IEEE Std 802.3cd-2018 is now approved

Suggested Remedy
- Change "IEEE Std 802.3cd-201x" to "IEEE Std 802.3cd-2018"

Proposed Response

---

The abstract should not contain "Draft D1.1 is prepared for Task Force Review."

Suggested Remedy
- Delete "Draft D1.1 is prepared for Task Force Review."

Proposed Response

---

"2019Draft Standard for Ethernet" contains a spurious "2019"

Suggested Remedy
- Delete "2019"

Proposed Response

---

IEEE Std 802.3cd-201x has published.

Suggested Remedy
- Replace all occurrences of "IEEE Std 802.3cd-201x" with "IEEE Std 802.3cd-2018"

Proposed Response
Delete references to unused loc_phy_ready and rem_phy_ready 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 able 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

Comment Type E Comment Status X

Changing 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

Proposed Response

[abbreviations use paragraph tag AcrList,ac]
Comment Type: T  Comment Status: X  
“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.  

Suggested Remedy: 
Replace by: “Single balanced pair of conductors PHY using shielded cabling.”  

Proposed Response  Response Status: O  

Comment Type: E  Comment Status: X  
Correct grammatical of the word “which”  

Suggested Remedy:  
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: O  

Comment Type: E  Comment Status: X  
"1-pair RS–FEC PCS & PMA" Inconsistent with 10GBASE-T.  

Suggested Remedy:  
Change to "RS-FEC PCS & 1-pair PMA"  

Proposed Response  Response Status: O  

Comment Type: ER  Comment Status: X  
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.  

Suggested Remedy:  
In the editing instruction, change: "1.2318 to 1.2320" to: "1.2318 to 1.2324"  

Proposed Response  Response Status: O
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"

Suggested Remedy
In the editing instruction, change "45.2.1.18a" to "45.2.1.18.a"

Proposed Response  Response Status O

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

Suggested Remedy
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.

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

Suggested Remedy
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 O

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

Suggested Remedy
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.

Suggested Remedy
In the heading of 45.2.1.192.4, change *(1.2309.14)" to *(1.2309.10:9)"

Proposed Response  Response Status O
Comment Type: verb/noun agreement  
Suggested Remedy:  
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: O

Comment Type: E  
Comment Status: X  
Suggested Remedy:  
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: O

Comment Type: E  
Comment Status: X  
We don't need to keep repeating MultiGBASE-T1.

Suggested Remedy:  
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: O

Comment Type: T  
Comment Status: X  
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?

Suggested Remedy:  
I see three possible solutions here:  
a) Define a pre-FEC BER target, which will implicitly set a reference SNR level for the SNR margin  
b) Define a fixed reference SNR pre-FEC  
c) 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: O
Comment Type T  Comment Status X
SNR operating margin as currently proposed in the draft is essentially an 8 bit value (255 used values), but it is defined as a 16 bit 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
Represents the 8-bit SNR margin in bits 7:0 of register 2314, with 0x80 as zero reference for that field.

Proposed Response Response Status O

Comment Type T  Comment Status X
Register 231 is called minimum margin register, but it is about an SNR value.

SuggestedRemedy
Rename to: minimum SNR margin

Proposed Response Response Status O

Comment Type T  Comment Status X
minimum SNR margin as currently proposed in the draft is essentially an 8 bit value (255 used values), but it is defined as a 16 bit 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 O

Comment Type E  Comment Status X
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 O

Comment Type E  Comment Status X
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 O
Comment Type: T  Comment Status: X
"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 handshake.
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.

Suggested Remedy
Refer to register 3.2319 in the quoted sentence

Proposed Response  Response Status: O

Comment Type: E  Comment Status: X
associate: missing d

Suggested Remedy
associated

Proposed Response  Response Status: O

Comment Type: E  Comment Status: X
While the addition of the hyphen in "8-octet" is shown with underline, the removal of the space is not shown with strikethrough.

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

Proposed Response  Response Status: O

Comment Type: TR  Comment Status: X
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 3.2318.2.0 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?

Suggested Remedy
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: O

Comment Type: E  Comment Status: X
Extra ")" at the end of "45.2.3.78.1 PCS reset (3.2322.15))"

Suggested Remedy
Delete the extra ")"

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

**Suggested Remedy**
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."

**Comment Status**
X

**Response Status**
O

---

"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.

**Suggested Remedy**
Rename to Frame Error Rate (FER)

**Comment Status**
X

**Response Status**
O

---

"When read as a one, bit 3.2324.9 indicates that the MultiGBASE-T1 PCS receiver is detecting a BER of > 4 × 10–4. When read as a zero, bit 3.2324.9 indicates that the MultiGBASE-T1 PCS is not detecting a BER of > 4 × 10–4."

**Suggested Remedy**
Change "is detecting a BER of > 4 × 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 × 10–4." to "is detecting fewer than 16 RS-FEC errored blocks in 312 500 bit times."

**Comment Status**
X

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

Add the space.

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

There is no definition of variable S in equation (149-16).

Need to define or make a statement about the meaning of variable S meaning

"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."
Comment Type: E  Comment Status: X
The heading for Table 104-9 has a grey background.

Suggested Remedy
Make it white.

Proposed Response  Response Status: O

Comment Type: E  Comment Status: X
Incorrect wording for MDI

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

Proposed Response  Response Status: O

Comment Type: E  Comment Status: X
Change the name of the PCS layer to be consistent with the other 5G/2.5G standards.

Suggested Remedy
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: O
Comment Type T  Comment Status X
We agreed to call the OAM "MultiGBASE-T1 OAM".

Suggested Remedy
Change: 2.5G/5G/10GBASE-T1 OAM
To:  MultiGBASE-T1 OAM throughout this section and the document.

Proposed Response  Response Status O

Comment Type E  Comment Status X
Use common abbreviation for the combined PHY types.

Suggested Remedy
Change: The 2.5GBASE-T1, 5GBASE-T1, or 10GBASE-T1 PMA
To:  2.5G/5G/10GBASE-T1 PMA

Proposed Response  Response Status O

Comment Type TR  Comment Status X
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.

Suggested Remedy
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 O
Comment Type E Comment Status X
Original OAM bytes are now named "BASE-T1 OAM".

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

Proposed Response Response Status O

Comment Type ER Comment Status X
L46=L49
Need to refer to the appropriate Figures.

Suggested Remedy
- 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 O

Comment Type E Comment Status X
missing comma

Suggested Remedy
- 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 O
Comment Type: E  Comment Status: X
subject/verb agreement

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

Proposed Response  Response Status: O

Comment Type: E  Comment Status: X
"Clause 98.4" should be just "98.4"

SuggestedRemedy
  Change "Clause 98.4" to "98.4"

Proposed Response  Response Status: O

Comment Type: TR  Comment Status: X
variable loc_phy_ready is not used.

SuggestedRemedy
  1. Remove "PMA_PHYREADY.indication(loc_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: O

Type: TR/technical required  ER/editorial required  GR/general required  T/technical  E/editorial  G/general
Comment Status: D/dispatched  A/accepted  R/rejected  RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
Sort Order: Clause, Subclause, page, line
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.

Suggested Remedy
- 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 O

---

We removed SEND_I, but didn't change the number of values to "three" from "four" in the text.

Suggested Remedy
- Change: four
  To: three

Proposed Response Response Status O

---

Comment Type TR Comment Status X

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

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

Proposed Response Response Status O
Timing specs for PCS reset are missing.

Suggested Remedy
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

Add commas for readability.

Suggested Remedy
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

Missing open parenthesis

Suggested Remedy
Change: Tn)
To: (Tn)

Proposed Response

Change signal value to +1 for consistency.

Suggested Remedy
In order to improve error correction capability, the PHY may aggregate L RS-FEC input frames into an interleaved RS-FEC input superframe.

Proposed Response

aggregation into a superframe is not an option - it is written as if it were.

Suggested Remedy
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

Correct typographical error.

Suggested Remedy
Change: 65B-RS_FEC
To: 65B RS-FEC

Proposed Response
<table>
<thead>
<tr>
<th>CI</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Comment</th>
<th>Suggested Remedy</th>
<th>Proposed Response</th>
<th>Response Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>149</td>
<td>149.3.2.2.2</td>
<td>P85</td>
<td>L31</td>
<td>#161</td>
<td>E</td>
<td>X</td>
<td>extraneous word</td>
<td>Remove the word &quot;pair&quot; from Figure 149-6. This is left from the 4-pair figure and isn't needed here.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>149</td>
<td>149.3.2.2.3</td>
<td>P85</td>
<td>L37</td>
<td>#185</td>
<td>E</td>
<td>X</td>
<td>-</td>
<td>Keep paragraphs together through formatting.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>149</td>
<td>149.3.2.2.11</td>
<td>P89</td>
<td>L37</td>
<td>#25</td>
<td>E</td>
<td>X</td>
<td>Correct grammatical of the word &quot;which&quot;</td>
<td>Replace &quot;(which is reserved)&quot; with &quot;, which is reserved&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>149</td>
<td>149.3.2.2.15</td>
<td>P90</td>
<td>L39</td>
<td>#18</td>
<td>E</td>
<td>X</td>
<td>-</td>
<td>Equation (149-1) is truncated</td>
<td>If it is not already, make this a &quot;Medium&quot; equation.</td>
<td></td>
</tr>
<tr>
<td>149</td>
<td>149.3.2.2.15</td>
<td>P90</td>
<td>L39</td>
<td>#285</td>
<td>ER</td>
<td>X</td>
<td>-</td>
<td>Just shows half g of g(x), and half 0 of g0 in Equation (149-1)</td>
<td>Zoom out a little bit for the equation (149-1) to show the full equation.</td>
<td></td>
</tr>
<tr>
<td>149</td>
<td>149.3.2.2.15</td>
<td>P91</td>
<td>L15</td>
<td>#233</td>
<td>E</td>
<td>X</td>
<td>&quot;This may be computed&quot;. &quot;may&quot; is a special word for &quot;is permitted to&quot;. In this case, it is describing an implementation.</td>
<td>Change &quot;may&quot; to &quot;can&quot;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Comment Type ER Comment Status X
Line 33 to line 37 are the same as line 27 to line 31.

Suggested Remedy
Delete line 33 to line 37.

Proposed Response

Comment Type ER Comment Status X
The L33-L37 seems being a duplicated copy of the L27-L31.

Suggested Remedy
Remove L33-L37.

Proposed Response

Comment Type E Comment Status X
i,r should be subscripts

Suggested Remedy
For pi,r, change i,r to a subscript of p.

Proposed Response

Comment Type ER Comment Status X
This paragraph seems to be the redundant. Keep line 4 and 5.

Suggested Remedy
Delete Line 1 and line 2.

Proposed Response
Lo, William Axonne Inc.

Comment Type TR Comment Status X
The first PAM4 state entered is TX SWITCH

SuggestedRemedy
Change PAM4 PCS Test to TX SWITCH state

Proposed Response Response Status O

---

Lo, William Axonne Inc.

Comment Type ER Comment Status X
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 O
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 O

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 O

Alert has a yellow tag around it <TBD Alert>

SuggestedRemedy
remove yellow and <TBD> and change to uppercase ALERT

Proposed Response
Response Status O

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 O

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 O

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

Proposed Response
Response Status O
Comment Type: E  Comment Status: X
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: O

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

SuggestedRemedy
Change 80 to 450.

Proposed Response  Response Status: O

Comment Type: TR  Comment Status: X
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: O

Comment Type: T  Comment Status: X
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: O
Two instances of "Table 149–1" (in b) and c) should be cross-references.

Proposed Change: Make the two instances of "Table 149–1" cross-references.

"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.

Proposed Change: 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."

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

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

"alignment to the RS-FEC super-frame comprising 16 partial PHY frames".

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

This is a duplicate of 149.3.4.3.

Proposed Change: Delete 149.3.4.4.
Within the LPI mode, PHYs use a repeating quiet-refresh cycle.

Add comma for readability.

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.

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.

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.
Comment Type E  Comment Status X
Add commas for readability.

Suggested Remedy
- 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 O

---

Comment Type TR  Comment Status X
Frame counts are based on RS-Frames, not partial frames

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

Proposed Response  Response Status O

---

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

Suggested Remedy
- Replace the word "half cycle" with "properly"

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

Suggested Remedy
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.

The table is erroneously referring to wake_period for alert calculation.

Suggested Remedy
Change wake_period to alert_period

Proposed Response Response Status O

The table is erroneously referring to wake_period for alert calculation.

Suggested Remedy
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 O

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 infofield data during refresh with the exception that the infofield consists of a sequence of 128 zeros.

Suggested Remedy
with the exception that the infofield 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 O
<table>
<thead>
<tr>
<th>Comment Type</th>
<th>Proposed Response</th>
<th>Comment Status</th>
<th>Response Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>Replace &quot;which&quot; with &quot;that&quot;</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td>ER</td>
<td>Remove highlighting</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td>E</td>
<td>Replace 6 RS-FEC with 8 RS-FEC</td>
<td>X</td>
<td>O</td>
</tr>
</tbody>
</table>
Comment Type: ER  Comment Status: X
There's no definition for rx_symb_vector. The rx_symb is defined instead.
Suggested Remedy
- Change "rx_symb_vector" to "rx_symb".
Proposed Response  Response Status: O

Comment Type: E  Comment Status: X
awkward wording
Suggested Remedy
- Change: belonging to the eight types
  To: belonging to one of the eight types
  Also on page 106, line 11
Proposed Response  Response Status: O

Comment Type: E  Comment Status: X
Hex alphabetic charcters should be capitalized.
Suggested Remedy
- Change: 0x1e
  To: 0x1E
  Also on page 105, line 45
Proposed Response  Response Status: O
The RFER monitor state diagram is missing.

Suggested Remedy:
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

The RFER monitor state diagram is missing.

Suggested Remedy:
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:

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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

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Suggested Remedy:
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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

The RFER monitor state diagram is missing.

Suggested Remedy:
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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

The RFER monitor state diagram is missing.

Suggested Remedy:
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
Comment Type TR  Comment Status X
There are only 6 bits in MDIO register bits 3.2324.5:0.

Suggested Remedy
Change from "X-bit counter that ..." to "6-bit counter that ...".

Proposed Response   Response Status O

---

Comment Type T  Comment Status X
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.

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

Proposed Response   Response Status O

---

Comment Type TR  Comment Status X
The "fr_active" and "fr_sigtpe" is not defined and should be removed.

Suggested Remedy
Change "if fr_active
rx_raw <= LBLOCK_R
else
rx_raw <= fr_sigtpe
end"

to
"rx_raw <= LBLOCK_R"

Proposed Response   Response Status O

---

Comment Type TR  Comment Status X
Change "TBD" to "65B RS-FEC".

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

Proposed Response   Response Status O

---

Comment Type E  Comment Status X
The OAM10 is not defined.

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

Proposed Response   Response Status O
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.

**Suggested Remedy**

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  O

---

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.

**Suggested Remedy**

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  O

---

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

**Suggested Remedy**

"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  O

---

"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)

**Suggested Remedy**

Change "it may be possible" to "it is possible" on lines 41 and 44

Proposed Response  
Response Status  O

---

The dummy OAM symbol is all 0s and its value is ignored at the receiver.

Proposed Response  
Response Status  O

---
cal Layer Specifications and Management Parameters for Greater Than 1 Gb/s Automotive Ethernet 4th T

Cl 149 SC 149.3.8.2.4 P115 L 44 # 200
Wienckowski, Natalie  General Motors

Comment Type  E  Comment Status  X
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  O

Cl 149 SC 149.3.8.2.5 P116 L 1 # 128
Chen, Steven  Broadcom

Comment Type  TR  Comment Status  X
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  O

Cl 149 SC 149.3.8.2.12 P117 L 17 # 201
Wienckowski, Natalie  General Motors

Comment Type  E  Comment Status  X
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  O

Cl 149 SC 149.3.8.2.12 P117 L 31 # 122
Chen, Steven  Broadcom

Comment Type  TR  Comment Status  X
The definition of *not receiving transmit messaged from the MAC* needs to be clarified.

SuggestedRemedy
  Change "… not receiving transmit messaged from the MAC" to "… not receiving valid transmit message from the MAC"

Proposed Response  Response Status  O

Cl 149 SC 149.3.8.2.12 P117 L 42 # 129
Chen, Steven  Broadcom

Comment Type  TR  Comment Status  X
This standard requires single pair cable. There's no pair swap.

SuggestedRemedy
  Remove L42 to L47.

Proposed Response  Response Status  O

Cl 149 SC 149.3.8.2.12 P118 L 7 # 127
Chen, Steven  Broadcom

Comment Type  TR  Comment Status  X
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  O
Comment Type: T
Comment Status: X
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.

Suggested Remedy
See Lo_3ch_01_0319.pdf slide 4 for the text changes

Proposed Response
Response Status: O

Comment Type: E
Comment Status: X
subject/verb agreement

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

Proposed Response
Response Status: O

Comment Type: E
Comment Status: X
missing period

Suggested Remedy
Add period

Proposed Response
Response Status: O

Comment Type: E
Comment Status: X
missing periods

Suggested Remedy
Add periods at the end of the a) and b) statements.

Proposed Response
Response Status: O

Comment Type: ER
Comment Status: X
Title heading incorrect

Suggested Remedy
Delete 1000BASE-T1

Proposed Response
Response Status: O
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 O

---

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 O

---

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 O

---

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 next OAM message can be written into the OAM transmit registers.

Proposed Response
Response Status O
ON THE RECEIVE SIDE, MR_RX_LP_VALID INDICATES THAT VALID OAM MESSAGE CAN BE READ FROM THE OAM RECEIVE REGISTERS.

CHEN, STEVEN, BROADCOM

Proposed Response

Proposed Response

Proposed Response
Comment Type: E  Comment Status: X  Improve wording to match other statements  

Suggested Remedy:  
- Change: Send request to link partner…  
- To: Request link partner…  

Proposed Response  Response Status: O  

---  

Comment Type: E  Comment Status: X  Missing periods  

Suggested Remedy:  
- Add periods at the end of all 4 "Values" sentences.  

Proposed Response  Response Status: O  

---  

Comment Type: E  Comment Status: X  We changed to BASE-T1 OAM  

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

Proposed Response  Response Status: O  

---  

Comment Type: E  Comment Status: X  Missing periods  

Suggested Remedy:  
- Add periods at the end of both "Values" sentences.  

Proposed Response  Response Status: O  

---
Comment Type: E
Comment Status: X
missing periods
Suggested Remedy:
Add periods at the end of all 4 "Values" sentences.
Proposed Response
Response Status: O

Comment Type: T
Comment Status: X
tx_boundary description has yellow highlighted
Suggested Remedy:
Remove the yellow as the text is correct.
Proposed Response
Response Status: O

Comment Type: E
Comment Status: X
missing periods
Suggested Remedy:
Add periods at the end of both "Values" sentences.
Proposed Response
Response Status: O

Comment Type: ER
Comment Status: X
rx_cnt incorrectly defined
Suggested Remedy:
Change:
A count of received OAM frames
To:
A count of received OAM frame symbols
Proposed Response
Response Status: O

Comment Type: TR
Comment Status: X
The downward arrow from RECEIVE INIT state to CHECK READ state is missing the transition condition.
Suggested Remedy:
Add conditional label "UCT" for the arrow in the middle.
Proposed Response
Response Status: O
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)

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
den Besten, Gerrit  
NXP Semiconductors

Comment Type T  
"true.All"

SuggestedRemedy
Add space

Proposed Response  
Response Status O

---

Wienckowski, Natalie  
General Motors

Comment Type T  
Comment Status D

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

Proposed Response  
Response Status Z

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

---

Wienckowski, Natalie  
General Motors

Comment Type T  
Comment Status X

SuggestedRemedy
Timing specs for PMA reset are missing.

Proposed Response  
Response Status O
**Comment Type:** E  **Comment Status:** X
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: O

---

**Comment Type:** T  **Comment Status:** X
TBD

**SuggestedRemedy**

Change: from any other values

To: from any other value

**Proposed Response**

Response Status: O

---

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

RS-FEC error rate specification "The quality of these symbols shall allow RFER of less than TBD after RS-FEC decoding"… 10^-12 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^-12.

**SuggestedRemedy**

Replace "TBD" with "10^-12" (where ^ indicates superscript)

**Proposed Response**

Response Status: O
Wienckowski, Natalie
General Motors

Comment Type E Comment Status X

Suggested Remedy

Change: Extra "F"
To: Figure 149-27

Proposed Response Response Status O

Wienckowski, Natalie
General Motors

Comment Type T Comment Status X

The SOF is 3 octets, not 4. Also, fix subject/verb agreement.

Suggested Remedy

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 O

Zimmerman, George
CME:ADI,Aquantia,AP

Comment Type T Comment Status X

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

Suggested Remedy

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 EEEen = 1. The optional BASE-T1 OAM capability shall be enabled only if both PHYs set the capability bit OAMen = 1."

Proposed Response Response Status O

Zimmerman, George
CME:ADI,Aquantia,AP

Comment Type T Comment Status X

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

Suggested Remedy

Change "data mode precoder" to "requested precoder"

Proposed Response Response Status O
Comment Type E Comment Status X
Text rewrite to eliminate requirements in what should be descriptive text.

SuggestedRemedy
Accept zimmerman_3cg_02_0319.pdf (TFTD)

Proposed Response Response Status O

Comment Type ER Comment Status X
Remove the editorial highlights

SuggestedRemedy
Remove the editorial highlights

Proposed Response Response Status O

Comment Type TR Comment Status X

Infotext 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 O

Comment Type E Comment Status X

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 O

Comment Type ER Comment Status X
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 O
The paragraph should be revised in order to match Figure 149-31 PHY Control state diagram.

**Suggested Remedy**

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: O

---

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

**Suggested Remedy**

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: O
Lo, William
Axonne Inc.

Comment Type TR Comment Status X
No state diagram so no reference
Update to correct time

Suggested Remedy
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 O

Graba, Jim
Broadcom

Comment Type TR Comment Status X
Update the moving time window length to be equivalent to 2.5G/5G/10GBASE-T

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

Proposed Response Response Status O

Anslow, Pete
Ciena

Comment Type E Comment Status X
In "{–1, -1/3, 1/3, 1}" the hyphen should be an en dash

Suggested Remedy
In "{–1, -1/3, 1/3, 1}" change the hyphen to an en dash

Proposed Response Response Status O
Wienckowski, Natalie General Motors

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

fix "-" and add "+" to be consistent with the rest of the document.

**Suggested Remedy**

- Change: \{-1, -1/3, 1/3, 1\} to \{-1, -1/3, +1/3, +1\}

**Proposed Response**

**Response Status:** O

---

WU, Peter Marvell

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

"PAM3 *" are still used in pma_Watchdog_status definition text and expiration times should be changed as well

**Suggested Remedy**

- Change "OK: the local device has received sufficient PAM3 transitions
  NOT_OK: the local device has not received sufficient PAM3 transitions" to
  "OK: the local device has received sufficient PAM4 transitions
  NOT_OK: the local device has not received sufficient PAM4 transitions"

**Proposed Response**

**Response Status:** O

---

Zimmerman, George CME:ADI,Aquantia,AP

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

- 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.

**Suggested Remedy**

- Remove highlighting from line 3 to line 12.

**Proposed Response**

**Response Status:** O

---
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

This comment was WITHDRAWN by the commenter.

---

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** O

---

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

Incorrect reference

**SuggestedRemedy**

Change 149.4.3 to 149.4.2.7

**Proposed Response**

**Response Status** O
## Comment Type: TR/technical required

### Comment Details:

#### Comment Type: TR

**Comment Status:** X

- **Comment:** The variable pcs_data_mode is not defined.

- **Suggested Remedy:** Copy from Clause 55.4.5.1 and insert here.

- **Proposed Response:** Response Status O

---

#### Comment Type: ER

**Comment Status:** X

- **Comment:** Maxwait_timer expiration period should be much shorter than 2000ms with 100ms link up requirement.

- **Suggested Remedy:** Change "2000ms +/- 10ms" to "97.5ms +/- 0.5ms".

- **Proposed Response:** Response Status O

---

#### Comment Type: TR

**Comment Status:** X

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

- **Suggested Remedy:** Change:
  - 2000 ms +/- 10 ms
  - To: 97.5 ms +/- 0.5 ms

- **Proposed Response:** Response Status O

---

#### Comment Type: TR

**Comment Status:** X

- **Comment:** Transition is from PAM2 to PAM4. Also it only depends on the received InfoField PFC24 counter.

- **Suggested Remedy:** 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 O

---

#### Comment Type: TR

**Comment Status:** X

- **Comment:** On line 1, 2, 4, 5, 7, 9, change "PAM3" to "PAM4".

- **Proposed Response:** Response Status O

---

#### Comment Type: TR

**Comment Status:** X

- **Comment:** The variable pcs_data_mode is not defined.

- **Suggested Remedy:** Copy from Clause 55.4.5.1 and insert here.

- **Proposed Response:** Response Status O
Comment Type: ER  Comment Status: X
Name of states incorrect for minwait_timer
Timer is ok

Suggested Remedy:
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: O

---

Comment Type: T  Comment Status: X
minwait_timer expiartion period changed to the same value used at 802.3b

Suggested Remedy:
change "1ms+0.1s" to "975us+/-50us"

Proposed Response  Response Status: O

---

Comment Type: T  Comment Status: X
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

Suggested Remedy:
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: O
Comment Type: TR/technical required  ER/editorial required  GR/general required  T/technical  E/editorial  G/general
COMMENT STATUS: D/dispatched  A/accepted  R/rejected  RESPONSE STATUS: O/open  W/written  C/closed  Z/withdrawn
SORT ORDER: Clause, Subclause, page, line
Figure 149-36 with wrong piece copied

Suggested Remedy
remove the block of "link partner" in the figure

Proposed Response Response Status O

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

Proposed Response Response Status O

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.

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

Proposed Response Response Status O

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.

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

Proposed Response Response Status O

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

Suggested Remedy
Delete 149.5.2.5 and content (lines 32 to 37)

Proposed Response Response Status O

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

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

Suggested Remedy
Replace "TBD" with "0.2"

Proposed Response
Response Status O

Change "1406.25 MHz ± 50 ppm" to "5625*S MHz± 50 ppm"

Proposed Response
Response Status O

"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.

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

Proposed Response
Response Status O

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

Suggested Remedy
Delete editor's note at 157 line 38

Proposed Response
Response Status O
Cal Layer Specifications and Management Parameters for Greater Than 1 Gb/s Automotive Ethernet 4th T

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

**Suggested Remedy**
- 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: O

---

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

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: O

---

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

- **Type:** Typo
- **Suggested Remedy**
  - Change "f is the" to "f is the"

**Proposed Response**
- Response Status: O

---

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

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.

**Suggested Remedy**
- 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: O
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.

**Suggested Remedy**
Delete "(former IEC 60950–1)"

**Proposed Response**

---

Typo

"23°C ± 5°C" to "23 ± 5°C"

**Proposed Response**

---

Typo

"Testfixture" to "Test Fixture"

**Proposed Response**