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<th>SC</th>
<th>FM</th>
<th>P</th>
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<td>1.3</td>
<td>6</td>
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<td>25</td>
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</table>

Comment Type: E
Comment Status: D

IEEE Std 802.3cd-2018 is now approved

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

Proposed Response: Response Status W

---

Comment Type: E
Comment Status: D

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: Response Status W

---

Comment Type: E
Comment Status: D

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

Suggested Remedy:
Delete "2019"

Proposed Response: Response Status W

---

Comment Type: E
Comment Status: D

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: Response Status W

---

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COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed Z/withdrawn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
over a single shielded balanced pair of conductors". Signal routing at PCB might not be
shielded. Same on lines 23 and 29.

Suggested Remedy
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.

---

Missing space

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

Proposed Response Response Status W
PROPOSED ACCEPT.

---

Remove note on the type of paragraph to use for Abbreviations.

Suggested Remedy
Remove: [abbreviations use paragraph tag AcrList,ac]

Proposed Response Response Status W
PROPOSED ACCEPT.

---

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.

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

Proposed Response Response Status W
PROPOSED ACCEPT.
Comment Type: E  Comment Status: D  EZ
Item d of 44.1.3 contains five external cross-references that are not in forest green
Suggested Remedy
  Apply character tag "External" to "Clause 53", "Clause 54", "Clause 55", "Clause 68", and "Clause 52"

Proposed Response
  Response Status: W
  PROPOSED ACCEPT.

Anslow, Pete  Ciena

Comment Type: ER  Comment Status: D  EZ
"1-pair RS–FEC PCS & PMA" inconsistent with 10GBASE-T.
Suggested Remedy
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.

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

Proposed Response
  Response Status: W
  PROPOSED ACCEPT.

Den Besten, Gerrit  NXP Semiconductors

Comment Type: T  Comment Status: D  EZ
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.
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.

Comment Type: E  Comment Status: D

"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_train_time as defined in 149.3.2.1 to resume operation and achieve the optimum BER after exiting from reset or lowpower 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_train_time as defined in 149.3.2.1 to resume operation and achieve the optimum BER after exiting from reset or lowpower mode.

Comment Type: ER  Comment Status: D

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

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 MultiGBASE-T1 OAM capability. When set as a zero, this bit indicates to the link partner that the 1 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 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 1 PHY is not advertising MultiGBASE-T1 OAM capability. This bit should be set to zero if the PHY does not support MultiGBASE-T1 OAM.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

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.

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.

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

---

Register 231 is called minimum margin register, but it is about an SNR value

**Suggested Remedy**
Rename to: minimum SNR margin

**PROPOSED ACCEPT.**

---

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.

**Suggested Remedy**
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 ACCEPT.**
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.

**Suggested Remedy**

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**

PROPOSED ACCEPT.

"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.

**Suggested Remedy**

Refer to register 3.2319 in the quoted sentence.

**Proposed Response**

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.

**Proposed Response**

PROPOSED ACCEPT.
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?

_Suggested Remedy_
If the intent is that 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.

_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 | W
---|---|---
PROPOSED ACCEPT.

Comment Type | E | Comment Status | D | EZ
---|---|---|---|---
Extra ")" at the end of "45.2.3.78.1 PCS reset (3.2322.15))"

_Suggested Remedy_
Delete the extra ")"

Proposed Response | Response Status | W
---|---|---
PROPOSED ACCEPT.

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."

_Suggested Remedy_
Replace by: ""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."

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.

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

**Suggested Remedy**

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**

PROPOSED ACCEPT.

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

---

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.

**Suggested Remedy**

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

**Proposed Response**

PROPOSED REJECT.

Either accept this proposal or the one in comment #218.
Comment Type  ER  Comment Status  D  Format  
Typo

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

Proposed Response  
Response Status  W  

This matches the formatting of existing 802.3 clauses.

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  

S is defined in 149.1.1.

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  

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  

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
Comment Type: E  Comment Status: D

Anslow, Pete Ciena

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

Suggested Remedy

Make it white.

Proposed Response  Response Status: W

PROPOSED ACCEPT.

---

Wienckowski, Natalie General Motors

Incorrect wording for MDI

Suggested Remedy

Change: Media Dependent Interface (MDI)

To: Medium Dependent Interface (MDI)

Proposed Response  Response Status: W

PROPOSED ACCEPT.

---

Tu, Mike Broadcom

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: 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.
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 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?)

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 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).

The transmit transition to the LPI transmit mode is based on the TXD[31:0] of the XGMII, not in the last 64B/65B 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 REJECT.

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

PROPOSED ACCEPT IN PRINCIPLE.

Change: Periodically the transmit
To: Periodically, the transmit

PROPOSED ACCEPT.

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

PROPOSED ACCEPT.
Comment Type: ER  Comment Status: D  EZ

Suggested Remedy
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.
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.

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 ACCEPT IN PRINCIPLE.

Update Figure 149-2 (number in D1.1) with the changes indicated on page 2 of Benyamin_3ch_1_0319.pdf.

PROPOSED ACCEPT IN PRINCIPLE.

PROPOSED ACCEPT.
# Comment Summary

**Comment # 153**: Wienckowski, Natalie, General Motors

**Comment Type**: E

**Comment Status**: D

**Desc**: subject/verb agreement

**Suggested Remedy**

- **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.

**Comment # 154**: Wienckowski, Natalie, General Motors

**Comment Type**: E

**Comment Status**: D

**Desc**: variable loc_phy_ready is not used.

**Suggested Remedy**

1. Remove "PMA_PHYREADY.indication(loc_phy_ready)".
2. In page 71 line 26, 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.

---

**Comment # 94**: Anslow, Pete, Ciena

**Comment Type**: TR

**Comment Status**: D

**Desc**: variable "rem_phy_ready" is no longer used

**Suggested Remedy**

1. Delete line 28 "PMA_REMPHYREADY.request(rem_phy_ready)"
2. Delete references to "rem_phy_ready" at the following location:
   - Page 71, line 34, Figure 149-2, change from "rem_rcvr_status / rem_phy_ready" to "rem_rcvr_status”.
   - Page 80, delete 149.2.2.10, 149.2.2.10.1, 149.2.2.10.2, and 149.2.2.10.3.
   - Page 82, line 24, Figure 149-4, change from "rem_rcvr_status / rem_phy_ready" to "rem_rcvr_status”.
   - Page 134, line 11, Figure 149-24, change from "rem_rcvr_status / rem_phy_ready" to "rem_rcvr_status”.
   - Page 148, delete line 14 to line 20.
   - 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.
Comment Type: T Comment Status: D

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: 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.
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.

**Suggested Remedy**

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**

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.

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**

PROPOSED ACCEPT.

Add commas for readability.

**Suggested Remedy**

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**

PROPOSED ACCEPT.

Missing open parenthesis

**Suggested Remedy**

Change: Tn)

To: (Tn)

**Proposed Response**

PROPOSED ACCEPT.
Comment Type  E  Comment Status  D  EZ
Comment: Change signal value to +1 for consistency.
Suggested Remedy
Change: {-1, 1} To: {-1, +1}

PROPOSED ACCEPT IN PRINCIPLE.

Comment Type  T  Comment Status  D  Editorial
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 ACCEPT.

Comment Type  E  Comment Status  D  EZ
typo
Suggested Remedy
Change: 65B-RS_FEC To: 65B RS-FEC

PROPOSED ACCEPT.
<table>
<thead>
<tr>
<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>ER</td>
<td>D</td>
<td>Wei, Dong</td>
<td>Futurewei Technologie</td>
<td>Just shows half g of g(x), and half 0 of g0 in Equation (149-1)</td>
<td>PROPOSED ACCEPT.</td>
</tr>
<tr>
<td>E</td>
<td>D</td>
<td>Anslow, Pete</td>
<td>Ciena</td>
<td>Equation (149-1) is truncated</td>
<td>Is this a &quot;Medium&quot; equation?</td>
</tr>
<tr>
<td>E</td>
<td>D</td>
<td>Zimmerman, George</td>
<td>CME, ADI, Aquantia, AP</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>
</tr>
<tr>
<td>E</td>
<td>D</td>
<td>Wienckowski, Natalie</td>
<td>General Motors</td>
<td>i,r should be subscripts</td>
<td>For i,r, change i,r to a subscript of p.</td>
</tr>
</tbody>
</table>

Comment Type: ER/editorial required GR/general required T/technical ER/editorial required PR/proposed R/rejected
Wrong indices. "m_L" should be "m_0" at both the input and the output of the Lth encoder.

**Suggested Remedy**

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.

---

Change "m_L" to "m_0"; Figure 149-10, at the RS Encoder #L, the input and output mL should be m0.

**Proposed Response**

Response Status: **W**

PROPOSED ACCEPT.

---

The last message symbol of the input message symbols should be m0, not mL.

**Proposed Response**

Response Status: **W**

PROPOSED ACCEPT.

---

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.

---

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

**Suggested Remedy**

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.
Comment Type ER Comment Status D
Refresh is PAM2 so we can delete highlighted paragraph.

Suggested Remedy
delete highlighted paragraph.

Proposed Response Response Status W
PROPOSED ACCEPT.

---

Comment Type TR Comment Status D
"P(r,t)" probably should be "P(u)"

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

Proposed Response Response Status W
PROPOSED ACCEPT.

---

Comment Type TR Comment Status D
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.

Suggested Remedy
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.

---

Comment Type E Comment Status D
Add comma for readability.

Suggested Remedy
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.
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.>

Suggested Remedy
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.

Alert has a yellow tag around it <TBD Alert>

Suggested Remedy
remove yellow and <TBD> and change to upper case ALERT

Proposed Response Response Status W
PROPOSED ACCEPT.

There is a yellow tag on this line awaiting some description

Suggested Remedy
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 Benyamin_3ch_1_0319.pdf after the text being added by this comment.

Editorial license to use the appropriate table number.

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

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

Proposed Response Response Status W
PROPOSED ACCEPT.
Comment Type E  Comment Status D  EZ

Wienckowski, Natalie General Motors

**Proposed Response**

Add comma for readability.

**Suggested Remedy**

Change:  monitors the signal quality asserting hi_rfer if excessive
To:  monitors the signal quality, asserting hi_rfer if excessive

**Response Status W**

**PROPOSED ACCEPT IN PRINCIPLE.**

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

Tu, Mike Broadcom

**Proposed Response**

There are 450 PAM2 symbols per partial frame.

**Response Status W**

**PROPOSED ACCEPT.**
There is a yellow TBD as follows
The quiet-refresh cycle continues until the PMA asserts <TBD Alert>.

Suggested Remedy
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 /I/ characters, representing a wake signal. The PHY receive function sends /I/ to the XGMII for 8 RS-Frame periods (wake duration) and then resumes normal operation.

Proposed Response
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 /I/ characters, representing a wake signal. The PHY receive function sends /I/ to the XGMII for 8 RS-Frame periods (wake duration) and then resumes normal operation.

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.

Suggested Remedy
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
PROPOSED ACCEPT.

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

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

Proposed Response
PROPOSED ACCEPT.
"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.

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

Proposed Response
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

This is a duplicate of 149.3.4.3.

Suggested Remedy
Delete 149.3.4.4.

Proposed Response
PROPOSED ACCEPT.

Add comma for readability.

Suggested Remedy
Change: a LPI
To: an LPI

Proposed Response
PROPOSED ACCEPT.

Add comma for readability.

Suggested Remedy
Change: lpi_qr_time equal to 96 RS-FEC frame periods.
To: lpi_qr_time, equal to 96 RS-FEC frame periods.

Proposed Response
PROPOSED ACCEPT.
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.

*Suggested Remedy*

$lpi_{offset}$ 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.

*Proposed Response*

PROPOSED ACCEPT IN PRINCIPLE.

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

---

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.

*Suggested Remedy*

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*

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.

**Comment**

### 149  SC 149.3.5.1  P101  L 6  
Wienckowski, Natalie  General Motors  

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

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, an 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.

**Comment**

### 149  SC 149.3.5.1  P101  L 10  
Benyamin, Saied  Aquantia  

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

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** W  
PROPOSED ACCEPT IN PRINCIPLE.

Not needed if comment #65 implemented as proposed.
Establish a limitation for alert starts so that it does not overlap with the link partner's alert.

**Suggested Remedy**

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**

PROPOSED ACCEPT IN PRINCIPLE.

Insert on page 101 line 19.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

**Proposed Response**

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

**Proposed Response**

PROPOSED ACCEPT.

**Proposed Response**

PROPOSED ACCEPT.
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.

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.

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 infofield data during refresh 
with the exception that the infofield consists of a sequence of 128 zeros.
SuggestedRemedy
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 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.
Comment Type: T  Comment Status: D  State diagrams
Need to accept rfer_timer so that hi_rfer function (already accepted) works. This is not an 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.

Suggested Remedy
Accept text in yellow at lines 35 through 39 for rfer_timer.

Proposed Response  Response Status: W
PROPOSED ACCEPT.

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

Suggested Remedy
Remove highlighting from lines 40 - page 105 line 7.

Proposed Response  Response Status: W
PROPOSED ACCEPT.

Comment Type: TR  Comment Status: D  EEE
lpi_tx_sleep_timer is wrong

Suggested Remedy
Replace 6 RS-FEC with 8 RS-FEC.

Proposed Response  Response Status: W
PROPOSED ACCEPT.

Comment Type: E  Comment Status: D  Editorial
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: W
PROPOSED ACCEPT IN PRINCIPLE.

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

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

Proposed Response  Response Status: W
PROPOSED ACCEPT.
duplicate sentence.

Suggested Remedy
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.

Zimmerman, George
CME:ADI,Aquantia,AP

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

Suggested Remedy
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.

Tu, Mike
Broadcom

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
Response Status: W
PROPOSED ACCEPT IN PRINCIPLE.

Need to reconcile comments 101, 221, 222, 103, and 78.
An excerpt from a document discussing state diagrams and management parameters for automotive Ethernet. It includes comments from various contributors proposing changes and suggestions. The text is structured in a way that shows the type of comment, status, and proposed response. The comments are related to making changes to the state diagrams and clarifying terminology. The contributors include Zimmerman, George, Graba, Jim, Tu, Mike, and Chen, Steven, from different companies like CME:ADI, Aquantia, AP, Broadcom, and Broadcom. The comments range from editorial changes to technical updates, and suggest reviewing the changes globally.
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 ACCEPT IN PRINCIPLE.

Change: X-bit counter
To: 6-bit counter

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

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 ACCEPT.

There is 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 ACCEPT.

Replace "TBD encoded" with "encoded transmit data"

PROPOSED ACCEPT IN PRINCIPLE.

Change "TBD" to "65B RS-FEC"
"a continuous stream of TBD encoded PAM 4 symbols" - the missing word is "RS-FEC"

"Replace "TBD" with "RS-FEC"

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

"the OAM10 field" to "the OAM 10-bit field"

"the OAM10 is not defined.

"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.

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

"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"

"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"
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)

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

Proposed Response  Response Status: W
PROPOSED ACCEPT.

Comment Type: ER  Comment Status: D  OAM

Clarification on the dummy symbol

Suggested Remedy
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.

Comment Type: E  Comment Status: D  EZ

awkward wording

Suggested Remedy
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.

Comment Type: TR  Comment Status: D  EEE

To exit the LPI would require to change MAC layer.

Suggested Remedy
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.

Comment Type: TR  Comment Status: D  EZ

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

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

Proposed Response  Response Status: W
PROPOSED ACCEPT.
This standard requires single pair cable. There's no pair swap.

Proposed Response

Remove L42 to L47.

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.

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 ACCEPT.
Comment Type  E  Comment Status  D  EZ
SuggestedRemedy
missing period
Change:  Figure 149–19 Before calculation
To:  Figure 149–19. Before calculation
Proposed Response  Response Status  W
PROPOSED ACCEPT.

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.

Comment Type  E  Comment Status  D  EZ
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.

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

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.

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.
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.

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.

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.
Comment Type: E  Comment Status: D  EZ
Highlighted sentence is accurate

Suggested Remedy
Remove highlight

Proposed Response
Response Status: W
PROPOSED ACCEPT.

Comment Type: E  Comment Status: D  EZ
Highlighted sentence is accurate

Suggested Remedy
Remove highlight

Proposed Response
Response Status: W
PROPOSED ACCEPT.

Comment Type: ER  Comment Status: D
OAM
The mr_rx_lp_message[95:0] has 12 Octets.

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

Proposed Response
Response Status: W
PROPOSED ACCEPT.
<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Proposed Response</th>
<th>Response Status</th>
<th>Comment Status</th>
<th>Response Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>149</td>
<td>149.3.8.4.3</td>
<td>127</td>
<td>12</td>
<td>216</td>
<td>E</td>
<td>D</td>
<td>Editorial</td>
<td>improve wording to match other statements</td>
<td>PROPOSED ACCEPT IN PRINCIPLE.</td>
<td>D</td>
</tr>
<tr>
<td>149</td>
<td>149.3.8.4.3</td>
<td>127</td>
<td>17</td>
<td>217</td>
<td>E</td>
<td>D</td>
<td>EZ</td>
<td>Change: Send request to link partner…</td>
<td>PROPOSED ACCEPT.</td>
<td>D</td>
</tr>
<tr>
<td>149</td>
<td>149.3.8.4.3</td>
<td>127</td>
<td>35</td>
<td>162</td>
<td>E</td>
<td>D</td>
<td>EZ</td>
<td>We changed to BASE-T1 OAM</td>
<td>PROPOSED ACCEPT.</td>
<td>D</td>
</tr>
<tr>
<td>149</td>
<td>149.3.8.4.3</td>
<td>128</td>
<td>16</td>
<td>59</td>
<td>T</td>
<td>D</td>
<td>EZ</td>
<td>rx_boundary description has yellow highlighted</td>
<td>PROPOSED ACCEPT.</td>
<td>D</td>
</tr>
</tbody>
</table>
Add periods at the end of both "Values" sentences.

Proposed Response
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.

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

Proposed Response
PROPOSED ACCEPT.

tx_boundary description has yellow highlighted

Proposed Response
PROPOSED ACCEPT IN PRINCIPLE.

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

Remove the yellow as the text is correct

Proposed Response
PROPOSED ACCEPT.
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**
PROPOSED REJECT.

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

---

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

**Suggested Remedy**
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**
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)
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)

PMA reference diagram shows alert detect, this is replaced by link synchronization

Accept changes as shown on page 3 of Benyamin_3ch_1_0319.pdf with editorial license while modifying the figure.

Report change as requested in comment 169.

Implement change as requested in comment 169.
Add requirement for time allowed to perform a reset at the end of this section.

**Suggested Remedy**

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.

---

**Comment Type** T

**Comment Status** D

**Den Besten, Gerrit**

NXP Semiconductors

**Comment Type** T

**Comment Status** D

Reset / Startup time

Timing specs for PMA 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**

**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).

---

**Comment Type** TR

**Comment Status** D

**Benyamin, Saied**

Aquantia

**State diagrams**

To allow ALERT to transmit link synchronization, we need to add it to the following statement:

when sync_link_control = ENABLE

**Suggested Remedy**

when sync_link_control = ENABLE or lpi_tx_mode = ALERT

**Proposed Response**

**Response Status** W

PROPOSED ACCEPT.
Comment Type: E  Comment Status: D  State diagrams

Suggested Remedy

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

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"

Proposed Response: Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Comment Type: E  Comment Status: D  Editorial

improve wording by removing an extra "transmitter".

Suggested Remedy

Change: 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.
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.

Comment Type: T  Comment Status: D  Error rate

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.

Suggested Remedy

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

Proposed Response: Response Status W
PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Proposed Response: Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Task force to discuss.

Comment Type: T  Comment Status: D  Editorial

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.

Suggested Remedy

Change "TBD" to "3.2 x 10^{-9}".

Proposed Response: Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Proposed Response: Response Status W
PROPOSED ACCEPT.

TFTD as part of comment 105.
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.
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**

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 EEEen = 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.

"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**

PROPOSED ACCEPT.
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".

Requested changes are accomplished with the proposal in comment 231.

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."

Requested changes are accomplished with the proposal in comment 231.

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."

Requested changes are accomplished with the proposal in comment 231.

Requested changes are accomplished with the proposal in comment 231.

Requested changes are accomplished with the proposal in comment 231.

Requested changes are accomplished with the proposal in comment 231.
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
Graba, Jim

Comment Type: TR
Comment Status: D
Comment: Change the hyphen to an en dash
Suggested Remedy: In "[-1, -1/3, 1/3, 1]" the hyphen should be an en dash

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

Point to Figure added by comment 76 as shown in Graba_3ch_1_0319.pdf.

Tu, Mike

Comment Type: ER
Comment Status: D
Comment: Remove editorial highlight.
Suggested Remedy: Remove editorial highlight.

Proposed Response: Response Status: W
PROPOSED ACCEPT.

Wienckowski, Natalie

Comment Type: T
Comment Status: D
Comment: Change: The modulation scheme used over each pair is PAM4.
To: The modulation scheme used is PAM4.
Suggested Remedy: Change: {–1, -1/3, 1/3, 1} to {–1, –1/3, +1/3, +1}

Proposed Response: Response Status: W
PROPOSED ACCEPT.

P146 L 21 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
"PAM3" are still used in pmawatchdog_status definition text and expiration times should be changed as well.

Suggested Remedy:
- Change "OK: the local device has received sufficient PAM3 transitions" to:
  - NOT_OK: the local device has not received sufficient PAM3 transitions:
    - PAM3 symbol 0 consecutively seen on the line for longer than 2 μs ± 0.1 μs
    - PAM3 symbol +1 consecutively seen on the line for longer than 3.9 μs ± 0.1 μs
    - PAM3 symbol -1 consecutively seen on the line for longer than 3.9 μs ± 0.1 μs

- During Low Power Idle operation NOT_OK is assigned when:
  - PAM3 symbol not toggling on the line during one full refresh window

- "OK: the local device has received sufficient PAM4 transitions" to:
  - NOT_OK: the local device has not received sufficient PAM4 transitions:
    - PAM4 symbol +3 consecutively seen on the line for longer than 1.9 μs ± 0.1 μs
    - PAM4 symbol +1 consecutively seen on the line for longer than 1.9 μs ± 0.1 μs
    - PAM4 symbol -1 consecutively seen on the line for longer than 1.9 μs ± 0.1 μs
    - PAM4 symbol –3 consecutively seen on the line for longer than 1.9 μs ± 0.1 μs

- 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 1.9us ±/− 0.1us.

PROPOSED ACCEPT IN PRINCIPLE.

Proposed Response

Make proposed changes and remove highlighting.

Accept variables for en_slave_tx, infofield_complete, loc_phy_ready, loc_countdown_done, rem_countdown_done, rem_phy_ready, and sync_link_control.

Do not accept PMA_watchdog_status, as this is not used.

Suggested Remedy:
- 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 REJECT.

This comment was WITHDRAWN by the commenter.

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 ACCEPT IN PRINCIPLE.

Accept Suggested Remedy except delete loc_phy_ready and rem_phy_ready as they are not used.

Suggested Remedy:

Accept Suggested Remedy except delete loc_phy_ready and rem_phy_ready as they are not used.
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.

-----

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.

-----

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.

-----

Comment Type TR  Comment Status D  State diagrams
Remove editorial highlight from line 3 to line 12.

SuggestedRemedy
Remove editorial highlight from line 3 to line 12.

Proposed Response Response Status W  PROPOSED ACCEPT.

-----

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.

-----

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.

-----

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.

-----

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.

-----

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.

-----

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.

-----

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.

-----

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.

-----

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.

-----

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.

-----

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.

-----

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.

-----

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.

-----

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.

-----

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.

-----

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.
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**

Make proposed changes and remove highlighting on rem_countdown_done and description.

---

The variable pcs_data_mode is not defined.

**Suggested Remedy**

Copy from Clause 55.4.5.1 and insert here.

**Proposed Response**

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.

---

Time way too long for acceptable startup in automotive applications.

**Suggested Remedy**

Change:

- 2000 ms +/- 10ms
  
  To:

- 97.5 ms +/- 0.5 ms

**Proposed Response**

PROPOSED ACCEPT.
Maxwait_timer expiration period should be much shorter than 2000ms with 100ms link up requirement.

**Suggested Remedy**

Change "2000ms +/- 10ms" to "975us +/- 50us"

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

PROPOSED ACCEPT.

Name of states incorrect for minwait_timer.

**Suggested Remedy**

Change:
PMA_Training_Init_S, PCS_Test and PCS_Data

To:
SILENT, TRAINING, PCS_TEST, and SEND DATA

Timer value is ok and should be un-highlighted

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

PROPOSED ACCEPT IN PRINCIPLE.

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** W

PROPOSED ACCEPT IN PRINCIPLE.

This change is included in comment #55.
The tx_mode has already been set to "SEND_N" in the "TX_SWITCH" state. There is no need to set it again.

Suggested Remedy
1. In the "PCS_TEST" block, remove "tx_mode <= SEND_N"
2. In the "SEND_DATA" block, remove "tx_mode <= SEND_N"

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"

---

Missing watchdog conditions and refresh status link down conditions

Suggested Remedy
See Lo_3ch_01_0319.pdf slide 2 for correct state machine.

PROPOSED ACCEPT.

---

Add EEE Refresh monitor state diagram

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.

---

Add commas for readability.

Suggested Remedy
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 ACCEPT.

---

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

PROPOSED ACCEPT.
Dividing a clock down does not change the clock jitter. Recommended divide by 32 or 64 so TX_TCLK_DIV is 175.8 or 87.9 MHz.

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

See Lo_3ch_01_0319.pdf slide 5 for an intuitive diagram.

Suggested Remedy
Change divided by 16 to divided by 32

Proposed Response
PROPOSED ACCEPT.

Remove extraneous comma

Suggested Remedy
Change: , or, To: , or

Proposed Response
PROPOSED ACCEPT.

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
PROPOSED REJECT.

No Suggested Remedy has been provided.
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**
PROPOSED ACCEPT.

---

The clock is still defined for 2.5G-T1,

**Suggested Remedy**
change "1406.25 MHz ± 50 ppm" to "5625*S MHz ± 50 ppm"

**Proposed Response**
PROPOSED ACCEPT IN PRINCIPLE.

---

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

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

**Proposed Response**
PROPOSED ACCEPT IN PRINCIPLE.

---

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**
PROPOSED ACCEPT IN PRINCIPLE.

---

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**
PROPOSED ACCEPT.
Typo

Comment Type ER Comment Status D Format

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.
Comment Type: ER  Comment Status: D  EZ
Suggested Remedy
Change "N" to "N = " in the equation (149-21)

Proposed Response
Response Status: W  PROPOSED ACCEPT.

Comment Type: ER  Comment Status: D  EZ
Suggested Remedy
Change "f is the" to "f is the"

Proposed Response
Response Status: W  PROPOSED REJECT.

This matches the formatting of existing 802.3 clauses.

Comment Type: ER  Comment Status: D  EZ
Suggested Remedy
Change "N = 1" to "N = 1 curve which is equivalent to equation (149-19)."

Proposed Response
Response Status: W  PROPOSED ACCEPT IN PRINCIPLE.

Change "N = 1" to "N = 1 curve which is equivalent to equation (149-19)."

Comment Type: TR  Comment Status: D  Link Segment
The frequency range for coupling attenuation is remained 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: W  PROPOSED ACCEPT IN PRINCIPLE.

Change: 5500 To: 4000 * S

Comment Type: ER  Comment Status: D  EZ
Suggested Remedy
Change "f is the" to "f is the"

Proposed Response
Response Status: W  PROPOSED REJECT.

This matches the formatting of existing 802.3 clauses.
Comment Type | Comment Status | Link Segment
--- | --- | ---
T | D | (there is no 149.7.2) the draft needs alien crosstalk coupling specs.

**Suggested Remedy**
- 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.

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Comment Type | Comment Status | Format
--- | --- | ---
ER | D | Typo

**Suggested Remedy**
- 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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Comment Type | Comment Status | Typo
--- | --- | ---
ER | D | "4000 MHz × S"

**Suggested Remedy**
- Change "4000 MHz × S" to "4000 × S MHz"

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

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Comment Type | Comment Status | Editorial
--- | --- | ---
ER | D | Typo

**Suggested Remedy**
- Change "23°C ± 5°C" to "23 ± 5°C"

**Proposed Response**
- **Response Status**: W
- PROPOSED ACCEPT.
Comment Type: ER  Comment Status: D  EZ

Suggested Remedy:
Change "Testfixture" to "Test Fixture"

Proposed Response  Response Status: W  PROPOSED ACCEPT.

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."

Suggested Remedy:
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.

Comment Type: E  Comment Status: D  EZ

"2019Draft" The 2019 seems not to belong here.

Suggested Remedy:
Replace by "Draft"

Proposed Response  Response Status: W  PROPOSED ACCEPT.