Comment Type: T
Comment Status: D
149C

Suggested Remedy

Change: provides information on return loss parameters
To: provides information on return loss parameters

Proposed Response
Response Status: Z
REJECT.

This comment was WITHDRAWN by the commenter.

Comment Type: TR
Comment Status: A
149C

Suggested Remedy

Annex 149C missing information on return loss parameters of the channel defined between TX function and RX function illustrated in Figure 149C–1.

Proposed Response
Response Status: C
ACCEPT IN PRINCIPLE.

Add the text proposed in diminico_3ch_02_0919.pdf with editorial license to conform to IEEE 802.3 style.

Comment Type: TR
Comment Status: A
149C

Suggested Remedy

Cannot condense into 1 variable (mGigT1). If one device can do 2.5G only and another can do 10G only how would the incompatible_link work as both would assert mGigT1?

Fixing the footnote in page 156 is the proper way to address D2.0 comment 224.

Proposed Response
Response Status: C
ACCEPT IN PRINCIPLE.

Undo changes from D2.0 comment 224

Page 156 line 22 change
link_control_mGigT1 and link_status_mGigT1 to
link_control_mGigT1 and link_status_mGigT1 where mGigT1 is 2.5GigT1, 5GigT1, or 10GigT1.

Response
Response Status: C
ACCEPT IN PRINCIPLE.

Undo changes from D2.0 comment 224

P156 L22 change: The variables link_control and link_status are designated as
link_control_mGigT1 and link_status_mGigT1, respectively,

To: The variables link_control and link_status are designated as link_control_2.5GigT1 and link_status_2.5GigT1 for 2.5GBASE-T1, link_control_5GigT1 and link_status_5GigT1 for 5GBASE-T1, and link_control_10GigT1 and link_status_10GigT1 for 10GBASE-T1.
### 2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Autom

<table>
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<td>L35</td>
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<td>149.3.6.1</td>
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#### Comment: D2.1

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</table>

**After exiting the low-power mode, the PHY should go to either Auto-Negotiation or PHY Link Synchronization, instead of going to Figure 149-33 PHY Control state diagram.**

**Suggested Remedy**

Delete the entire paragraph.

**Response**

Accept in principle.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make requested change to fix an error in the draft.

---

<table>
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<tbody>
<tr>
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<td>A</td>
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</table>

"An EEE-capable PHY in SLAVE mode is responsible for synchronizing its Partial PHY frame Count..." This is not correct. All PHYs in slave mode must sync.

**Suggested Remedy**

change "An EEE-capable PHY" to "A PHY"

**Response**

Accept in principle.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make the suggested change to correct an error in the draft.
Inconsistent usage of the term "RS-FEC frame count".

The term "RS-FEC frame count" is a continuous counter of the RS-FEC frames. But in Table 149-5, it is used to indicate the length of LPI signals.

Suggested Remedy
In Table 149-5, change the top row of the second column from "RS-FEC frame count" to "Number of RS-FEC frame periods".

Response
ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make the suggested change to correct an error in the draft.

It is not clear what it means by "the transmitter shall stop transmitting".

Suggested Remedy
Change the sentence from: "During the quiet period the transmitter shall stop transmitting."

To: "During the quiet period the PCS transmitter shall pass zeros to the PMA via the PMA_UNITDATA.request interface."

Response
ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make the suggested change to correct an error in the draft.
There are several problems with this paragraph. Twice it references 149.3.4 however the Infofield and the training sequence are not specified in 149.3.4. It also fails to refer to the appropriate PAM2 mapping.

**Suggested Remedy**

change "Two-level PAM refresh symbols are generated using the PMA side-stream scrambler polynomials described in 149.3.4 and exactly as is shown in Figure 149–11 with the exception that the Infofield consists of a sequence of 128 zeros. The 10-bit OAM symbol to be transmitted is XORed with the last 10 bits of the PAM2 refresh transmission. The training sequence described in 149.3.4 shall be used during the LPI mode, with the scramblers free-running from PCS Reset." to "Two-level PAM refresh symbols are generated from the $T_n$ mapping defined in 149.3.5.1 of $S_n$ defined in 149.3.5 with the exception that the Infofield consists of a sequence of 128 zeros. The 10-bit OAM symbol to be transmitted is XORed with the last 10 bits of the PAM2 refresh transmission."

**Response**

**Response Status C**

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make the following change to correct an error in the draft.

change "Two-level PAM refresh symbols are generated using the PMA side-stream scrambler polynomials described in 149.3.4 and exactly as is shown in Figure 149–11 with the exception that the Infofield consists of a sequence of 128 zeros. The 10-bit OAM symbol to be transmitted is XORed with the last 10 bits of the PAM2 refresh transmission. The training sequence described in 149.3.4 shall be used during the LPI mode, with the scramblers free-running from PCS Reset." to "Two-level PAM refresh symbols are generated from the $T_n$ mapping defined in 149.3.5.1 of $S_n$ defined in 149.3.5, with the exception that the Infofield consists of zeros. The 10-bit OAM symbol to be transmitted is XORed with the last 10 bits of the PAM2 refresh transmission."
The statement "The training sequence described in 149.3.4 shall be used during the LPI mode, with the scramblers free-running from PCS Reset" is confusing and adds no new information.

Suggested Remedy
Delete this sentence.

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make the following change to correct an error in the draft.

change "Two-level PAM refresh symbols are generated using the PMA side-stream scrambler polynomials described in 149.3.4 and exactly as is shown in Figure 149–11 with the exception that the Infomfield consists of a sequence of 128 zeros. The 10-bit OAM symbol to be transmitted is XORed with the last 10 bits of the PAM2 refresh transmission. The training sequence described in 149.3.4 shall be used during the LPI mode, with the scramblers free-running from PCS Reset." to "Two-level PAM refresh symbols are generated from the T_n mapping defined in 149.3.5.1 of S_n defined in 149.3.5, with the exception that the Infomfield consists of zeros. The 10-bit OAM symbol to be transmitted is XORed with the last 10 bits of the PAM2 refresh transmission."
2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Autm

P802.3ch D2.1

Comment Type E Comment Status A EZ
"This amendment to IEEE Std 802.3-2018 adds physical layer specifications and management parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s operation on a single balanced pair of conductors suitable for automotive applications." does not read right

SuggestedRemedy
Change to:
"This amendment to IEEE Std 802.3-2018 adds physical layer specifications and management parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s operation on a single balanced pair of conductors suitable for automotive applications."

Response Response Status C ACCEPT.

Comment Type E Comment Status A EZ
There are multiple amendments missing from the front matter (802.3cn, 802.3cq, and soon 802.3cm) which are now in SA ballot. 802.3cn is now Amendment four, before 802.3cg, as well.

SuggestedRemedy
Insert missing amendments in correct order in front matter

Response Response Status C ACCEPT.

Comment Type E Comment Status A EZ
IEEE Std 802.3cm-20xx - Amendment 7—This amendment includes changes to IEEE Std 802.3-2018 and adds Clause 150. This amendment adds Physical Layer (PHY) specifications and management parameters for 400 Gb/s operation on four pairs (400GBASE-SR4.2) and eight pairs (400GBASE-SR8) of multimode fiber, over reaches of at least 100 m.

Response Response Status C ACCEPT.

Wienckowski, Natalie General Motors

Comment Type E Comment Status A EZ
Add: IEEE Std 802.3cm™-20xx
Amendment 7—This amendment includes changes to IEEE Std 802.3-2018 and adds Clause 150. This amendment adds Physical Layer (PHY) specifications and management parameters for 400 Gb/s operation on four pairs (400GBASE-SR4.2) and eight pairs (400GBASE-SR8) of multimode fiber, over reaches of at least 100 m.

Response Response Status C ACCEPT.

Wienckowski, Natalie General Motors
Comment Type: E  Comment Status: A  EZ

IEEE Std 802.3cq-20xx - Amendment 6

Suggested Remedy

Add: IEEE Std 802.3cq™-20xx Amendment 6—This amendment includes editorial and technical corrections, refinements, and clarifications to Clause 33 and related portions of the standard.

Response  Response Status: C

ACCEPT.

Comment Type: E  Comment Status: A  EZ

Title is wrong.

Suggested Remedy

Change title to: "Draft Standard for Ethernet Amendment: Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s and 10 Gb/s Automotive Electrical Ethernet"

Also consider changing page headers to something other than "IEEE P802.3ch Multi-Gig Automotive Ethernet PHY Task Force" perhaps change to: "IEEE P802.3ch Task Force: Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s and 10 Gb/s Automotive Electrical Ethernet"

Response  Response Status: C

ACCEPT IN PRINCIPLE.

Change title to match the first page adding missing comma: "Draft Standard for Ethernet Amendment: Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Automotive Electrical Ethernet"

Don't change the page header as it is supposed to be the Task Force name.
P802.3ch D2.1  32.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Autom

Comment Type: E  Comment Status: A  EZ
"Minimum SNR margin" - Minimum should not be capitalized (it isn't the first word or an acronym)
SuggestedRemedy
Change Minimum to minimum.

Response  Response Status: C
ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make suggested change to follow IEEE802.3 style.

Comment Type: E  Comment Status: A  EZ
PHY names should not break across lines.
SuggestedRemedy
Widen first column of Tables 45-9 and 45-10 and use non-breaking hyphens in BASE-T1 instances. (do both - this way no matter what happens in the future, PHY names won’t break across lines.)

Response  Response Status: C
ACCEPT.

Comment Type: E  Comment Status: A  EZ
The empty rows in Table 45-9 and Table 45-10 should contain an ellipsis
SuggestedRemedy
Add an ellipsis to the empty rows (two instances per table)

Response  Response Status: C
ACCEPT.

Comment Type: E  Comment Status: A  EZ
"Add" is not a valid editing instruction. Table 45-21 is not being changed, so should not be shown. Notes should use the paragraph tag "Note"
SuggestedRemedy
Change the editing instruction to: "Insert the following note below Table 45-21:"
Delete Table 45-21.
Apply Paragraph tag "Note" to the note.

Response  Response Status: C
ACCEPT.

Comment Type: E  Comment Status: A  EZ
In Table 45-155b, "EEE Ability" should be "EEE ability".
SuggestedRemedy
Change "EEE Ability" to "EEE ability"

Response  Response Status: C
ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make suggested change to follow IEEE802.3 style.
"Reed-Solomon 'receiver' interleave setting" does not sound right. Delete the word 'receiver'.

SuggestedRemedy

Change from: "... the Reed-Solomon receiver interleave setting ..."
To: "... the Reed-Solomon interleave setting ..."

Response

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make suggested change and additional change to correct "Infofields" to "InfoField".

In Table 45-155c, change "Slow wake" to "Slow Wake" in order to be consistent.

SuggestedRemedy

Change all occurrences of "Slow wake" and "slow wake" into "Slow Wake" throughout the document.

Response

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make changes defined below to make draft consistent.
P39 L19 - change "Slow wake" to "Slow Wake"
P40 L20, P40 L44, & P40 L45 - change "slow wake" to "Slow Wake"
2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Autom

---

**Comment Type** | **Comment Status** | **Response** | **Response Status**
--- | --- | --- | ---
**E** | **A** | ACCEPT IN PRINCIPLE.

Both "local device" and "local PHY" are used in this document. Maybe we should stay with "local PHY"?

**Suggested Remedy**
Replace all occurrences of "local device" by "local PHY" throughout the document.

---

**Comment Type** | **Comment Status** | **Response** | **Response Status**
--- | --- | --- | ---
**E** | **A** | ACCEPT.

The convention used in Clause 45 for the values of pairs of bits is to not include a space between them.

**Suggested Remedy**
Change "value of 0 0" to "value of 00"
Change "value of 0 1" to "value of 01"
Change "value of 1 0" to "value of 10"

---

**Comment Type** | **Comment Status** | **Response** | **Response Status**
--- | --- | --- | ---
**E** | **A** | ACCEPT.

Test mode 2 is described in 149.5.2.3.1

**Suggested Remedy**
change "149.5.2.3" to "149.5.2.3.1"

---

**Comment Type** | **Comment Status** | **Response** | **Response Status**
--- | --- | --- | ---
**E** | **A** | ACCEPT.

Make "Table 104-7" a hyperlink.
Also, P67 L4

---

**Comment Type** | **Comment Status** | **Response** | **Response Status**
--- | --- | --- | ---
**E** | **A** | ACCEPT.

The highest inserted item is MM231.

**Suggested Remedy**
Change "through MM227" to "through MM231"

---

The bottom ruling of Table 78-2 should not be "Very Thin"

**Suggested Remedy**
remove the override for the bottom ruling of Table 78-2

---

"Insert an 10th paragraph" should be "Insert a 10th paragraph"

**Suggested Remedy**
Change "an" to "a"

---

**Comment Type** | **Comment Status** | **Response** | **Response Status**
--- | --- | --- | ---
**E** | **A** | ACCEPT.

Make Table 104-7 a hyperlink.

---

**Comment Type** | **Comment Status** | **Response** | **Response Status**
--- | --- | --- | ---
**E** | **A** | ACCEPT.
32.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Autom

**Comment 104**

**SC 104.5.6.4**

P67  L5  

Wienckowski, Natalie  General Motors

**Comment Type** E  **Comment Status** A

**Suggested Remedy**

Make "Table 104-7" a hyperlink and remove the "forest green" color.
Also, P67 L6, P67 L11, P67 L14.

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

ACCEPT.

**Comment 104**

**SC 104.9**

P68  L1  

Anslow, Pete  Ciena

**Comment Type** E  **Comment Status** A

The editing instruction at the top of page 68 is redundant as each change has its own editing instruction.
"Modify" is not a valid editing instruction.
The instruction is too vague to be of any use anyway.

**Suggested Remedy**

Delete the editing instruction at the top of page 68

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

ACCEPT.

**Comment 104**

**SC 104.9.3**

P68  L8  

Anslow, Pete  Ciena

**Comment Type** E  **Comment Status** A

The two items *PSETE and *PDTE are being inserted by IEEE Std 802.3cg-20xx. The redundant editing instruction at the top of the page (proposed to be deleted in another comment) does not change the fact that this editing instruction should include this.

**Suggested Remedy**

Change "in the table in 104.9.3 as follows" to "in the table in 104.9.3 (as modified by IEEE Std 802.3cg-20xx) as follows"

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

ACCEPT.
2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Autom

P802.3ch D2.1

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 U/unsatisfied Z/withdrawn
SORT ORDER: Topic

Cl 125 SC 125.1 L 46 P71 # 128
Zimmerman, George CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisco

Comment Type: TR/technical required Comment Status: D/Dispatched
"NOTE 2 - AUTO-NEGOTIATION IS OPTIONAL" Auto-Negotiation is only optional for the BASE-T1 PHYs.

SuggestedRemedy
Add "FOR BASE-T1 PHYs" after "AUTO-NEGOTIATION IS OPTIONAL"

Proposed Response: Response Status: Z/Rejected

This comment was WITHDRAWN by the commenter.

Cl 125 SC 125.1.4 L 34 P72 # 26
Wienckowski, Natalie General Motors

Comment Type: E/editorial required Comment Status: A/Accepted

SuggestedRemedy
Make "78" a hyperlink.

Response: Response Status: C/Accepted

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Correct the link to improve readability of the draft.

Cl 125 SC 125.3 L 12 P74 # 47
Lo, William Axonne Inc.

Comment Type: E/editorial required Comment Status: D/Dispatched
Table fix gap in column 2 numbers

SuggestedRemedy
Remove the gaps in all the numbers in column 2.

Proposed Response: Response Status: Z/Rejected

This comment was WITHDRAWN by the commenter.

Cl 149 SC 149.1.3.1 L 44 P77 # 129
Zimmerman, George CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisco

Comment Type: E/editorial required Comment Status: A/Accepted

149.3.2.2.18 is NOT where the interleaving is described. It is where the scrambler is. The interleaver IS in 149.3.2.2.16, where it was in the previous draft....

SuggestedRemedy
Change cross-ref from 149.3.2.2.18 to 149.3.2.2.16

Response: Response Status: C/Accepted

Cl 149 SC 149.1.3.3 P78 L 27 # 42
Slavick, Jeff Broadcom

Comment Type: E/editorial required Comment Status: A/Accepted

Extra or instead of a period.

SuggestedRemedy
Replace the or with a "."

Response: Response Status: C/Accepted IN PRINCIPLE.

The word "corrupted" was accidentally deleted from the end of the sentence. Add it back per comment #100.

Cl 149 SC 149.1.3.3 P78 L 27 # 100
Graba, Jim Broadcom

Comment Type: E/editorial required Comment Status: A/Accepted

The last part of the sentence is missing?

SuggestedRemedy
Based on D2.0, change last part of sentence from: "... to be lost or" To: "... to be lost or corrupted."

Response: Response Status: C/Accepted
### 32.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Autom

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</table>

Zimmerman, George  
CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisco

**Comment Type**  | **Comment Status**  | **EZ**
---|---|---
IEEE 802.3 state diagrams do not have precedence defined other than parentheses. To avoid parentheses around logical functions of relational operators (>, =, <, etc.) or combinations of AND and OR operations, adopting precedence is recommended. Fortunately, 802.3bt did this work and it is in clause 145.

**Suggested Remedy**

Change "The notation used in the state diagrams follows the conventions of 21.5." to "The notation used in the state diagrams follows the conventions of state diagrams as described in 21.5, along with the extensions described in 145.2.5.2.

**Response**  | **Response Status**  | **C**
---|---|---
ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make the requested change as current state transitions in our diagrams assume this precedence.

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</table>

Tu, Mike  
Broadcom

**Comment Type**  | **Comment Status**  | **EZ**
---|---|---
PMACL_link.request can be set by either the Auto-Negotiation or the PHY Link Synchronization.

**Suggested Remedy**

Change start of this sentence from: "Auto-Negotiation generates …"  
To: "Auto-Negotiation or PHY Link Synchronization generates …"

**Proposed Response**  | **Response Status**  | **Z**
---|---|---
REJECT.

This comment was WITHDRAWN by the commenter.

<table>
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</table>

Tu, Mike  
Broadcom

**Comment Type**  | **Comment Status**  | **EZ**
---|---|---
PMACL_link.indication also goes to the PHY Link Synchronization.

**Suggested Remedy**

Change from: "…, and the Auto-Negotiation functions …"  
To: "…, and the Auto-Negotiation or PHY Link Synchronization function …"

**Proposed Response**  | **Response Status**  | **Z**
---|---|---
REJECT.

This comment was WITHDRAWN by the commenter.

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</table>

Tu, Mike  
Broadcom

**Comment Type**  | **Comment Status**  | **EZ**
---|---|---
PMA_Link.indication also goes to the PHY Link Synchronization.

**Suggested Remedy**

Add a reference to 149.4.2.6.4 PHY Link Synchronization State Diagram.

**Proposed Response**  | **Response Status**  | **Z**
---|---|---
REJECT.

This comment was WITHDRAWN by the commenter.
 Comment Type E  Comment Status A  EZ

"The subsequent functions of the PCS Transmit process" is meaningless, because the preceding text no longer talks about the generation of 65B blocks.

SuggestedRemedy
Change "The subsequent functions of the PCS Transmit process" to "After mapping the XGMII transfers to 64B/65B blocks, the subsequent functions of the PCS Transmit process"

Response  Response Status C  ACCEPT.

Comment Type E  Comment Status A  EZ
typo

SuggestedRemedy
change 'RS-FE' to 'RS-FEC' in multiple locations

Response  Response Status C  ACCEPT IN PRINCIPLE.

Change on P91 L13 and P91 L 48

Comment Type E  Comment Status A  EZ
Typo: RS-FE

SuggestedRemedy
change "RS-FE symbols" to "RS-FEC symbols"

Response  Response Status C  ACCEPT.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Correct the link to improve readability of the draft.
Per Figure 78-1 and 46.4 it is not the MAC but the RS and LPI Client that controls entry to LPI mode.

**Suggested Remedy**
Change 'MAC' to 'RS'

**Response**
ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make the requested change to fix an error in the draft.

---

The block diagram is "shown" in Figure 149-5.

**Suggested Remedy**
Change the sentence to: "A block diagram of the PCS Transmit functions is shown in Figure 149-5."

**Response**
ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make the requested change to be consistent with the terminology used throughout this document.

---

To be consistent, "TxB" should be "tx_coded" and "RXB" should be "rx_coded".

**Suggested Remedy**
Change "The bits of a transmitted or received block are labeled TxB<31:0> and RXB<31:0> where TxB<0> and RXB<0> represent the first transmitted bit." To "The bits of a transmitted or received block are labeled tx_coded<64:0> and rx_coded<64:0> respectively where tx_coded<0> and rx_coded<0> represent the first transmitted bit."

**Response**
ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make the requested change so the text matches the Figure.
There's no signals defined as TXD<32> to TXD<63>. Only the XGMII TXD<0> to TXD<31>.

Suggested Remedy:
delete TXD<0>, TXD<31>, TXD<32>, and TXD<63> and move the XGMII line with signal labels down to align with the arrows.

Response

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make change as requested as the current implementation could cause additional comments in the future.

There's no signals defined as RXD<32> to RXD<63>. Only the XGMII RXD<0> to RXD<31>.

Suggested Remedy:
delete RXD<0>, RXD<31>, RXD<32>, and RXD<63> and move the XGMII line with signal labels down to align with the arrows.

Response

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make change as requested as the current implementation could cause additional comments in the future.

In Figure 149.7 the eight arrows from the "Input to decoder function 65B block" to the XGMII at the top of the drawing should be pointing up towards the XGMII.

Suggested Remedy:
Reverse the arrows

Response

ACCEPT.
2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Autom P802.3ch D2.1

149.3.2.2.3 uses the term ‘descrambler’ for the receiver. Should probably match it in this figure.

Suggested Remedy
change ‘scrambler’ to ‘descrambler’

Response
ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make the requested change so the Figure matches the text.

149.3.2.2.14 uses the term ‘tx_group50x65B’ and the 10-bit OAM_field.

Suggested Remedy
Change line 31 from: "... takes the 3260-bit vector tx_group50x65B, and ...

To: "... takes the 3260-bit vector tx_group50x65B and the 10-bit OAM_field, and ...

Response
ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make the following change to fix an error in the draft.
Change line 31 from: "... takes the 3260-bit vector tx_group50x65B, and ...

To: "... takes the 3260-bit vector, consisting of tx_group50x65B and the 10-bit OAM_field, and ...

Response
ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot. Make the requested change to fix an error in the draft.
The mapping on line 12 and line 14 is inconsistent with Figure 149-6. The OAM symbol is appended after the fifty 65B blocks, and should be the last symbol entering into each RS FEC encoder. But the mapping on line 12 and line 14 will make the OAM symbol the first one to enter the RS FEC encoder.

**SuggestedRemedy**
- Change line 12 from: "tx_RSmessage<3259:10> = tx_group50x65B<3249:0>.*
  To: "tx_RSmessage<3249:0> = tx_group50x65B<3249:0>.*
- Change line 14 from: "tx_RSmessage<9:0> = OAM_field<9:0>.*
  To: "tx_RS_message<3259:3250> = OAM_field<9:0>.*

**Response**
- **Response Status**: C
- ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make the requested change to fix an error in the draft.

**Comment Status**: A

---

**Comment Type**: E

**Comment Status**: A

**Comment**
- typo

**SuggestedRemedy**
- change 'an' to 'a'

**Response**
- **Response Status**: C
- ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make the requested change to improve readability.

**Comment Status**: A

---

**Comment Type**: E

**Comment Status**: A

**Comment**
- Missing comma on parenthetical phrase: "Each pair of bits, {A, B}, where A is the bit arriving first is converted to".

**SuggestedRemedy**
- change "Each pair of bits, {A, B}, where A is the bit arriving first is converted to" to "Each pair of bits, {A, B}, where A is the bit arriving first, is converted to"

**Response**
- **Response Status**: C
- ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make the requested change to improve readability.

**Comment Status**: A
The precoder_type is suppose to be assigned to two bits from the InfoFields, which contains 96 bits of information. So which 2 bits should be used?

**Suggested Remedy**

Change "two bits in the InfoField messages" to "the PrecodeSel field from the InfoField messages (see 149.4.2.4.5)"

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

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make the requested change to increase reader understanding.

---

"and subject to the timing requirements of 46.1.7" - there are no timing requirements in 46.1.7. 46.1.7 is the mapping of primitives. Do you mean 46.3.1.5 Transmit direction LPI transition?

**Suggested Remedy**

Change 46.1.7 to 46.3.1.5

**Response**

**Response Status C**

ACCEPT.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

---

"The transmit function of the PHY initiates a transition to the LPI transmit mode when it generates 8 RS-FEC frames composed entirely of LPI control characters, as described in 149.3.2.2.22. The transmit function of the link partner signals the transition using the sleep signal" awkward language and why reference the link partner? This text is about the local device and LPI signaling.

**Suggested Remedy**

Change to  
"The transmit function of the PHY initiates a transition to the LPI transmit mode by generating the sleep signal comprised of 8 RS-FEC frames composed entirely of LPI control characters, as described in 149.3.2.2.22."

**Response**

**Response Status C**

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make the requested change to increase reader understanding.
P802.3ch D2.1

2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Autom

McClellan, Brett  
Marvell

Comment Type: E  Comment Status: A  EZ

"offset by the link partner's."
awkward language

Suggested Remedy
change to "offset between the link partners."

Response  
Response Status: C

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make requested change to improve clarity.

---

Comment Type: T  Comment Status: A  EZ

The prior paragraphs talk about the transmitter and signaling, suddenly this paragraph changed topic to receiver behavior.

Suggested Remedy

Change text to
"The end of LPI mode occurs at the transmission of the alert signal indicating the end of quiet-refresh cycle."
also move this orphaned text prior to figure 149-14

Response  
Response Status: C

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make the requested change to increase reader understanding.
The editor will try to move the text.
The wording of this sentence is confusing and redundant. A better specification regarding PFC counter alignment can be found in 149.4.2.4.10, page 147 line 26:

"During startup, prior to entering the COUNTDOWN state, the SLAVE shall align its transmit 65B RS-FEC frame to within +0/–4 × S (See Table 149–1 for definition of S.) partial PHY frames of the MASTER as seen at the SLAVE MDI. The SLAVE InfoField partial PHY frame Count shall match the MASTER InfoField partial PHY frame Count for the aligned frame."

**Suggested Remedy**

Replace the last two sentences: "For 10GBASE-T1, 5GBASE-T1, and 2.5GBASE-T1 the SLAVE's PFC24 are +0/–4, +0/–2, and +0/–1 partial frames respectively with respect to the MASTER's PFC24."

To: "For the requirements on the SLAVE and the MASTER frame alignment, see 149.4.2.4.10."

**Response**

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make the suggested change to eliminate redundant specifications in the draft.

---

"65B-RS_FEC" should be "65B RS-FEC".

**Suggested Remedy**

Change "65B-RS_FEC" to "65B RS-FEC."

**Response**

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make requested change to fix typo.

---

In Figure 149-18, there are no states named "RECEIVE_LPI" or "RECEIVE_WAKE".

**Suggested Remedy**

1. Change "RECEIVE_LPI" to "RX_L".
2. Change "RECEIVE_WAKE" to "RX_W".
3. Change "Figure 149-18" to "Figure 145-19."

**Response**

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make suggested changes to fix errors in the draft.
In Figure 149-16, there are no states named "SEND_LPI" or "SEND_WAKE". In Figure 149-20, there is SEND_WAKE, but no SEND_LPI. The text should refer to the correct states in Figure 149-17.

SuggestedRemedy
1. Change "SEND_LPI" to "TX_L".
2. Change "SEND_WAKE" to "TX_WN".
3. Change "Figure 149-16" to "Figure 149-17".

Response Response Status C
ACCEPt IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make suggested changes to fix errors in the draft.

In Figure 149-16, there are no states named "SEND_LPI" or "SEND_WAKE". In Figure 149-20, there is SEND_WAKE, but no SEND_LPI. The text should refer to the correct states in Figure 149-17.

SuggestedRemedy
1. Change "SEND_LPI" to "TX_L".
2. Change "SEND_WAKE" to "TX_WN".
3. Change "Figure 149-16" to "Figure 149-17".

Response Response Status C
ACCEPt IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make suggested changes to fix errors in the draft.

Although both 3.0.14 and 3.2322.14 are copies of each other, I think it is better to refer to 3.2322.14 here.

SuggestedRemedy
Change "3.0.14" to "3.2322.14".

Response Response Status C
ACCEPt IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make suggested changes to fix errors in the draft.

The OAM field: The OAM10-bit field - there is no such phrase as OAM10-bit field... And defining the OAM field as the OAM field isn't useful.

SuggestedRemedy
Change "The OAM10-bit field in each PHY frame" to "A 10-bit field in each PHY frame reserved for the OAM symbol".

Response Response Status C
ACCEPt IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make suggested change to clarify draft.

In addition, on P125 L21 change "OAM 10-bit field" to "10-bit OAM field".

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Correct the link to improve readability of the draft.
2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Autom

- **Cl 149 SC 149.3.9.2.13**
  - **P 130**
  - **L 6**
  - **# 14**
  - Anslow, Pete
  - Ciena

  **Comment Type**: E
  **Comment Status**: A
  **EZ**

  Figure 149-23 has been changed so that the coefficient "A2 = 1" is adjacent to an arrow that just points to another line. Previously, this was an input to a multiply function. In this version of the figure it is unclear what function is performed with "A2 = 1".

  **SuggestedRemedy**
  - If the intent is to simply multiply by 1, then reinstate the multiply symbol.
  - If the intent is different from this then clarify what it is.

  **Response**
  **Response Status**: C
  **ACCEPT IN PRINCIPLE**.

  Remove arrows from all "A_x" and just put the name by the symbol/line as is done in Figure 149-10.

- **Cl 149 SC 149.4.2.2**
  - **P 142**
  - **L 29**
  - **# 92**
  - Souvignier, Tom
  - Broadcom

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

  The PMA Transmit electrical specifications are given in 149.5.2.

  **SuggestedRemedy**
  - Change "149.1.3" to "149.5.2".

  **Response**
  **Response Status**: C
  **ACCEPT IN PRINCIPLE**.

  This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

  Correct the link to improve readability of the draft.

- **Cl 149 SC 149.4.2.4**
  - **P 143**
  - **L 31**
  - **# 53**
  - Souvignier, Tom
  - Broadcom

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

  It is not clear what is meant by "each InfoField" since the PFC 24 and CRC16 values will be changing after each PAM2 PHY training frame.

  **SuggestedRemedy**
  - Change this sentence from: "Each InfoField shall be transmitted at least 256 times ..." to: "InfoField shall be transmitted at least 256 times with each change to octets 7-10 to ensure detection at link partner."

  **Response**
  **Response Status**: C
  **ACCEPT IN PRINCIPLE**.

  This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

  Make the suggested change to improve clarity.

- **Cl 149 SC 149.4.2.4**
  - **P 143**
  - **L 37**
  - **# 56**
  - Souvignier, Tom
  - Broadcom

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

  Field "MSG24" in Figure 149-27 not defined. Figure 149-27 not needed since it is shown in figures 149-28 and Figure 149-29 for both PMA states.

  **SuggestedRemedy**
  - Remove Figure 149-27 and change first sentence of paragraph on page 143 line 30 to "The 12-octet InfoField shall include the fields in 149.4.2.4.2 through 149.4.2.4.8, also shown in Figure 149-28 and Figure 149-29."

  **Response**
  **Response Status**: C
  **ACCEPT IN PRINCIPLE**.

  This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

  Make suggested change to remove issue which could lead to comments during SA ballot.
2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Autom

Cl  SC  P  L  #
---  ---  --  --  --

D 2.1 149 149.4.2.4 143 46 95

Souvignier, Tom  Broadcom

Comment Type  Comment Status  EZ
T  A

Figure 149–28—InfoField TRAINING format octets 8/9/10 should be labeled "PHY Capability Bits" as indicated in subclause 149.4.2.4 and Table 149-12

SuggestedRemedy
Change "UsrCfgCap" to "PHY Capability Bits" in Figure 149–28

Response  Response Status  C
ACCEPT IN PRINCIPLE.
This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make suggested change to remove issue which could lead to comments during SA ballot.

Cl  SC  P  L  #
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95 149 149.4.2.4.5 145 45 73

Tu, Mike  Broadcom

Comment Type  Comment Status  EZ
T  A

Need to define the bit mapping of InterleaverDepth and PrecodeSel.

SuggestedRemedy
Change line 45 from: "… PHY capability bits is Oct10<2:1> = InterleaverDepth, Oct10<4:3> = PrecodeSel. …"
To: "… PHY capability bits is Oct10<2:1> = InterleaverDepth[1:0], Oct10<4:3> = PrecodeSel[1:0]. …"

Response  Response Status  C
ACCEPT.

Cl  SC  P  L  #
---  ---  --  --  --

135 149 149.4.2.6.4 151 25 15

Edem, Brian  Aquantia

Comment Type  Comment Status  EZ
E  A

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make suggested change to fix typo.

Cl  SC  P  L  #
---  ---  --  --  --

135 149 149.4.2.6.4 151 25 15

Zimmerman, George  CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisco

Comment Type  Comment Status  EZ
E  A

typo: send_s_sidget = true

SuggestedRemedy
change send_s_sidget to send_s_sigdet

Response  Response Status  C
ACCEPT IN PRINCIPLE.
This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make suggested change to fix typo.
In state diagrams, the transitions shouldn't include "=true" or "=false", instead you should have the variable_name for true and !variable_name for false.

**Suggested Remedy**

In Figure 149-32, change the following:
- L25 & L31: "send_s_sigeq = false" to "!send_s_sigeq"
- L39: "power_on = true" to "power_on"
- L40: "mr_main_reset = true" to "mr_main_reset"
- L49: "mr_autoneg_enable = false" to "!mr_autoneg_enable"

**Response**

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make the suggested change to match the IEEE802 style. In addition, correct the spelling of send_s_sigeq.

In state diagrams, the transitions shouldn't include "=true" or "=false", instead you should have the variable_name for true and !variable_name for false.

**Suggested Remedy**

In Figure 149-33, change the following:
- L4 & L12: "auto_neg_imp = true" to "auto_neg_imp"
- L6 & L14: "auto_neg_imp = false" to "!auto_neg_imp"
- L45: "hi_rfer = false" to "!hi_rfer"
- L46: "hi_rfer = true" to "hi_rfer"
- L47: "block_lock = true" to "block_lock"
- L47: "block_lock = false" to "!block_lock"

**Response**

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make the suggested change to match the IEEE802 style.
In state diagrams, the transitions shouldn't include "=true" or "=false", instead you should have the variable_name for true and !variable_name for false.

SuggestedRemedy
In Figure 149-34, change the following:
L2: "auto_neg_imp = true" to "auto_neg_imp"
L2: "mr_autoneg_enable = true" to "mr_autoneg_enable"
L4: "auto_neg_imp = false" to "auto_neg_imp"
L4: "mr_autoneg_enable = false" to "mr_autoneg_enable"
L12: "pcs_data_mode = true" to "pcs_data_mode"

Response
ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make the suggested change to match the IEEE802 style.

While Fmax is used for several link segment parameters, it only gets defined for insertion loss. This definition (Equation 149-18) needs to be moved up to 149.7

SuggestedRemedy
Insert new second paragraph in 149.7: "For the three different PHY types, link segment parameters are specified to different upper frequencies, given by the parameter Fmax shown in Equation 149-17."

Insert (new) Equation 149-17, which is the current Equation 149-18: Fmax = 4000 X S Followed by "See Table 149-1 for definition of S."
Delete lines 30 through 33, so that 149.7.1.1 after the equation (currently 149-17, now 149-18) reads:
f is the frequency in MHz; 1 <= f <= Fmax.
The insertion loss is illustrated in Figure 149-42.

Response
ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make suggested change to help the reader.

The Return loss section actually is 3 subclauses, one for each PHY type.

SuggestedRemedy
Divide 149.7.1.3 into 149.7.1.3.1 2.5GBASE-T1 link segment return loss, 149.7.1.3.2 5GBASE-T1 link segment return loss, and 149.7.1.3.3 10GBASE-T1 link segment return loss.

Response
ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make suggested change to help the reader.
P802.3ch D2.1  
32.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Autom

Cl 149  SC 149.7.1.3  P166  L24  # 62
Ohni, Josef  MD Elektronik

Comment Type E  Comment Status A  EZ

In the equation defined by parts (149–22). The frequency point 480/2N belongs only to the first part. The frequency point 3000 belongs to the second and third part. This is not consistent.

SuggestedRemedy
Change the second part "480/2N ≤ f ≤ 3000 MHz" to "480/2N ≤ f < 3000"

Response  Response Status C
ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make change to fix typo.

Cl 149  SC 149.10  P173  L23  # 49
Zimmerman, George  CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisco

Comment Type T  Comment Status A  EZ

While the title for Figure 149-43 says there are 5 curves, the figure only shows 2 curves (this is due to frequency overlaps), but is confusing. Also, 2.5G no longer has the "N" factor, which makes the figure even more confusing.

SuggestedRemedy
Divide Figure 149-43 into 3 figures, one for 2.5G, one for 5G and one for 10G. Alternately, delete the figure.

Response  Response Status C
ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make suggested change to help the reader.
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</table>
2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Autom

**Comment**

**Comment Type**: E  **Comment Status**: A  **EZ**

**Suggested Remedy**

Make "149.5.2" in Feature column a hyperlink.

Response  **Response Status**: C  ACCEPT.

**Comment**

**Comment Type**: E  **Comment Status**: A  **EZ**

Suggested Remedy

Make "149.5.3" in Feature column a hyperlink.

Response  **Response Status**: C  ACCEPT.

**Comment**

**Comment Type**: E  **Comment Status**: A  **EZ**

Suggested Remedy

Make "Figure 149A–3" in Feature column a hyperlink.

Response  **Response Status**: C  ACCEPT.

**Comment**

**Comment Type**: E  **Comment Status**: A  **EZ**

Suggested Remedy

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make all text size 8 to be consistent.

**Comment**

**Comment Type**: E  **Comment Status**: A  **EZ**

Suggested Remedy

Different font sizes in Figure 149B-2

Change all text in figure to be 8.0 pt

Response  **Response Status**: C  ACCEPT.

**Comment**

**Comment Type**: E  **Comment Status**: A  **EZ**

In state diagrams, the transitions shouldn't include "=true" or "=false", instead you should have the variable_name for true and !variable_name for false.

Suggested Remedy

In Figure 149B-2, change the following:

L15 & L28: "mr_rx_clear_rec=true" to "mr_rx_clear_rec"

L28: "mr_rx_clear_rec=false" to "!mr_rx_clear_rec"

Response  **Response Status**: C  ACCEPT.

**Comment**

**Comment Type**: E  **Comment Status**: A  **EZ**

Suggested Remedy

In state diagrams, the transitions shouldn't include "=true" or "=false", instead you should have the variable_name for true and !variable_name for false.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Correct the link to improve readability of the draft.
2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Autom

Comment Type E  Comment Status A  EZ
Different font sizes in Figure 149B-3

SuggestedRemedy
Change all text in figure to be 8.0 pt

Response  Response Status C  ACCEPT.

Comment Type T  Comment Status A  EZ
The variable "mr_tx_request_rec_clear" is not defined.

SuggestedRemedy
In Figure 149B-3, the transition condition should be changed to: "mr_tx_clear_rec = true".

Response  Response Status C  ACCEPT IN PRINCIPLE.
Change "mr_tx_request_rec_clear = true" to "mr_tx_clear_rec"

Comment Type E  Comment Status A  EZ
In state diagrams, the transitions shouldn't include "=true" or "=false", instead you should have the variable_name for true and !variable_name for false.

SuggestedRemedy
In Figure 149B-3, change the following:
L44: "mr_tx_request_rec_clear = true" to "mr_tx_request_rec_clear"
L50: "mr_rx_rec_cleared = true" to "mr_rx_rec_cleared"

Response  Response Status C  ACCEPT IN PRINCIPLE.

In Figure 149B-3, change the following:
L44: "mr_tx_request_rec_clear = true" to "mr_tx_clear_rec"
L50: "mr_rx_rec_cleared = true" to "mr_rx_rec_cleared"

Comment Type E  Comment Status A  EZ
This comment is "OOS"; however, the change should be made to make the draft consistent. InfoField is the name for the set of bytes used to indicate the PHY capability; however, the capitalization is not consistent in the draft.

SuggestedRemedy
Make the following changes:
P38 L42, P39 L50, and P147 L31 - Change: Infofields
To: the InfoField
P78 L29, P91 L31, and P144 L11 - Change: Infofield
To: InfoField
P177 L16 - Change: infofield
To: InfoField

Response  Response Status C  ACCEPT IN PRINCIPLE.
Make the following changes:
In 1.4.289 add statement to the effect that Clause 149 uses a 12 octet Infofield
Change all instances of "infofield" with any capitalization to be "Infofield" throughout the P802.3ch draft.
D2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Autom P802.3ch D2.1

Table 45-241 bit 3.2308.15 description and 45.2.3.71.1 contain a triplicate shalls to the one in the OAM state diagram (45.2.3.72.1 and the shall on the OAM state diagram, and reads odd, referring to 'state machine' inappropriately. The 'shall' on this bit clearing is actually the state diagram. This is similar to the changes in the receive register 45-243, subject of maintenance request 1327 and I plan to submit it as a maintenance request.

Another comment fixes the defect that the OAM state diagrams don't have shall's associated with them. This defect is also in clause 97 and makes the maintenance request complicated, because there are NO PICS in clause 97 for OAM....

**Suggested Remedy**

In Table 45-241, Change the second sentence in Description of 2313.15 from: "This bit shall self clear when register 3.2317 is read." to: "This bit self clears when register 3.2317 is read."

In 45.2.3.72.1 change "shall be set to one", to "is set to one" (P44 L27), and on line 29 change "This register shall be cleared by the state machine" to: "This bit self-clears"...

**Response**

ACCEPT IN PRINCIPLE.

P46 L19 - Change: This register shall be cleared when register 3.2317 is read.
To: This bit shall self-clear when register 3.2317 is read.

P46 L34 - Delete: Register 3.2313.15 shall be cleared when register 3.2317 is read.

Bring in PICS RM134 and change "Feature": Register 3.2313 is cleared when register 3.2317 is read.
To: Bit 3.2313.15 self clears when register 3.2317 is read.

Bring in PICS RM135 and RM136 and "delete" them.

P43 L42 - Change: This bit shall self-clear when registers are loaded by the state machine.
To: This bit self clears when registers are loaded by the OAM transmit state diagram.

P44 L29 - Change: This register shall be cleared by the state machine to indicate ...
To: This bit self-clears to indicate ...

Bring in PICS RM125, RM126, and RM129 and "delete" them.

---

Comment Type TR Comment Status A OAM

Table 45-241 bit 3.2308.15 description and 45.2.3.71.1 contain a triplicate shalls to the one in the OAM state diagram (45.2.3.72.1 and the shall on the OAM state diagram, and reads odd, referring to 'state machine' inappropriately. The 'shall' on this bit clearing is actually the state diagram. This is similar to the changes in the receive register 45-243, subject of maintenance request 1327 and I plan to submit it as a maintenance request.

Another comment fixes the defect that the OAM state diagrams don't have shall's associated with them. This defect is also in clause 97 and makes the maintenance request complicated, because there are NO PICS in clause 97 for OAM....

**Suggested Remedy**

Insert new second sentence in first paragraph of 149.3.9 "When OAM is implemented, behavior shall conform to the state diagrams in Figure 149-24 and Figure 149-25." Add new first PICS item to 149.11.4.2.8 OAM:

State diagram behavior | 149.3.9.4 | Conforms to Figure 149-24 and 149-25
| OAM: M | Yes

[ ] No

**Response**

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make suggested changes to clarify requirement when OAM is implemented.

**Suggested Remedy**

Delete this sentence.

**Response**

ACCEPT.
I think the last sentence is talking about superframes. So scale both number by L.

Suggested Remedy

- Change "3600 bits" to "3600xL bits", and change "1800 PAM4 symbols" to "1800xL PAM4 symbols".

Response

ACCEPT IN PRINCIPLE.

Delete this sentence per comment #156.

The paragraph mentions 2 benefits. The first one listed does not sound like a benefit. The intended benefit is that the ALERTs do not overlap, but we determined that they may overlap a little bit given the tolerance in the standard. The fact that the ALERTs mostly do not overlap is still a benefit. Rephrase as shown below.

Suggested Remedy

- Change "may overlap" to "mostly will not overlap"

Response

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Change: This offsets the MASTER and SLAVE ALERT start times by alert_period/2 and provides the following two benefits: The MASTER and SLAVE allowable ALERT transmissions may overlap and ALERT does not overlap the device’s own refresh.

To: This offsets the MASTER and SLAVE ALERT start times by alert_period/2 and provides two benefits. The first benefit is that ALERT transmissions do not overlap with the device’s own refresh. The second benefit is that the MASTER and SLAVE ALERT transmissions generally do not overlap, and only overlap at the limits of tolerances.

Suggested Remedy

- Change: "During startup, prior to entering the COUNTDOWN state, the SLAVE shall align …"

Response

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make requested change to fix deficiency in current draft.
2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Autom

P802.3ch D2.1

32.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Autom

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 U/unsatisfied Z/withdrawn

SORT ORDER: Topic

Page 33 of 46

2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Autom

When bit 1.2313.11 is set to one, the value in bits 1.2313.10:9 control the local transmitter's precoder [45.2.1.196.2] | M | Yes | No

When bit 1.2313.11 is set to one, the value in bits 1.2313.10:9 are ignored and the link partner's request controls the local transmitter's precoder [45.2.1.196.2] | M | Yes | No

When bit 1.2313.11 is set to zero, the value in bits 1.2313.10:9 are ignored and the link partner's request controls the local transmitter's precoder [45.2.1.196.2] | M | Yes | No

Add PICS items MM232 and MM233 (editorial license to number and position appropriately):
2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Autom

The link partner, and bits 1.2313.10:9 are ignored.

Add PICS items MM232 and MM233 (editorial license to number and position appropriately):

(Feature | Subclause | Value/comment | Status | Support)

When bit 1.2313.11 is set to one, the value in bits 1.2313.10:9 control the local transmitter's precoder | 45.2.1.196.2 | | M | Yes [ ] No [ ]

When bit 1.2313.11 is set to zero, the value in bits 1.2313.10:9 are ignored and the link partner's request controls the local transmitter's precoder | 45.2.1.196.2 | | M | Yes [ ] No [ ]

On page 102 line 27 (149.3.2.2.20), change "The precoder type is determined by the PCS decoding two bits in InfoField messages received from the remote PHY during training as:" to: "In normal operation (see 45.2.1.196.3) the value of precoder_type shall be set to the value of PrecodeSel received from the link partner in the InfoField messages (see 149.4.2.4.5);"

(Start of PIC S already covered by PCT21)

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Comment Type: TR  Comment Status: A  Precoder

There are several problems subclause.

First - "Setting these bits forces the precoder to the mode set. " this sentence makes it appear that simply writing to these bits will cause precoder to use the written setting without other action required when in fact this setting is used only for test mode 3.

Second - "During normal operation, these bits are set according to the precoder requested by the link partner in the Infofield, and reading bits 1.2309.10:9 will represent the value of the request, which has been received and set into the transmitter. "

It is very poor practice to use configuration bits (R/W) also as status bits (usually RO). It causes issues when read-modify-write operations are performed. It is also not clear whether these bits are supposed to act as RO in normal mode but R/W during test mode.

Further, during normal operation the setting of the precoder can already be inferred from 1.2312.3:2 status bits (Link partner precoder requested)

SuggestedRemedy

change the text as follows:

Bits 1.2309.10:9 determine the precoder setting of the transmitter, as defined in 149.3.2.2.20 in the variable precoder_type while in test mode 3.

Response: Response Status: C

ACCEPT IN PRINCIPLE.

These lines are removed by comment #124.

---

Comment #123.

Make the following changes:

Page 37 line 21 (Table 45-155b) change "Actual precoder requested" to "PrecodeSel" Page 38 line 8 (45.2.1.193.5 header) change "Actual precoder selected" to "PrecodeSel", and replace text of 45.2.1.193.5 (P38 lines 10-12) to read as follows:

"Bits 1.2310.4:3 contain the requested precoder setting communicated by the PHY to the link partner via the PrecodeSel bits in the Infofield (see 149.4.2.4.4)."

Page 39 line 15 (Table 45-155c) and Page 38 line 45 (45.2.1.194.2 header) change "Precoder request override" to "Precoder Selection", and replace text (P38 lines 47-48) to read as follows:

"When 1.2311.5 is set to a one, the PHY shall use 1.2311.3:2 for the value of PrecodeSel, and when set to a zero the PHY controls the value of PrecodeSel. PrecodeSel is the desired precoder setting communicated to the link partner via the Infofield specified in 149.4.2.4.4."

Page 39 line 23 (Table 45-155c) and Page 39 line 37 (45.2.1.194.4 header) change "Precoder requested" to "User precoder selection", and replace text (P39 lines 38-39) to read as follows:

"When 1.2311.5 is a one, bits 1.2311.3:2 are the requested precoder setting communicated by the PHY to the link partner via the PrecodeSel bits in the Infofield (see 149.4.2.4.4)."
Actual precoder requested doesn't really make any sense to me based upon description. I believe this field should be indicating the actual state/control of the receive precoder.

Suggested Remedy
See Presentation tu_3ch_01_0919.pdf

Response
ACCEPT IN PRINCIPLE.

This comment has the same response as #123.

Make the following changes:
Page 37 line 21 (Table 45-155b) change "Actual precoder requested" to "PrecodeSel"
Page 38 line 8 (45.2.1.193.5 header) change "Actual precoder selected" to "PrecodeSel",
and replace text of 45.2.1.193.5 (P38 lines 10-12) to read as follows:
"Bits 1.2310.4:3 contain the requested precoder setting communicated by the PHY to the link partner via the PrecodeSel bits in the Infofield (see 149.4.2.4.4)."

Page 39 line 15 (Table 45-155c) and Page 38 line 45 (45.2.1.194.2 header) change "Precoder request override" to "Precoder Selection", and replace text (P38 lines 47-48) to read as follows:
"When 1.2311.5 is set to a one, the PHY shall use 1.2311.3:2 for the value of PrecodeSel, and when set to a zero the PHY controls the value of PrecodeSel. PrecodeSel is the desired precoder setting communicated to the link partner via the PrecodeSel bits in the Infofield specified in 149.4.2.4.4."

Page 39 line 23 (Table 45-155c) and Page 39 line 37 (45.2.1.194.4 header) change "Precoder requested" to "User precoder selection", and replace text (P39 lines 38-39) to read as follows:
"When 1.2311.5 is a one, bits 1.2311.3:2 are the requested precoder setting communicated by the PHY to the link partner via the PrecodeSel bits in the Infofield (see 149.4.2.4.4)."
(Comment PRECD1) The language of "Actual precoder requested" or "selected" is all messed up and confusing. Which precoder parameters relate to the local transmitter and which to the request of the link partner's transmitter is not consistent. The "Link partner" ones are all clear, leaving me to think that it is just the local PHY's REQUEST, which is meant here.

SuggestedRemedy

Make the following changes:

Page 37 line 21 (Table 45-155b) change "Actual precoder requested" to "PrecoderSel".

Page 38 line 8 (45.2.1.193.5 header) change "Actual precoder selected" to "PrecoderSel", and replace text of 45.2.1.193.5 (P38 lines 10-12) to read as follows:

"Bits 1.2310.4:3 contain the requested precoder setting communicated by the PHY to the link partner via Infofields in the PrecodeSel field (see 149.4.2.4.4)."

Page 39 line 15 (Table 45-155c) and Page 38 line 45 (45.2.1.194.2 header) change "Precoder request override" to "Precoder Selection", and replace text (P38 lines 47-48) to read as follows:

"When 1.2311.5 is set as a one, the PHY shall use 1.2311.3:2 for the value of PrecoderSel, and when set to a zero the PHY controls the value of PrecoderSel. PrecoderSel is the desired precoder setting communicated to the link partner via Infofields in the PrecodeSel field (see 149.4.2.4.4)."

Page 39 line 23 (Table 45-155c) and Page 39 line 37 (45.2.1.194.4 header) change "Precoder requested" to "User precoder selection", and replace text (P39 lines 38-39) to read as follows:

"When bit 1.2311.5 is a one, bits 1.2311.3:2 are the requested precoder setting communicated by the PHY to the link partner via Infofields in the PrecodeSel field (see 149.4.2.4.4)."

Response

ACCEPT IN PRINCIPLE.

Type: TR/technical requested ER/editorial requested GR/general requested T/technical E/editorial G/general

Comment Type: TR

Comment Status: A

Response Status: C

Accept in principle.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make the following change to increase reader understanding.

Type: E

SuggestedRemedy

Change: when entering PAM4 mode

To: when transitioning to PAM4 encoding

Response

ACCEPT IN PRINCIPLE.

Type: E

SuggestedRemedy

Change: What is "PAM4 mode"?

To: PAM4 mode

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make the following change to increase reader understanding.

Change: when transitioning to PAM4 encoding

To: when entering PAM4 mode
### P802.3ch D2.1

#### 32.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Autom

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<td>149</td>
<td>TR</td>
<td>A</td>
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</table>

Comment

"This bit shall be set" puts a requirement on the user and is inappropriate for a read/write bit. Reverse the changes from d2.0 in 45.2.1.194.5, 45.2.1.194.6 (note that this language is appropriate for RO registers but not for situations where the MDIO is supposed to write the value into the register, like the ones cited).

**Suggested Remedy**

Change "shall be set" to "should be set" on page 39 line 45 and on page 39 line 52.

**Response**

**Response Status** C

ACCEPT IN PRINCIPLE.

P39 L43 Replace the existing paragraph with:

Support for MultiGBASE-T1 OAM capability shall be advertised if this bit is set to one. Support for MultiGBASE-T1 OAM capability shall not be advertised if this bit is set to zero. Support for MultiGBASE-T1 OAM capability should only be advertised if it is supported by the PHY.

And P39 L50 Replace the existing paragraph with:

Support for EEE capability shall be advertised if this bit is set to one. Support for EEE capability shall not be advertised if this bit is set to zero. Support for EEE operation should only be advertised if it is supported by the PHY.

And MM227 Replace the text in the "Feature" column with: Advertisement of support for MultiGBASE-T1 OAM; and in the "Value/Comment" column put: Support is advertised if bit 1.2311.1 is set to one, and not advertised if bit 1.2311.1 is set to zero.

And MM228 Replace the text in the "Feature" column with: Advertisement of support for MultiGBASE-T1 EEE; and in the "Value/Comment" column put: Support is advertised if bit 1.2311.0 is set to one, and not advertised if bit 1.2311.0 is set to zero.

---

<table>
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<tr>
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<th>Comment Status</th>
<th>Registers</th>
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<tr>
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<td>149</td>
<td>TR</td>
<td>A</td>
<td></td>
</tr>
</tbody>
</table>

Comment

GRaba, Jim

**Comment Type** T

**Comment Status** R

Reject OOS

PHY Health status is only available when the optional OAM is enabled.

**Suggested Remedy**

Change from: "When the PHY Health status received …"

To: "When the optional MultiGBASE-T1 OAM is enabled and the PHY Health status received …"

**Response**

**Response Status** C

REJECT.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

PHY Health status is only received when MultiGBASE-T1 OAM is enabled, so making this change would add redundancy. If the commenter still wants this change, he is encouraged to resubmit this comment at SA ballot.

---

<table>
<thead>
<tr>
<th>CI</th>
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<th>Comment Type</th>
<th>Comment Status</th>
<th>Registers</th>
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<td>D</td>
<td></td>
</tr>
</tbody>
</table>

Comment

Tu, Mike

**Comment Type** E

**Comment Status** D

Reject OOS

Should we use "MultiGBASE-T1" instead of "2.5G/5G/10GBASE-T1"?

**Suggested Remedy**

Change "2.5G/5G/10GBASE-T1 PCS" to "MultiGBASE-T1 PCS", and change "2.5G/5G/10GBASE-T1 control codes" to "MultiGBASE-T1 control code".

**Proposed Response**

**Response Status** Z

REJECT.

This comment was WITHDRAWN by the commenter.

---

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

This needs to be carefully reviewed to see if this has any other impacts. 2.5G/5G/10GBASE-T1 was intentionally left in the draft in some places.

Commenter is encouraged to resubmit this comment at SA ballot if it is deemed not to impact the draft.
2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Autom

Tu, Mike Broadcom

Comment Type T Comment Status D
The description should consider the interleaved cases.

Suggested Remedy
Change from: "... from rx_PAM4_0 to rx_PAM4_1799 (see Figure 149–7)."
To: "... from rx_PAM4_0 to rx_PAM4_1800xL-1, where L is the interleaving depth (see Figure 149–7 for the L=1 case)."

Proposed Response Response Status Z
This comment was WITHDRAWN by the commenter.

Tu, Mike Broadcom

Comment Type TR Comment Status A
It is important to limit the noise ingress even outside the bandwidth of the PHY, especially if multiple rates of PHYs are to be used together in the same system. As such, the PSANEXT and PSAFEXT characteristic needs to be specified to the same frequency for all PHY types.

Suggested Remedy
Replace Fmax on Page 169 line 9 and Page 170 line 6 with 4000 MHz.

Response Response Status C
ACCEPT IN PRINCIPLE.

Zimmerman, George CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisco

Comment Type TR Comment Status A
It is important to limit the noise ingress even outside the bandwidth of the PHY, especially if multiple rates of PHYs are to be used together in the same system. As such, the PSANEXT and PSAFEXT characteristic needs to be specified to the same frequency for all PHY types.

Suggested Remedy
Replace Fmax on Page 169 line 9 and Page 170 line 6 with 4000 MHz.

Response Response Status C
ACCEPT IN PRINCIPLE.

Make the change in the Suggested Remedy.

Straw poll #1
I believe we need to do something for the higher frequency PSANEXT and PSAFEXT for 2.5GBASE-T1 and 5GBASE-T1.

Y: 22
N: 2

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.
The example values do not match the register definitions for 1.2314 and 1.2315. The examples use a resolution of 1/2560 instead of 0.1dB.

Suggested Remedy
lines 5 and 13, delete the example text ", 12.7 dB represented by 0xFF00, and –12.7 dB represented by 0x0100"

Response
ACCEPT IN PRINCIPLE.

P42, L7 Insert the following text: The assignment of bits in the MultiGBASE-T1 SNR operating margin register is shown in Table 45–155x.

Add a register bit definition table (45-155x) with the following 2 content rows:
1.2314.15:8 | MultiGBASE-T1 SNR operating margin | value of current SNR operating margin in dB | RO
1.2314.7:0 | Reserved | Value always 0 | RO

With the following note on the table: *aRO = Read only

P42, L13 Change "0x8000" to "0x80"
P42, L13 Change "0xFF00" to "0xFF"
P42, L13 Change "0x0100" to "0x01"

P42 L15 Insert the following text: The assignment of bits in the MultiGBASE-T1 Minimum SNR margin register is shown in Table 45–155y.

Add a register bit definition table (45-155y) with the following 2 content rows:
1.2315.15:8 | MultiGBASE-T1 Minimum SNR margin | value of minimum observed SNR margin in dB | RO
1.2315.7:0 | Reserved | Value always 0 | RO

With the following note on the table: *aRO = Read only

"The MultiGBASE-T1 PMA shall take no longer than 100 ms to enter the PCS_DATA state after exiting from reset or low power mode." is a non-interoperable way of stating a startup time requirement. The startup time may be allocated to one training state in one phy and another training state in another phy. To get interoperability, startup time must be allocated to phy control states.

Suggested Remedy
Task force to discuss. (this requires some consensus building - sorry!)

Response
ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Change: The MultiGBASE-T1 PMA shall take no longer than 100 ms to enter the PCS_DATA state after exiting from reset or low power mode.

To: The MultiGBASE-T1 PMA takes no longer than 100 ms to enter the PCS_DATA state after exiting from reset or low power mode (see Figure 149-33).

And: Delete PICS item PR2 (149.11.4.3.1, page 181 line 47)
To ensure interoperability during the training phase, certain timing allocations between Master, Slave and other steps of training must be observed. We propose to the text of 802.3bz for interoperability and just scale the timing of 10G mode and deduct the timing for PCS_TEST that is set by min_wait_timer.

Suggested Remedy

Modify Figure 149.33 as attached and Include the associated Table 145.15 in section 149.4.2.4.10 page 147, line 35 to read as follows

<table>
<thead>
<tr>
<th>MASTER</th>
<th>SLAVE</th>
<th>MAX REQUIRED TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td>Silent</td>
<td>40.00 msec</td>
</tr>
<tr>
<td>Training</td>
<td>Training</td>
<td>57.02 msec</td>
</tr>
<tr>
<td>PCS Test</td>
<td>0.98 msec</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>98.00 msec</td>
<td></td>
</tr>
</tbody>
</table>

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Implement the changes defined on slide 5 of zimmerman_3ch_01b_0919.pdf, with editorial license to conform to IEEE 802.3 syntax.

Editorial license to add necessary PICS.

More details are needed in the sentences between line 45 and line 47. Recommend to use Clause 97 as the baseline, and apply the scaling from 1 usec (Clause 97) to 1.25 usec (Clause 149).

Suggested Remedy

Change line 45 to line 47 from: "The MASTER PHY sends a synchronization sequence. If there is no response from the SLAVE, the MASTER repeats by sending a synchronization sequence. If the slave detects the sequence, it responds with a synchronization sequence."

To: "The MASTER PHY sends a synchronization sequence for 1.25 μs. If there is no response from the SLAVE, the MASTER repeats by sending a synchronization sequence every 6.25 μs. If the slave detects the sequence, it responds with a synchronization sequence for 1.25 μs (after the MASTER has stopped transmitting)."

ACCEPT IN PRINCIPLE.

Delete: The MASTER PHY sends a synchronization sequence. If there is no response from the SLAVE, the MASTER repeats by sending a synchronization sequence. If the slave detects the sequence, it responds with a synchronization sequence. If no other detection happens after the SLAVE response then Link Synchronization is successfully complete, link monitor timers are started, and the PHY Control state diagram starts Training.
It is sufficient to say "PHY Link Synchronization". Delete "algorithm".

Suggested Remedy

Change from: "... the PHY Link Synchronization algorithm to …"

To: "... the PHY Link Synchronization to …"

Response

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Make the following change to correct the draft.

Change page 81, line 16 and line 17 from:

“This primitive allows the Auto-Negotiation or the PHY Link Synchronization algorithm to enable and disable operation of the PMA, as specified in 98.4.2, respectively.”

To:

“This primitive allows the Auto-Negotiation to enable and disable operation of the PMA, as specified in 98.4.2.”
The most common transmitter connection to an oscilloscope utilizes two 50-ohm channels. Figure 149-36 should be updated.

**Suggested Remedy**
Recommned new figure 149-36

IEEE Std 802.3 does not specify equipment, and can't put a 'shall' on "All equipment subject to this clause...shall conform to the potential environmental stresses", or to the systems integrating the PHY (149.9.2.2). 802.3cg had similar language in ballots and the suggested language is drawn from the remedies there.

**Suggested Remedy**
Change "shall conform" to "is expected to conform" in 149.9.2.1, and "shall comply" with "is expected to comply" in 149.9.2.2.

This comment does not apply to the substantive changes between IEEE P802.3ch D2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

While automotive testing requires the use of CISPR 25, other applications may not use this. P172 L45-48 make it clear that CISPR25 is used for automotive applications.

Remove the text as suggested and remove PICS ES5 on P190 L20.

**Suggested Remedy**
Clarify that the environmental conditions in 149A are the applicable conditions for the defined test method.

**Suggested Remedy**
Change: Measurements are performed at ... To: These test methods are applicable for temperature of …

Also, delete PICS ES3 and ES4.
Comment Type E Comment Status A Vendor
"PHY Vendor specific" and "Link Partner vendor specific data" isn't a specific enough name
for these registers, in the context of clause 45. These registers are specific to MultiGBASE-
T1. As labeled, they look like general registers for ANY 802.3 PHY type. Suggest change
name to "MultiGBASE-T1 PHY vendor specific data" and "MultiGBASE-T1 link partner PHY
vendor specific data". Note also capitalization and alignment of the link partner register
name.

Suggested Remedy
Change as per comment. Also change names in 45.2.1.199 and table 45-155f

Response Response Status C
ACCEPT IN PRINCIPLE.

Resolved by the response to comment 1, copied below.

In Table 45-3:
Change the name of register 1.2316 to "MultiGBASE-T1 user defined data" in subclause
45.2.1.199
Change the name of register 1.2317 to "MultiGBASE-T1 link partner user defined data" in
subclause 45.2.1.200
In 45.2.1.199:
Change the title to "MultiGBASE-T1 user defined data register (Register 1.2316)"
Change the text to: "The assignment of bits for the MultiGBASE-T1 user defined data
register is shown in Table 45–155f. The values of the bits in this register are outside the
scope of this standard."
In Table 45-155f:
Change the title to: "MultiGBASE-T1 user defined data register bit definitions"
Change the Name to: "MultiGBASE-T1 user defined data"
Change the Description to: "16 bits of vendor specific data that the PHY sends to its link
partner"*
Delete the last row of the table.
Change footnote a to "R/W = Read/Write"
In 45.2.1.199.1:
Change the title to: "PHY vendor specific data (1.2316.15:0)"
Change text to: "Bits 1.2316.15:0 contain vendor specific data that the PHY may
communicate to its link partner during training."
Delete 45.2.1.199.2
Create a new level 4 subclause:
"45.2.1.200 MultiGBASE-T1 link partner user defined data register (Register 1.2317)" with
text:
"The assignment of bits for the MultiGBASE-T1 link partner user defined data register
is shown in Table 45–155g. The values of the bits in this register are outside the scope of this
standard."
Create Table 45-155g with title "MultiGBASE-T1 link partner user defined data register bit
definitions" and a row with Name entry for 1.2317.15:0 is "Link partner PHY vendor specific
data", Description is "16 bits of vendor specific data that the PHY may receive from its link
partner". R/W is "RO", and footnote a is "RO = Read only"
Create a new level 5 subclause:
"45.2.1.200.1 Link partner PHY vendor specific data (1.2317.15:0)" with text "Bits
1.2317.15:0 contain vendor specific data that the PHY may receive from its link partner
during training."
Comment Type T  Comment Status A  Vendor

The definition of registers 1.2316 and 1.2317 is not being done in accordance with Clause 45 conventions or in keeping with "user defined data" as used in prior BASE-T PHYs. The names of the registers are such that when this amendment has been applied to the base standard it will not be clear what they are for.

Suggested Remedy

In Table 45-3:
Change the name of register 1.2316 to "MultiGBASE-T1 user defined data" in subclause 45.2.1.199
Change the name of register 1.2317 to "MultiGBASE-T1 link partner user defined data" in subclause 45.2.1.200

In 45.2.1.199:
Change the title to "MultiGBASE-T1 user defined data register (Register 1.2316)"
Change the text to: "The assignment of bits for the MultiGBASE-T1 user defined data register is shown in Table 45–155f. The values of the bits in this register are all zeros unless the PHY identifies the link partner during Auto-Negotiation through communicating OUIs using the NEXT pages."

In Table 45-155f:
Change the title to: "MultiGBASE-T1 user defined data register bit definitions"
Change the Name to: "MultiGBASE-T1 user defined data"
Change the Description to: "16 bits of vendor specific data that the PHY sends to its link partner during Auto-Negotiation through communicating OUIs using the NEXT pages."

Delete the last row of the table.
Change footnote a to "R/W = Read/Write"

In 45.2.1.199.1:
Change the title to: "PHY vendor specific data (1.2316.15:0)"
Change the text to: "Bits 1.2316.15:0 contain vendor specific data that the PHY may communicate to its link partner during training."

Delete 45.2.1.199.2

Create a new level 4 subclause:
"45.2.1.200 MultiGBASE-T1 link partner user defined data register (Register 1.2317)" with text:
"The assignment of bits for the MultiGBASE-T1 link partner user defined data register is shown in Table 45–155g. The values of the bits in this register are all zeros unless the PHY identifies the link partner during Auto-Negotiation through communicating OUIs using the NEXT pages."

Create Table 45-155g with title "MultiGBASE-T1 link partner user defined data register bit definitions" and a row with Name entry for 1.2317.15:0 is "Link partner PHY vendor specific data", Description is "16 bits of vendor specific data that the PHY may receive from its link partner", R/W is "RO", and footnote a is "RO = Read only"

Create a new level 5 subclause:
"45.2.1.200.1 Link partner PHY vendor specific data (1.2317.15:0)" with text "Bits 1.2317.15:0 contain vendor specific data that the PHY may receive from its link partner during training."

Response C

ACCEPT IN PRINCIPLE.

In Table 45-3:
Change the name of register 1.2316 to "MultiGBASE-T1 user defined data" in subclause 45.2.1.199
Change the title to "MultiGBASE-T1 user defined data register (Register 1.2316)"
Change the text to: "The assignment of bits for the MultiGBASE-T1 user defined data register is shown in Table 45–155f. The values of the bits in this register are outside the scope of this standard."

In Table 45-155f:
Change the title to: "MultiGBASE-T1 user defined data register bit definitions"
Change the Name to: "MultiGBASE-T1 user defined data"
Change the Description to: "16 bits of vendor specific data that the PHY sends to its link partner"

Delete the last row of the table.
Change footnote a to "R/W = Read/Write"

In 45.2.1.199.1:
Change the title to: "PHY vendor specific data (1.2316.15:0)"
Change the text to: "Bits 1.2316.15:0 contain vendor specific data that the PHY may communicate to its link partner during training."

Delete 45.2.1.199.2

Create a new level 4 subclause:
"45.2.1.200 MultiGBASE-T1 link partner user defined data register (Register 1.2317)" with text:
"The assignment of bits for the MultiGBASE-T1 link partner user defined data register is shown in Table 45–155g. The values of the bits in this register are outside the scope of this standard."

Create Table 45-155g with title "MultiGBASE-T1 link partner user defined data register bit definitions" and a row with Name entry for 1.2317.15:0 is "Link partner PHY vendor specific data", Description is "16 bits of vendor specific data that the PHY may receive from its link partner", R/W is "RO", and footnote a is "RO = Read only"

Create a new level 5 subclause:
"45.2.1.200.1 Link partner PHY vendor specific data (1.2317.15:0)" with text "Bits 1.2317.15:0 contain vendor specific data that the PHY may receive from its link partner during training."
The values of the bits in these registers are all zeros unless the PHY identifies the link partner during Auto-Negotiation through communicating OUIs using the NEXT pages.

Identification of the link partner is not defined and is beyond the scope of this specification. I suggest borrowing the text from Clause 55.

Suggested Remedy
change text to "If during Auto-Negotiation both devices agree on the use of the vendor specific messages, they may be used as a communication channel; otherwise the bits are set to zero."

Response
Response Status: C
ACCEPT IN PRINCIPLE.

Resolved by the response to comment 1, copied below.

In Table 45-3:
Change the name of register 1.2316 to "MultiGBASE-T1 user defined data" in subclause 45.2.1.199
Change the name of register 1.2317 to "MultiGBASE-T1 link partner user defined data" in subclause 45.2.1.200

In 45.2.1.199:
Change the title to "MultiGBASE-T1 user defined data register (Register 1.2316)"
Change the text to: "The assignment of bits for the MultiGBASE-T1 user defined data register is shown in Table 45–155f. The values of the bits in this register are outside the scope of this standard."

In Table 45-155f:
Change the title to: "MultiGBASE-T1 user defined data register bit definitions"
Change the Name to: "MultiGBASE-T1 user defined data"
Change the Description to: "16 bits of vendor specific data that the PHY sends to its link partner"
Delete the last row of the table.
Change footnote a to "R/W = Read/Write"

In 45.2.1.199.1:
Change the title to: "PHY vendor specific data (1.2316.15:0)"
Change text to: "Bits 1.2316.15:0 contain vendor specific data that the PHY may receive from its link partner during training."

Create a new level 4 subclause:
"45.2.1.200 Link partner PHY vendor specific data (1.2317.15:0)" with text "Bits 1.2317.15:0 contain vendor specific data that the PHY may receive from its link partner during training."

Create a new level 5 subclause:
"45.2.1.200.1 Link partner PHY vendor specific data (1.2317.15:0)" with text "Bits 1.2317.15:0 contain vendor specific data that the PHY may receive from its link partner during training."

In Table 45-155g:
Change the title to: "MultiGBASE-T1 link partner user defined data register bit definitions" and a row with Name entry for 1.2317.15:0 is "Link partner PHY vendor specific data", Description is "16 bits of vendor specific data that the PHY may receive from its link partner", R/W is "RO", and footnote a is "RO = Read only"

Create a new level 5 subclause:
"45.2.1.200.2 Link partner PHY vendor specific data (1.2317.15:0)" with text "Bits 1.2317.15:0 contain vendor specific data that the PHY may receive from its link partner during training."

In Table 45-155g:
Change the title to: "MultiGBASE-T1 link partner user defined data register bit definitions"
Change the Name to: "MultiGBASE-T1 link partner user defined data"
Change the Description to: "16 bits of vendor specific data that the PHY may receive from its link partner during training."

This text is removed as rewritten by comment #1.
"Reserved" should be 'Link partner vendor specific data'

Suggested Remedy
change 'Reserved'
to 'Link partner vendor specific data'

Response
ACCEPT IN PRINCIPLE.

This is moved to a new subclause with a new name by comment #1.

Need to define the bit mapping of VendorSpecificData.

Suggested Remedy
Change line 47 from "Oct8<7:0> = VendorSpecificData, and Oct9<7:0> = VendorSpecificData."
To: "Oct8<7:0> = VendorSpecificData[7:0], and Oct9<7:0> = VendorSpecificData[15:8]."

Response
ACCEPT.