 SuggestedRemedy  
 Change "f is the" to "f is the"  
 Proposed Response Response Status W  
 PROPOSED REJECT.  
 This matches the formatting of existing 802.3 clauses.

Cl 149 SC 149.7.1.3 P160 L33 # 254  
 Wei, Dong Futurewei Technologie  
 Comment Type ER Comment Status D EZ  
 typo  
 SuggestedRemedy  
 Change "N" to "N =" in the equation (149-23)  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.8.2.1 P163 L12 # 257  
 Wei, Dong Futurewei Technologie  
 Comment Type ER Comment Status D Format  
 Typo  
 SuggestedRemedy  
 Change "f is the" to "f is the"  
 Proposed Response Response Status W  
 PROPOSED REJECT.  
 This matches the formatting of existing 802.3 clauses.

Cl 149 SC 149.7.1.3 P160 L38 # 255  
 Wei, Dong Futurewei Technologie  
 Comment Type ER Comment Status D Editorial  
 typo  
 SuggestedRemedy  
 Change "N=1" to "N=1" in the equation (149-23)  
 Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.  
 Change "N = 1" to "N = 1 curve which is equivalent to equation (149-19)."

Cl 149 SC 149.8.2.1 P163 L15 # 258  
 Wei, Dong Futurewei Technologie  
 Comment Type ER Comment Status D EZ  
 Typo  
 SuggestedRemedy  
 Change "4000 MHz × S" to "4000 × S MHz"  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl **98B** SC **98B.3** P**168** L**24** # **259**  
 Wei, Dong Futurewei Technologie  
 Comment Type **ER** Comment Status **D** EZ  
 Type  
 SuggestedRemedy  
 Change "A6through" to "A6 through"  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

Cl **149** SC **149.3.2.2.16** P**93** L**33** # **263**  
 Wei, Dong Futurewei Technologie  
 Comment Type **ER** Comment Status **D** EZ  
 Repeat statement  
 SuggestedRemedy  
 Delete the repeat statement of line 33-37, which are the same as line 27-31  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

Cl **149A** SC **149A.2** P**169** L**26** # **260**  
 Wei, Dong Futurewei Technologie  
 Comment Type **ER** Comment Status **D** Editorial  
 Type  
 SuggestedRemedy  
 Change "23°C ± 5°C" to "23 ± 5°C"  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

Cl **149** SC **149.4.2.1** P**135** L**4** # **264**  
 Wei, Dong Futurewei Technologie  
 Comment Type **ER** Comment Status **D** EZ  
 Type  
 SuggestedRemedy  
 Change "true.All" to "true. All", just add one space.  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT IN PRINCIPLE.

Cl **149A** SC **149A.4** P**170** L**33** # **261**  
 Wei, Dong Futurewei Technologie  
 Comment Type **ER** Comment Status **D** EZ  
 Type  
 SuggestedRemedy  
 Change "Testfixture" to "Test Fixture"  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

Cl **149** SC **149.3.2.2.15** P**90** L**39** # **265**  
 Wei, Dong Futurewei Technologie  
 Comment Type **ER** Comment Status **D** EZ  
 Just shows half g of g(x), and half 0 of g0 in Equation (149-1)  
 SuggestedRemedy  
 Zoom out a little bit for the equation (149-1) to show the full equation.  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

Cl **149** SC **149.1.3.3** P**69** L**25** # **262**  
 Wei, Dong Futurewei Technologie  
 Comment Type **ER** Comment Status **D** EZ  
 Repeat statement  
 SuggestedRemedy  
 Delete the sentence:"The PMA Transmit function in the PHY then sends an alert message to the link partner" in line 25~26  
 Proposed Response Response Status **W**  
 PROPOSED ACCEPT.

CI 149 SC 149.3.2.2.16 P94 L19 # 266  
 Wei, Dong Futurewei Technologie  
 Comment Type ER Comment Status D Editorial  
 Type  
 SuggestedRemedy  
 Change "mL" to "m0"; Figure 149-10, at the RS Encoder #L, the input and output mL should be m0.  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

CI 149 SC 149.4.4.2 P148 L45 # 267  
 WU, Peter Marvell  
 Comment Type TR Comment Status D State diagrams  
 Maxwait\_timer expiration period should be much shorter than 2000ms with 100ms link up requirement  
 SuggestedRemedy  
 Change "2000ms+/-10ms" to "97.5ms+/-0.5ms"  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

CI 149 SC 149.4.4.2 P148 L50 # 268  
 WU, Peter Marvell  
 Comment Type T Comment Status D State diagrams  
 minwait\_timer expiration period changed to the same value used at 802.3bp  
 SuggestedRemedy  
 change "1ms+0.1s" to "975us+/-50us"  
 Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.  
 Make proposed change and remove highlighting.

CI 149 SC 149.5.1.1 P154 L27 # 269  
 WU, Peter Marvell  
 Comment Type ER Comment Status D EZ  
 Figure 149-36 with wrong piece copied  
 SuggestedRemedy  
 remove the block of " link partner" in the figure  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

CI 149 SC 149.4.4 P148 L1 # 270  
 WU, Peter Marvell  
 Comment Type TR Comment Status D State diagrams  
 "PAM3 " are still used in pma\_Watchdog\_status definition text and expiration times should be changed as well  
 SuggestedRemedy  
 change "OK: the local device has received sufficient PAM3 transitions"  
 NOT\_OK: the local device has not received sufficient PAM3 transitions  
 During normal operation NOT\_OK is assigned when:  
 — PAM3 symbol 0 consecutively seen on the line for longer than  $2 \mu\text{s} \pm 0.1 \mu\text{s}$   
 — PAM3 symbol +1 consecutively seen on the line for longer than  $3.9 \mu\text{s} \pm 0.1 \mu\text{s}$   
 — PAM3 symbol -1 consecutively seen on the line for longer than  $3.9 \mu\text{s} \pm 0.1 \mu\text{s}$   
 During Low Power Idle operation NOT\_OK is assigned when:  
 — PAM3 symbol not toggling on the line during one full refresh window"  
 to  
 "OK: the local device has received sufficient PAM4 transitions"  
 NOT\_OK: the local device has not received sufficient PAM4 transitions  
 During normal operation NOT\_OK is assigned when:  
 — PAM4 symbol +3 consecutively seen on the line for longer than  $1.9 \mu\text{s} \pm 0.1 \mu\text{s}$   
 — PAM4 symbol +1 consecutively seen on the line for longer than  $1.9 \mu\text{s} \pm 0.1 \mu\text{s}$   
 — PAM4 symbol -1 consecutively seen on the line for longer than  $1.9 \mu\text{s} \pm 0.1 \mu\text{s}$   
 — PAM4 symbol -3 consecutively seen on the line for longer than  $1.9 \mu\text{s} \pm 0.1 \mu\text{s}$   
 During Low Power Idle operation NOT\_OK is assigned when:  
 — PAM4 symbol not toggling on the line during one full refresh window"  
 The timers expire all at  $1.9\mu\text{s} \pm 0.1\mu\text{s}$

Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.

Make proposed changes and remove highlighting.

Cl 149 SC 149.4.4 P148 L14 # 271  
 WU, Peter Marvell  
 Comment Type ER Comment Status D EZ  
 PAM3 still used  
 SuggestedRemedy  
 change "PAM3" to "PAM4"  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.5.2.6 P156 L40 # 272  
 WU, Peter Marvell  
 Comment Type TR Comment Status D PMA  
 The clock is still defined for 2.5G-T1,  
 SuggestedRemedy  
 change "1406.25 MHz ± 50 ppm"  
 to "5625\*S MHz± 50 ppm"  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.4.4.1 P147 L3 # 273  
 Zimmerman, George CME:ADI,Aquantia,AP  
 Comment Type T Comment Status D State diagrams  
 Accept variables for en\_slave\_tx, infofield\_complete, loc\_countdown\_done, PMA\_state,  
 rem\_countdown\_done, and sync\_link\_control.  
 Do not accept PMA\_watchdog\_status, loc\_phy\_ready, and rem\_phy\_ready as these are  
 not used.  
 SuggestedRemedy  
 Remove highlighting from en\_slave\_tx, infofield\_complete, loc\_countdown\_done,  
 PMA\_state, rem\_countdown\_done, and sync\_link\_control.  
 Delete PMA\_watchdog\_status at P147 L51- P148 L9  
 Delete loc\_phy\_ready at P147 L18-26  
 Delete rem\_phy\_ready at P148 L14-21  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 149 SC 149.2.2.9 P79 L27 # 274  
 Zimmerman, George CME:ADI,Aquantia,AP  
 Comment Type T Comment Status D State diagrams  
 Delete references to unused loc\_phy\_ready and rem\_phy\_ready in in the primitives section,  
 in Figures 149-2, 149-4, and 149-24, and in the variables of PHY Control 149.4.4.1. PHY  
 control uses loc\_rcvr\_status instead of loc\_phy\_ready and rem\_phy\_ready

## SuggestedRemedy

In Figure 149-2 (P71): Delete loc\_phy\_ready from PMA RECEIVE to PCS TRANSMIT, and  
 rem\_phy\_ready (just the label, not the arc) from PCS RECEIVE to PHY CONTROL (this  
 arc also has the label rem\_rcvr\_status, which should remain)

149.2.2 P74 L26, Delete primitives PMA\_PHYREADY.indication(loc\_phy\_ready) and on  
 P74 L28 delete PMA\_REMPHYREADY.request (rem\_phy\_ready)

149.2.2.8 Delete 149.2.2.8 and subclauses 149.2.2.8.1 and 149.2.2.8.2 (P79 L1-22)

149.2.2.10 Delete P80 L1 - 28, Editor's note and 149.2.2.10  
 PMA\_REMPHYREADY.request and subclauses.

In Figure 149-4 (PCS reference diagram, P82 L23), Delete loc\_phy\_ready input to PCS  
 TRANSMIT from PMA SERVICE INTERFACE. Change label on output from PCS  
 RECEIVE to PMA SERVICE INTERFACE from "rem\_rcvr\_status/rem\_phy\_ready" to  
 "rem\_rcvr\_status".

In Figure 149-24 (PMA reference diagram, P134 L7) delete the first solid line output from  
 PMA RECEIVE to PMA SERVICE INTERFACE and label "loc\_phy\_ready", and change label  
 on rightmost input (2nd from right line) to PHY CONTROL from PMA SERVICE  
 INTERFACE from "rem\_rcvr\_status/rem\_phy\_ready" to "rem\_rcvr\_status"

Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.

Comments 130, 94, 274, 276, 273 all discuss removing loc\_phy\_ready and/or  
 rem\_phy\_ready. Need to determine a coherent solution for these comments.

Cl 149 SC 149.5.2.5 P156 L35 # 275  
 Souvignier, Tom Broadcom

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

Max transmitter peak differential output of 1.2V. 20% over nominal to allow for process and design variation.

*SuggestedRemedy*  
 Replace "TBD" with "0.2"

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

PROPOSED ACCEPT IN PRINCIPLE.

If comment 227 to remove this section is not accepted, implement this solution.

Cl 149 SC 149.2.2 P80 L3 # 276  
 McClellan, Brett Marvell

*Comment Type* **T** *Comment Status* **D** *State diagrams*

I believe this editor's note refers to a special GMII codeword defined and used in Clause 97 only for the purpose of signaling PMA\_PHYREADY.indication (loc\_phy\_ready) to the link partner.  
 For Clause 97, Idle was split into two different codewords, one for loc\_phy\_ready = NOT\_OK and one for loc\_phy\_ready = OK.  
 This points out a problem in the current CH draft.  
 149.2.2.8 PMA\_PHYREADY.indication definition states that "loc\_phy\_ready is conveyed to the link partner by the PCS as defined in 149.4.4.1."  
 149.4.4.1 then points back to Table 149-1, "This variable is conveyed to the link partner by the PCS as defined in Table 149-1."  
 However, Table 149-1 has no codeword to convey loc\_phy\_ready. loc\_phy\_ready was created in BP to prevent either side from transmitting frames until both sides are ready. loc\_phy\_ready is unnecessary for XGMII based PHYs and currently it isn't used in the PMA PHY control state machine. Normal ordered sets of Local Fault and Remote Fault from the Reconciliation Sublayer perform the function of holding off frames until both PHYs are ready.

*SuggestedRemedy*  
 Remove the editor's note.  
 Remove the primitive PMA\_PHYREADY.indication and any text and figure references related to loc\_phy\_ready.  
 Remove the primitive PMA\_REMPHYREADY.request and any text and figure references related to rem\_phy\_ready.  
 Remove loc\_phy\_ready definition from 149.4.4.1 State diagram variables.  
 Remove rem\_phy\_ready definition from 149.4.4.1 State diagram variables.

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

PROPOSED ACCEPT IN PRINCIPLE.

Comments 130, 94, 274, 276, 273 all discuss removing loc\_phy\_ready and/or rem\_phy\_ready. Need to determine a coherent solution for these comments.

CI 149 SC 149.3.2.3 P97 L38 # 277  
McClellan, Brett Marvell

Comment Type T Comment Status D Editorial  
according to 149.3.4.1, alignment bits are placed every 450 symbols.

SuggestedRemedy  
Change 80 to 450.

Proposed Response Response Status W  
PROPOSED ACCEPT IN PRINCIPLE.

Change: 180

To: 450

Changing 80 to 450 would yield 1450 which is not what is desired here.

CI Introdu SC Introduction P11 L5 # 278  
den Besten, Gerrit NXP Semiconductors

Comment Type E Comment Status D EZ  
"for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s operation on automotive cabling in an automotive application."

SuggestedRemedy  
replace by: "for operation at 2.5Gb/s, 5Gb/s, and 10Gb/ over single shielded balanced pair of conductors."

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI Page SC Title page P21 L1 # 279  
den Besten, Gerrit NXP Semiconductors

Comment Type E Comment Status D EZ  
"2019Draft" The 2019 seems not to belong here.

SuggestedRemedy  
Replace by "Draft"

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 1 SC 1.4 P22 L17 # 280  
den Besten, Gerrit NXP Semiconductors

Comment Type T Comment Status D Nomenclature  
"over a single shielded balanced pair of conductors". Signal routing at PCB might not be shielded. Same on lines 23 and 29.

SuggestedRemedy  
Replace by: "over a single balanced pair of conductors using shielded cabling."

Proposed Response Response Status W  
PROPOSED ACCEPT IN PRINCIPLE.

TFTD

This would require a change of the cable name throughout the document, not just the two places mentioned by comments 280 and 281.

CI 30 SC 30.5.1.1.2 P24 L12 # 281  
den Besten, Gerrit NXP Semiconductors

Comment Type T Comment Status D Nomenclature  
"Single shielded balanced pair of conductors PHY". Signal routing at PCB might not be shielded. Same on lines 18 and 23. Recommend to search for "single shielded balanced pair" as this occurs at more places in the spec.

SuggestedRemedy  
Replace by: "Single balanced pair of conductors PHY using shielded cabling."

Proposed Response Response Status W  
PROPOSED ACCEPT IN PRINCIPLE.

TFTD

This would require a change of the cable name throughout the document, not just the two places mentioned by comments 280 and 281.

Cl 44 SC 44.1.3 P27 L41 # 282  
den Besten, Gerrit NXP Semiconductors

Comment Type T Comment Status D EZ

Figure 44.1 shows "WIS = WAN INTERFACE SUBLAYER" inside the lower diagram of the figure, and not in the list below. This is confusing because WIS does not occur in that lower diagram.

*SuggestedRemedy*

Move the definition: "WIS = WAN INTERFACE SUBLAYER" to the list below the figure.

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 44 SC 44.1.4.4 P29 L10 # 283  
den Besten, Gerrit NXP Semiconductors

Comment Type E Comment Status D Nomenclature

"1-pair RS-FEC PCS & PMA" Inconsistent with 10GBASE-T.

*SuggestedRemedy*

Change to "RS-FEC PCS & 1-pair PMA"

Proposed Response Response Status W

PROPOSED REJECT.

This is undoing the change made by comment #128 on D1.0.

Cl 45 SC 45.2.1.192.1 P34 L29 # 284  
den Besten, Gerrit NXP Semiconductors

Comment Type T Comment Status D Reset / Startup time

"The control and management interface shall be restored to operation within 0.5 s from the setting of bit 1.2309.15"

*SuggestedRemedy*

Replace by: "The control and management interface shall be restored to operation within max\_reset\_time as defined in 149.x.x, starting when bit 1.2309.15 is set."

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change: The control and management interface shall be restored to operation within 0.5 s from the setting of bit 1.2309.15

To: The control and management interface shall be restored to operation within max\_reset\_time as defined in 149.3.2.1, starting when bit 1.2309.15 is set.

Cl 45 SC 45.2.1.197 P40 L10 # 285  
den Besten, Gerrit NXP Semiconductors

Comment Type T Comment Status D SNR

SNR operating margin as currently proposed in the draft is essentially an 8 bit value (255 used values), but it is defined as a 16bit register with 0x8000 as zero dB reference. This is very inefficient as all 16 bits would be toggling between values 0.0dB and -0.1dB.

*SuggestedRemedy*

Represent the 8-bit SNR margin in bits 7:0 of register 2314, with 0x80 as zero reference for that field.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD

It may be desirable to keep a 16-bit register to be consistent with other Clauses.

Cl 45 SC 45.2.1.198 P40 L17 # 286  
den Besten, Gerrit NXP Semiconductors

Comment Type T Comment Status D SNR

minimum SNR margin as currently proposed in the draft is essentially an 8 bit value (255 used values), but it is defined as a 16bit register with 0x8000 as zero dB reference. This is very inefficient as the upper 8 bits would be toggling between values 0.0dB and -0.1dB, but they don't contain information.

*SuggestedRemedy*

Represent the 8-bit minimum SNR margin in bits 15:8 of register 2314, with 0x80 as zero reference for that field. Free-up register 2315.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD

It may be desirable to keep a 16-bit register to be consistent with other Clauses.



CI 45 SC 45.2.1.198 P40 L13 # 287  
 den Besten, Gerrit NXP Semiconductors

Comment Type T Comment Status D SNR  
 Register 231 is called minimum margin register, but it is about an SNR valy

SuggestedRemedy  
 Rename to: minimum SNR margin

Proposed Response Response Status W  
 PROPOSED ACCEPT.

CI 149 SC 149.3.8.2.1 P114 L # 288  
 den Besten, Gerrit NXP Semiconductors

Comment Type T Comment Status D OAM  
 I understand the benefit of an separate RS code to protect OAM bytes during LPI mode. However it should be noted that EEE is optional. It doesn't make sense to me that the OAM data during normal operation would be double RS encoded as it is already protected by the regular RS-FEC frame. Therefore I propose to make the OAM RS optional for normal operation.

SuggestedRemedy  
 I propose to only use the (16,14,10) RS coding for OAM during refreshing and not during normal operation. At least this should not be mandated. During normal operation the OAM bytes are already protected by the RS(360,324,10) scheme. We intentionally selected an RS scheme where one byte was left over for OAM. A transceiver with EEE still can double RS encode the OAM all the time, but an PHY that does not support EEE should not be required to add this additional coding without any purpose. In order to keep it simple with a 16 byte scheme, the last two bytes will be reserved in normal operation, and be transmitted as zero.

Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.

Change as proposed in Comment #56 which provides specific text changes.

CI 149 SC 149.4.2.3 P135 L34 # 289  
 den Besten, Gerrit NXP Semiconductors

Comment Type T Comment Status D Error rate  
 TBD

SuggestedRemedy  
 1.00E-09

Proposed Response Response Status W  
 PROPOSED REJECT.

TFTD as part of comment 105.

CI 149 SC 149.5.2.4 P155 L24 # 290  
 den Besten, Gerrit NXP Semiconductors

Comment Type T Comment Status D late  
 The current transmit PSD mask practically not providing any constraint to the signaling. With the current limits this does not add any value except for being a complicated way to define the signal swing.

SuggestedRemedy  
 I will make a separate presentation with a proposal for an updated mask.

Proposed Response Response Status W  
 PROPOSED REJECT.

No Suggested Remedy has been provided.

CI 149 SC 149.5.2.5 P156 L35 # 291  
 den Besten, Gerrit NXP Semiconductors

Comment Type T Comment Status D PMA  
 TBD

SuggestedRemedy  
 Propose to make this 1.3Vppd, like 1000BASE-T1

Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.

If comment 227 to remove this section is not accepted, implement 275.

**CI 149**    **SC 149.8.2.2**    **P163**    **L46**    # **292**  
 den Besten, Gerrit    NXP Semiconductors

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

We reached consensus on coupling and shielding attenuation, but the paragraph on the first topic is empty and the paragraph about the second doesn't exist yet.

**SuggestedRemedy**  
 Need to add the limit formulas and graph on coupling attenuation to this paragraph. Need to add an paragraph in shielding attenuation. I would be happy to provide editorial assist on the wording.

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

No Suggested Remedy has been provided.

**CI 45**    **SC 45.2.1.192.3**    **P35**    **L18**    # **293**  
 den Besten, Gerrit    NXP Semiconductors

**Comment Type** T    **Comment Status** D    *Reset / Startup time*

"The data path of the MultiGBASE-T1 PMA, depending on type and temperature, may take many seconds to run at optimum error ratio after exiting from reset or lowpower mode."

**SuggestedRemedy**  
 "The data path of the MultiGBASE-T1 PMA may take max\_startup\_time as defined in 149.x.x. to resume operation and achieve the required BER after exiting from reset or low-power mode."

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

Change: The data path of the MultiGBASE-T1 PMA, depending on type and temperature, may take many seconds to run at optimum error ratio after exiting from reset or lowpower mode.

To: The data path of the MultiGBASE-T1 PMA may take max\_training\_time as defined in 149.3.2.1 to resume operation and achieve the optimum BER after exiting from reset or low-power mode.

**CI 149**    **SC 149.4.2.1**    **P135**    **L4**    # **294**  
 den Besten, Gerrit    NXP Semiconductors

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

"true.All"

**SuggestedRemedy**  
 Add space

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

Implement change as requested in comment 169.

**CI 149**    **SC 149.4.2.1**    **P137**    **L7**    # **295**  
 den Besten, Gerrit    NXP Semiconductors

**Comment Type** T    **Comment Status** D    *Reset / Startup time*

Timing specs for PMA reset are missing.

**SuggestedRemedy**  
 Insert the following paragraph:  
 The reset shall take less than 10ms (=max\_reset\_time), and register access shall be available again after that. The link shall resume operation and achieve the required BER within 100ms (=max\_training\_time)

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

Insert the following paragraph:  
 The reset shall take less than 10ms (=max\_reset\_time), and register access shall be available immediately after the max\_reset\_time. The link shall resume operation and achieve the required BER within 100ms (=max\_training\_time).

**CI 149**    **SC 149.3.2.1**    **P82**    **L45**    # **296**  
 den Besten, Gerrit    NXP Semiconductors

**Comment Type** T    **Comment Status** D    *Reset / Startup time*

Timing specs for PCS reset are missing.

**SuggestedRemedy**  
 Insert the following paragraph:  
 The reset shall take less than 10ms (=max\_reset\_time), and register access shall be available again after that. The link shall resume operation and achieve the required BER within 100ms (=max\_training\_time)

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

CI 45 SC 45.2.1.197 P40 L10 # 297  
den Besten, Gerrit NXP Semiconductors

Comment Type T Comment Status D SNR

How is SNR operating margin defined? We currently don't have a pre-FEC (raw) BER target in the spec. The BER < 1e-12 is post-FEC. So what does 0dB mean here?

*SuggestedRemedy*

I see three possible solutions here:

- Define a pre-FEC BER target, which will implicitly set a reference SNR level for the SNR margin
- Define a fixed reference SNR pre-FEC
- Report the actual SNR pre-FEC and don't talk about 'margin'. In the latter case the SNR register value becomes strictly positive.

Proposed Response Response Status W

PROPOSED REJECT.

Margin is relative to an implementation-dependent number determined by the implementer. It doesn't need to be defined in the standard to be meaningful.

CI 45 SC 45.2.3.74.2 P43 L41 # 298  
den Besten, Gerrit NXP Semiconductors

Comment Type E Comment Status D EZ

associate: missing d

*SuggestedRemedy*

asociated

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 45 SC 45.2.3.74.1 P43 L36 # 299  
den Besten, Gerrit NXP Semiconductors

Comment Type T Comment Status D OAM

"This register shall be cleared when register 3.2317 is read." However, the last OAM byte is in register 2319. So it looks like only the first 8 bytes of the message are handshaked. Furthermore the addition of these extra 4 bytes is a bit messy as they are not directly concatenated to the existing 8 bytes in the register map.

*SuggestedRemedy*

Refer to register 3.2319 in the quoted sentence

Proposed Response Response Status W

PROPOSED REJECT.

3.2318 and 2319 are the new MultiGBASE-T1 OAM Status registers. We agreed that these are always current. It is only up to 2317 (the BASE-T1 OAM, common with 1000BASE-T1) which are handshaked. Making this change would break the 1000BASE-T1 handshake.

CI 45 SC 45.2.3.78.1 P46 L14 # 300  
den Besten, Gerrit NXP Semiconductors

Comment Type T Comment Status D Reset / Startup time

"The control and management interface shall be restored to operation within 0.5 s from the setting of bit 3.2322.15."

*SuggestedRemedy*

Replace by: ""The control and management interface shall be restored to operation within max\_reset\_time as defined in 149.x.x, starting when bit 3.2322.15 is set."

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change: The control and management interface shall be restored to operation within 0.5 s from the setting of bit 3.2322.15.

To: The control and management interface shall be restored to operation within max\_reset\_time as defined in 149.3.2.1, starting when bit 3.2322.15 is set.

Cl 45 SC 45.2.3.80.2 P48 L36 # 301  
den Besten, Gerrit NXP Semiconductors

Comment Type T Comment Status D Nomenclature

"PCS high BER": The way it is currently defined is not a BER but a RFER (reed-solomon frame-error-rate) as only frames which cannot be corrected are counted.

*SuggestedRemedy*

Rename to Frame Error Rate (FER)

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD

Rename to "PCS High RFER". (Frame error rates can be confused with Ethernet frames, and this is calculated based on the RS-FEC Frames.)

Cl 45 SC 45.2.3.80.2 P48 L39 # 302  
den Besten, Gerrit NXP Semiconductors

Comment Type T Comment Status D Registers

The spec text "detecting a BER of  $> 4e-4$ " is ambiguous, because actually the frame errors are counted here, not bit errors. Furthermore this number seems way too high. Bit errors at PMA level will mostly be successfully corrected by the RS-FEC, or corrupt a whole RS frame. Counting the number of erroneous RS frames seems the correct approach, but why would we express this as BER instead of RFER? Note that the RFER counter is only 6 bits so apparently this not supposed to happen very often. For a RFER $<1e-9$  the packet level performance is similar to a transmission scheme without RS-FEC and a PMA BER of about  $3e-11$ .

*SuggestedRemedy*

Propose to change into: "detecting a RFER  $> 1e-9$ "

Proposed Response Response Status W

PROPOSED REJECT.

Either accept this proposal or the one in comment #218.

Cl 104 SC 104.5.6.4 P59 L15 # 303  
den Besten, Gerrit NXP Semiconductors

Comment Type T Comment Status D PoDL

Type F has been added to the sub-clause, but there is no reference to clause 149 in there. Especially in this sentence that was apparently there for 1000BASE-T1 with reference to the MDI return loss, it seems that just adding Type F in there is not sufficient.

*SuggestedRemedy*

Change:

"The ripple and transient specifications for a Type B or Type F PD shall be met for all operating voltages in the range of VPD sourced through a dc bias coupling network with MDI return loss as specified by Clause 97, and over the range of PPD."

into:

"The ripple and transient specifications for a Type B PD shall be met for all operating voltages in the range of VPD sourced through a dc bias coupling network with MDI return loss as specified by Clause 97, and over the range of PPD..... The ripple and transient specifications for a Type F PD shall be met for all operating voltages in the range of VPD sourced through a dc bias coupling network with MDI return loss as specified by Clause 149, and over the range of PPD."

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 149 SC 149.3.2.2.19 P95 L43 # 304  
den Besten, Gerrit NXP Semiconductors

Comment Type T Comment Status D EEE

PAM2 versus PAM4 during refreshes

*SuggestedRemedy*

In order to keep things as simple as possible in EEE mode, I would recommend to go for PAM2 here, so no pre-coder during refreshes.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Comment #48 deletes these highlighted lines.

CI 149 SC 149.3.4.1 P99 L37 # 305  
den Besten, Gerrit NXP Semiconductors

Comment Type T Comment Status D Editorial

"alignment to the RS-FEC block and the 16 partial PHY frames that comprise the block" "block" is confusing here as block is used in the context of 64B/65B block encoding. What is meant here is PAM2 training sequence with the length of 4 RS frames. I think this is called super-frame.

*SuggestedRemedy*

Replace by: "alignment to the RS-FEC super-frame comprising 16 partial PHY frames"

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change: alignment to the RS-FEC block and the 16 partial PHY frames that comprise the block

To: alignment to the RS-FEC super-frame comprised of 16 partial PHY frames

CI 149 SC 149.3.7.3 P112 L50 # 306  
den Besten, Gerrit NXP Semiconductors

Comment Type T Comment Status D Editorial

TBD

*SuggestedRemedy*

Replace "TBD encoded" with "encoded transmit data"

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change "TBD" to "65B RS-FEC"

CI 149 SC 149.3.8.2.13 P118 L35 # 307  
den Besten, Gerrit NXP Semiconductors

Comment Type E Comment Status D EZ

Period missing after "Figure 149–19"

*SuggestedRemedy*

Add period

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Implemented by comment 204.

CI 149 SC 149.3.8.2.1 P114 L38 # 308  
den Besten, Gerrit NXP Semiconductors

Comment Type E Comment Status D Editorial

"full OAM frame can be packed into 8 super frames in the 2x interleave mode, and into 4 super frames in the 4x interleave mode"

*SuggestedRemedy*

"full OAM frame can be packed into 8 super frames in the 2x interleaved mode, and into 4 super frames in the 4x interleaved mode"

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 149 SC 149.3.8.4.6 P131 L26 # 309  
Chen, Steven Broadcom

Comment Type TR Comment Status D late

Partially accept William Lo's commentary #66. Suggest additional improvement. Need to identify the OAM symbol based on the OAM framing bit.

*SuggestedRemedy*

At line 26, change "Parity\_Check(rx\_oam\_field<8:0>) = Even" to "(rx\_cnt !=16) \* (rx\_oam\_field<8> = 0)".

At line 31, change "else" to "(rx\_cnt !=16) \* (rx\_oam\_field<8> = 1)"

Proposed Response Response Status W

PROPOSED REJECT.

What you proposed will not work since the final 2 OAM symbols are 10-bit parity symbols and bit 8 can be either 1 or 0.

So we cannot rely on looking only at this bit by itself. That is why we defined frame\_boundary variable that looks at the sequence of all 16 rx\_oam\_field<8> with the final 2 bits being xx.