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

Razavi, Alireza
Aquantia

Comment Type: E  Comment Status: R
Suggested Remedy

Response  Response Status: C
REJECT.

empty comment

Maguire, Valerie
The Siemon Company

Comment Type: E  Comment Status: A
Suggested Remedy
Use oxford comma.

Response  Response Status: C
ACCEPT.

"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

Suggested Remedy
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
Missing 149C in the description of the amendment.
Suggested Remedy
Change: adds Clause 149 and Annex 149A and Annex 149B.
Response Response Status C
ACCEPT.

Comment Type E Comment Status A  EZ
IEEE Std 802.3cm-20xx - Amendment 7
Suggested Remedy
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.

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

Comment Type  E  Comment Status  A  
"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.

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

Response  
Response Status  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 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 during training." 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: "MultiGBASE-T1 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."

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"
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)"
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 body the same as the last row of Table 45-155f except that the Name entry for 1.2317.15:0 is "Link partner PHY vendor specific data" 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 as per the existing 45.2.1.199.2.

**Response**

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 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 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."

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**Comment: Cl 45 SC 45.2.1.7.5 P33 L3 # 121**

**Anslow, Pete Ciena**

**Comment Type** E  **Comment Status** A  **Suggested Remedy**

"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"

**Response** Response Status C  **ACCEPT.**

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**Comment: Cl 45 SC 45.2.1.18 P34 L24 # 121**

**Anslow, Pete Ciena**

**Comment Type** E  **Comment Status** A  **Suggested Remedy**

Add an ellipsis to the empty rows (two instances per table)

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

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

Comment Type T  Comment Status A  Precoder

the changes to allow the user to set precoder selection and the reporting of the link monitor's precoder request have made these registers confusing and duplicate. They are now better delegated to just control the test mode precoder forcing, since the user can force his precoder from the remote device. For testing purposes, an override control could be put in the test mode register as well, but in no normal operation case would you want the control register to modify the precoder (either you do it by link partner request determined by the PHY or by the link partner registers forcing a configuration). Also, nowhere do we link PreciseSel to the precoder setting with a requirement (shall).

SuggestedRemedy
Delete row for 1.2309.10:9 from Table 45-155a (page 35 lines 40-44)
Change reserved row in Table 45-155a (page 35 line 45) from 1.2309.8:0 to 1.2309.10:0
Delete page 36 lines 40-48, subclause 149.2.1.192.4 and renumber.

On page 41 line 33, Change Reserved row to be : 1.2313.12 | Reserved | Value always 0 | RO and insert three new rows below the new reserved row:
1.2313.11 | Local transmitter precoder override | 0 = Normal Operation
1 = User Override | R/W
1.2313.10:9 | Local transmit precoder setting | 00 = transmit with no precoder
01 = transmit with 1-D precoder
10 = transmit with 1+D precoder
11 = transmit with 1-D2 precoder | R/W
1.2313.8:2 | Reserved | Value always 0 | RO

On page 41 line 47, add new subclauses after 45.2.1.196.1 and renumber appropriately:

45.2.1.196.2 Local transmitter precoder override (1.2313.11)
When bit 1.2313.11 is set to one, the local transmitter's precoder shall be controlled by the value of bits 1.2313.10:9, and the precoder requested by the link partner in PreciseSel received from the link partner as specified in 149.3.2.2.20. The default value of 1.2313.11 is zero.

45.2.1.196.3 Local transmit precoder setting (1.2313.10:9)
When bit 1.2313.11 is set to one, bits 1.2313.10:9 control the precoder setting of the local transmitter, as defined in 149.3.2.2.20 in the variable precoder_type. For testing purposes, the precoder can be set using these bits, and the specified test can be carried out by using these bits, bit 1.2313.11, and enabling test mode 3. During normal operation, bit 1.2313.11 is set to zero, and the precoder is set according to the value of PreciseSel received from 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 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]
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 PreciseSel received from the link partner in the InfoField messages (see 149.4.2.4.5):"

(this PICS is already covered by PCT21)

Response  Response Status  C
ACCEPT IN PRINCIPLE.
The following response has minor editorial corrections to the Suggested Remedy.
Delete row for 1.2309.10:9 from Table 45-155a (page 35 lines 40-44)
Change reserved row in Table 45-155a (page 35 line 45) from 1.2309.8:0 to 1.2309.10:0
Delete page 36 lines 40-48, subclause 149.2.1.192.4 and renumber.
On page 41 line 33, Change Reserved row to be : 1.2313.12 | Reserved | Value always 0 | RO and insert three new rows below the new reserved row:
1.2313.11 | Local transmitter precoder override | 0 = Normal Operation
1 = User Override | R/W
1.2313.10:9 | Local transmit precoder setting | 00 = transmit with no precoder
01 = transmit with 1-D precoder
10 = transmit with 1+D precoder
11 = transmit with 1-D2 precoder | R/W
1.2313.8:2 | Reserved | Value always 0 | RO
On page 41 line 47, add new subclauses after 45.2.1.196.1 and renumber appropriately:

45.2.1.196.2 Local transmitter precoder override (1.2313.11)
When bit 1.2313.11 is set to one, the local transmitter's precoder shall be controlled by the value of bits 1.2313.10:9, and the precoder requested by the link partner in PreciseSel received from the link partner as specified in 149.3.2.2.20. The default value of 1.2313.11 is zero.

45.2.1.196.3 Local transmit precoder setting (1.2313.10:9)
When bit 1.2313.11 is set to one, bits 1.2313.10:9 control the precoder setting of the local transmitter, as defined in 149.3.2.2.20 in the variable precoder_type. For testing purposes, the precoder can be set using these bits, and the specified test can be carried out by using these bits, bit 1.2313.11, and enabling test mode 3. During normal operation, bit 1.2313.11 is set to zero, and the precoder is set according to the value of PreciseSel received from the link partner, and bits 1.2313.10:9 are ignored.

Add PICS items MM232 and MM233 (editorial license to number and position appropriately):
the link partner, and bits 1.2313.10:9 are ignored.

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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Subclause</th>
<th>Value/comment</th>
<th>Status</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>45.2.1.192.4</td>
<td>P36</td>
<td>L43</td>
<td>#105</td>
</tr>
</tbody>
</table>

McClellan, Brett  Marvell

Comment Type  TR  Comment Status  A

Precoder

There are several problems subclause.

1. "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.

2. "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.

Graba, Jim  Broadcom

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

Comment Type: TR
Comment Status: A
Precoder

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
Response Status: C
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 as 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 PrecoderSel. PrecoderSel is the desired precoder setting communicated to the link partner via Infofields 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 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
Response Status: C
ACCEPT IN PRINCIPLE.

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 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 to 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 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 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)."
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)."

The parameter name in Table 45-155b is "Actual precoder requested" and this fits with the text in the description cell as well as the text in 45.2.1.193.5. However, the title of 45.2.1.193.5 is "Actual precoder selected" which does not match

Suggested Remedy

Change the title of 45.2.1.193.5 from "Actual precoder selected (1.2310.4:3)" to: "Actual precoder requested (1.2310.4:3)"

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 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)."
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

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

Comment Type ER Comment Status A Precoder
"Actual precoder selected" - title of this subclause is not the same as the name of the bit in the table (Actual precoder requested" - suggest the table is more appropriate. (If the larger language (comment PRECD1) is accepted or accepted in principle, this comment should become moot and should be accommodated by the resolution).

Suggested Remedy
Change "Actual precoder selected" to "Actual precoder requested".

Response Response Status C ACCEPT IN PRINCIPLE.

Change per comment #123
Change the title of 45.2.1.193.5 from "Actual precoder selected (1.2310.4:3)" to: "PrecoderSel (1.2310.4:3)"

Ci 45 SC 45.2.1.194.1 P38 L41 # 69
Tu, Mike Broadcom

Comment Type E Comment Status A EZ "Reed-Solomon 'receiver' interleave setting" does not sound right. Delete the word 'receiver'.

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

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

Ci 45 SC 45.2.1.194.1 P38 L42 # 170
Wienckowski, Natalie General Motors

Comment Type E Comment Status A late
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.

Suggested Remedy
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.

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 "Infofields" to "InfoField" throughout the P802.3ch draft.

Ci 45 SC 45.2.1.194.1 P39 L19 # 98
Graba, Jim Broadcom

Comment Type E Comment Status A EZ In Table 45-155c, change "Slow wake" to "Slow Wake" in order to be consistent.

Suggested Remedy
Change all instances of "infofield" with any capitalization to be "InfoField" throughout the document.

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 and additional change to correct "slow wake" to "Slow Wake" throughout the document.

Ci 45 SC 45.2.1.194.1 P39 L19 # 98
Graba, Jim Broadcom

Comment Type E Comment Status A EZ In Table 45-155c, change "Slow wake" to "Slow Wake" in order to be consistent.

Suggested Remedy
Change all instances of "infofield" with any capitalization to be "InfoField" throughout the P802.3ch draft.

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 and additional change to correct "infofield" to "InfoField" throughout the document.
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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**Comment Type** E  **Comment Status** A  
**Anslow, Pete**  
Ciena

- The convention used in Clause 45 is to use "is one" and "is zero" rather than "is 1" and "is 0".

**Suggested Remedy**
- Change "is 1" to "is one".
- Change "is 0" to "is zero".

**Response**  
Response Status C  
ACCEPT.

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**Comment Type** TR  **Comment Status** A  
**Zimmerman, George**  
CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisco

- "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.

---

**Comment Type** E  **Comment Status** A  
**Graba, Jim**  
Broadcom

- These bits are requested by the link partner via Infofield. The current text is confusing.

**Suggested Remedy**
- Change from: "... communicated to the link partner via Infofields ..."  
- To: "... communicated by the link partner via InfoFields ..."

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

---

**Comment Type** E  **Comment Status** A  
**Tu, Mike**  
Broadcom

- 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.

**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** TR  **Comment Status** A  
**Zimmerman, George**  
CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisco

- 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 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

---

**Comment Type** TR  **Comment Status** A  
**Graba, Jim**  
Broadcom

- These bits are requested by the link partner via Infofield. The current text is confusing.

**Suggested Remedy**
- Change from: "... communicated to the link partner via Infofields ..."  
- To: "... communicated by the link partner via InfoFields ..."

**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.

---

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.

---
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"

**Response**

**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"

**Response**

**ACCEPT.**

---

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.**

---

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

---

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 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 the 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 MultiGBASE-T1 link partner user defined data register (Register 1.2317)" 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."

Suggested Remedy

Delete lines 28 and 31 that start with "when the link partner is from the same vendor."

Response

Response Status: C

ACCEPT IN PRINCIPLE.

This text is removed as rewritten by comment #1.

In Table 45-155g:
Under column "Name", change "Reserved" to "Link partner vendor specific data".

Response

Response Status: C

ACCEPT IN PRINCIPLE.

This row is deleted by comment #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**

'Saved' 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.

**Comment Type ER**

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 shal'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.
<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>Suggested Remedy</th>
<th>Response Status</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>45</td>
<td>54</td>
<td>8</td>
<td></td>
<td>E</td>
<td>A</td>
<td>The highest inserted item is MM231.</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>78</td>
<td>78.2</td>
<td>58</td>
<td>53</td>
<td></td>
<td>E</td>
<td>A</td>
<td>The bottom ruling of Table 78-2 should not be &quot;Very Thin&quot;</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>78</td>
<td>78.5</td>
<td>59</td>
<td>17</td>
<td></td>
<td>E</td>
<td>A</td>
<td>&quot;Insert an 10th paragraph&quot; should be &quot;Insert a 10th paragraph&quot;</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>104</td>
<td>104.5.6.4</td>
<td>66</td>
<td>40</td>
<td>23</td>
<td>E</td>
<td>A</td>
<td>Make &quot;Table 104-7&quot; a hyperlink.</td>
<td>C</td>
<td></td>
</tr>
</tbody>
</table>
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

Suggested Remedy
Make "Table 104-7" a hyperlink and remove the "forrest green" color.
Also, P67 L6, P67 L11, P67 L14.
Response: Response Status: C
ACCEPT.

Comment Type: E
Comment Status: A
EZ

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 Type: E
Comment Status: A
EZ

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 Automa

Cl 125 SC 125.1 P71 L46 # 128
Zimmerman, George CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisco

Comment Type TR Comment Status D EZ
"NOTE 2 - AUTO-NEGOTIATION IS OPTIONAL" Auto-Negotiation is only optional for the BASE-T1 PHY's.

Suggested Remedy
Add "FOR BASE-T1 PHY's" after "AUTO-NEGOTIATION IS OPTIONAL"

Response
Response Status Z REJECT.

This comment was WITHDRAWN by the commenter.

Cl 125 SC 125.1.4 P72 L34 # 26
Wienckowski, Natalie General Motors

Comment Type E Comment Status A EZ

Suggested Remedy
Make "78" a hyperlink.

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.

Cl 125 SC 125.3 P74 L12 # 47
Lo, William Axonne Inc.

Comment Type E Comment Status D EZ
Table fix gap in column 2 numbers

Suggested Remedy
Remove the gaps in all the numbers in column 2.

Response
Response Status Z REJECT.

This comment was WITHDRAWN by the commenter.

Cl 149 SC 149.1.3.1 P77 L44 # 129
Zimmerman, George CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisco

Comment Type E Comment Status A EZ
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....

Suggested Remedy
Change cross-ref from 149.3.2.2.18 to 149.3.2.2.16

Response
Response Status C ACCEPT.

Cl 149 SC 149.1.3.3 P78 L27 # 130
Zimmerman, George CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisco

Comment Type T Comment Status A EEE
"The transition to or from LPI mode shall not cause any MAC frames to be lost or" is a fragment of a sentence and an untestable shall....

Suggested Remedy
delete sentence fragment, or change it to read: "The transition to or from LPI mode should not cause any MAC frames to be lost or corrupted."

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 149.1.3.3 P78 L27 # 42
Slavick, Jeff Broadcom

Comment Type E Comment Status A EZ
Extra or instead of a period.

Suggested Remedy
Replace the or with a "."

Response
Response Status C ACCEPT IN PRINCIPLE.

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

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

**Response**
**Response Status** C
ACCEPT.

---

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.
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 Status:** C

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.


diagram


current state transitions in our diagrams assume this precedence.

---

**Comment Type:** T  
**Comment Status:** A  
**Commentor:** Zimmerman, George  
**Comment:** 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 Status:** C

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.

---

**Comment Type:** E  
**Comment Status:** A  
**Commentor:** Tu, Mike  
**Comment:** 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 Status:** C

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."

---

**Comment Type:** T  
**Comment Status:** D  
**Commentor:** Tu, Mike  
**Comment:** PMA_Link.request can be set by either the Auto-Negotiation or the PHY Link Synchronization.

**Suggested Remedy:**
Change line 24 and 25 to:
DIABLE    Used by the Auto-Negotiation or PHY Link Synchronization function to disable the PHY.
ENABLE    Used by the Auto-Negotiation or PHY Link Synchronization function to enable the PHY.

**Proposed Response:** Z

This comment was WITHDRAWN by the commenter.
### Comment 149 SC 149.2.1.1.2 P81 L30 #76

Tu, Mike Broadcom

**Comment Type** T  **Comment Status** D  **Suggested Remedy**

*PMA_Link.request can be set by either the Auto-Negotiation or the PHY Link Synchronization.*

This comment was WITHDRAWN by the commenter.

### Comment 149 SC 149.2.1.2 P81 L40 #77

Tu, Mike Broadcom

**Comment Type** T  **Comment Status** D  **Suggested Remedy**

*PMA_Link.indication also goes to the PHY Link Synchronization.*

This comment was WITHDRAWN by the commenter.

### Comment 149 SC 149.2.1.2.3 P82 L8 #78

Tu, Mike Broadcom

**Comment Type** T  **Comment Status** D  **Suggested Remedy**

*Add a reference to 149.4.2.6.4 PHY Link Synchronization State Diagram.*

This comment was WITHDRAWN by the commenter.

---

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

**Comment Type** E  **Comment Status** A  **Suggested Remedy**

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

**Proposed Response**  **Response Status** Z  **ACCEPT.**

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

**Comment Type** T  **Comment Status** A  **Suggested Remedy**

*Conceptually the interleaving is done prior to or at the same time with the RS-FEC encoding. Also there is a typo on this line: "RS-FE symbols" should be "RS-FEC symbols".*

**Proposed Response**  **Response Status** Z  **ACCEPT IN PRINCIPLE.**

*Change this sentence from: "… OAM field, then add 340 bits of parity for the RS-FEC, interleave the RS-FE symbols, …" To: "… OAM field, then interleave and add 340 bits of parity for the RS-FEC, …"*

**Comment Type** T  **Comment Status** A  **Suggested Remedy**

*The subsequent functions of the PCS Transmit process then take a block of fifty 65B blocks, append a 10-bit OAM field, then add 340 bits of parity for the RS-FEC, interleave the RS-FE symbols, and then scramble the resulting bits.*

**Proposed Response**  **Response Status** Z  **ACCEPT IN PRINCIPLE.**

*Change: The subsequent functions of the PCS Transmit process take L groups of fifty 65B blocks and append a 10-bit OAM field to each group. This forms the input to an L-interleaved RS-FEC which adds L x 340 parity bits. The resulting L x 3600 bits are then scrambled.*
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  149.3.2.2  P91  L 13  #  148
McClellan, Brett  Marvell
Comment Type: E  Comment Status: A  EZ

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

Cl  149  SC  149.3.2.2  P91  L 13  #  48
Lo, William  Axonne Inc.
Comment Type: E  Comment Status: A  EZ

SuggestedRemedy:
RS-FE should be RS_FEC

Response: Response Status: C
ACCEPT.

Cl  149  SC  149.3.2.2  P91  L 13  #  43
Slavick, Jeff  Broadcom
Comment Type: E  Comment Status: A  EZ

SuggestedRemedy:
Change "RS-FE symbols" to "RS-FEC symbols"

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

**SuggestedRemedy**

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.

---

Per Figure 78-1 and 46.4 it is not the MAC but the RS and LPI Client that controls entry to LPI mode.

**SuggestedRemedy**

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 following change to be consistent with wording used throughout this draft.

Change: A block diagram of the PCS Transmit functions is in Figure 149–5.

To: A block diagram of the PCS Transmit function 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 fix an error in the draft.
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.".

**Make the requested change so the text matches the Figure.**

---

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.

**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.

---

149.3.2.3.2 uses the term 'descrambler' for the receiver. Should probably match it in this figure.

**Suggested Remedy**
Change 'scrambler' to 'descrambler'.

**Response**
ACCEPT IN PRINCIPLE.

---

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**
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.

---

Figure 149-6 shows the PCS bit ordering, not Figure 149-8.

**Suggested Remedy**
Change "Figure 149-8" to "Figure 149-6".

**Response**
ACCEPT.
The RS-FEC encoder input of 3260 bits consist of tx_group50x65B AND the 10-bit OAM.

SuggestedRemedy

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 …"

The additive scrambler is added after the encoder and interleaver. So this sentence is not quite correct.

SuggestedRemedy

Change from: "tx_RSmessage<3259:10> = tx_group50x65B<3249:0>.
To: "tx_RSmessage<3249:0> = tx_group50x65B<3249:0>.
Also add indents at line 12 and line 14.

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_RSMessage<3259:3250> = OAM_field<9:0>.

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.

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.

Also add indents at line 12 and line 14.

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.

Also add indents at line 12 and line 14.

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.

Also add indents at line 12 and line 14.

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.

Also add indents at line 12 and line 14.

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.
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**

Apply subscript formatting on the index "n" in Dn[0] and Dn[1].

**Suggested Remedy**

Apply subscript formatting on the index "n" in Dn[0] and Dn[1].

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

ACCEPT.

---

**Comment Type T**  **Comment Status A**  **Terminology**

Use "n" as the common index of symbol numbers in time, in 149.3.2.2.18, 149.3.2.2.19, 149.3.2.2.20, and 149.3.2.2.21.

**Suggested Remedy**

1. On page 101, line 35, insert a new paragraph as follows:
   "n is an index indicating the symbol number."

2. In 149.3.2.2.18, 149.3.2.2.19, 149.3.2.2.20, and 149.3.2.2.21, applying the following changes:
   2.1 Change all bit notation "A" to "A_n", where "_" means subscript formatting.
   2.2 Change all bit notation "B" to "B_n", where "_" means subscript formatting.
   2.3 Change all "G(j)" to "G(n)".
   2.4 Change all "P(j)" to "P(n)". all "P(j-1)" to "P(n-1)". and "P(j-2)" to "P(n-2)".
   2.5 Change "M(u)" to "M(n)".
   2.5 Change "P(u)" to "P(n)".

3. Change page 103, line 6 from "The PAM4 encoded symbols are denoted M(u), where:" to "The PAM4 encoded symbols are denoted M(n),".

4. Delete page 103, line 8.

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

ACCEPT IN PRINCIPLE.

---

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

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 PrecoderSel 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 improve readability.

---

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

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.
What is "PAM4 mode"?

Suggested Remedy
Change: PAM4 mode
To: PAM4 encoding

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 entering PAM4 mode
To: when transitioning to PAM4 encoding

Redundant statement?

Suggested Remedy
Change from: “… separated into a 10-bit OAM field, separated from the 64B/65B blocks, and fifty 64B/65B blocks.”
To: “… separated into a 10-bit OAM field and fifty 64B/65B blocks.”

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

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).”

This comment was WITHDRAWN by the commenter.
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**

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 reader understanding.

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**

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.

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

**SuggestedRemedy**

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**

**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 change suggested by comment 104 to remove redundant specifications in the draft.

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."

This sentence contradicts the prior sentence which requires the slave to match the PFC24 of the master.

**SuggestedRemedy**

delete the sentence

**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 change suggested by comment 104 to remove redundant specifications in the draft.

The formula may result in non-integer output for the RS-FEC frame count.

**SuggestedRemedy**

Change the formula to: " RS-FEC frame count = floor (PFC24 / 4) mod 96."

**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 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.

**SuggestedRemedy**

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.

---

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.

**SuggestedRemedy**

Change

"may overlap" to

"mostly will not overlap"

**Response**

ACCEPT IN PRINCIPLE.

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.

---

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

**SuggestedRemedy**

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.

---

The "side-stream scrambler" is in the PCS, not in the PMA.

**SuggestedRemedy**

Delete "PMA" from this sentence.

**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.

---

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
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 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.

**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 an error in the draft.

"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."

**Comment Type**
T

**Comment Status**
A

**Suggested Remedy**

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

**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.

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

**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.

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**Comment**

Lo, William

**Type**

TR/Technical required

**Comment Status**

A

**Comment Type**

TR

**Comment**

Fix corner case out of sync condition between Figure 149-17 and 149-20 Scenario:
LPI is send at the initial RS frame just as lp_low_snr=1 TX_L state is entered and tx_lpi_req never gets set to true Stuck in TX_L state since it is waiting for tx_lpi_active to go true.
Meanwhile in Figure 149-20 stuck at TX_NORMAL since tx_lpi_req remains false so never enters into SEND_SLEEP to set tx_lpi_active to true. So we are deadlocked Figure 149-17 waiting for tx_lpi_active to go true while Figure 149-20 is waiting for tx_lpi_req to go true. Remedy below breaks the dead lock.

**Suggested Remedy**

Change:
(lp_low_snr + T_TYPE(tx_raw) = (C + D + E + S + T )) * tx_lpi_active
To:
(lp_low_snr + T_TYPE(tx_raw) = (C + D + E + S + T ) ) * (tx_lpi_req + tx_lpi_active)

**Response**

ACCEPT.

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**Comment**

Zimmerman, George

**Type**

OAM

**Comment Status**

A

**Comment Type**

TR

**Comment**

There is no requirement for the OAM state diagrams.

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

Comment Type: E  
Comment Status: A  
EZ

"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".

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

Comment Type: T  
Comment Status: A  
Startup

"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.

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

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.

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)
The PMA Transmit electrical specifications are given in 149.5.2.

Suggested Remedy

Change "149.1.3" to "149.5.2".

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 improve clarity.

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.

Suggested Remedy

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

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.

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.

Suggested Remedy

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

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 Auton

Tu, Mike

Broadcom

Comment Type T

Comment Status 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.

Comment Type T

Comment Status A

Need to define the bit mapping of VendorSpecificData.

SuggestedRemedy

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

Response Status C

ACCEPT.

Zimmerman, George

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

Comment Type TR

Comment Status A

The only constraint on DataSwPFC24 is that it is 24 bits and a multiple of 16. A PFC interval is 450 baud intervals, which at 10 gig is 80 nsec. As it is, this allows startup to hang for 16777600*80nsec = 1.342 seconds, which is WAY too long for a 100 msec total startup to allocate for a synchronization countdown after both receivers are reporting they are OK. A constraint of 500 (40 usec) should be more than enough, and would still be reasonable at 2.5 gig (160 usec). Also, DataSwPFC24 could be so close to the current PFC that the link partner might not be able to sync.

SuggestedRemedy

Add new final sentence to end of paragraph in 149.4.2.4.6: "DataSwPFC24 shall be a minimum of 64 and a maximum of 512 from the current PFC24 value."

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.

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.

Souvignier, Tom

Broadcom

Comment Type TR

Comment Status A

The SLAVE should align its transmit frames before it starts transmission. Otherwise MASTER will need to redo frame alignments during training.

SuggestedRemedy

Change from: "During startup, prior to entering the COUNTDOWN state, the SLAVE shall align ...

To: "During startup, prior to entering the TRAINING state, the SLAVE shall align ...

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 fix deficiency in current draft.
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>State</th>
<th>Type</th>
<th>MAX REQUIRED TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td></td>
<td>40.00 msec</td>
</tr>
<tr>
<td>Training</td>
<td></td>
<td>57.02 msec</td>
</tr>
<tr>
<td>PCS Test</td>
<td></td>
<td>0.98 msec</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>98.00 msec</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 style.

Editorial license to add necessary PICS.

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_simdet = false" to "send_s_simdet"
  - L39: "power_on = true" to "power_on"
  - L40: "mr_main_reset = true" to "mr_main_reset"
  - L49: "mr_autoneg_enable = true" to "mr_autoneg_enable"

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 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.

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

Make the suggested change to match the IEEE802 style.

The most common transmitter connection to an oscilloscope utilizes two 50-ohm channels. Figure 149-36 should be updated.

Replace Figure 149-36 with the figure in gubow_3ch_01a_0919.pdf.
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.

**Suggested Remedy**

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: \[ F_{\text{max}} = 4000 \times S \]

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; \(1 \leq f \leq F_{\text{max}}\).

The insertion loss is illustrated in Figure 149-42.

**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.

**Suggested Remedy**

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**

**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.
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

In the equation defined by parts (149–24). The frequency point 750 belongs to the first and second part.

Suggested Remedy
Change the first part "30 ≤ f ≤ 750 MHz" to "30 ≤ f < 750 MHz"

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 to fix typo.

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
ACCEPT IN PRINCIPLE.

Make the change in the Suggested Remedy.

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

Comment Type T Comment Status A
IEEE Std 802.3 does not restrict the EMC test methods ("PHY shall be tested according to CISPR 25 test methods"). The integrating system will specify the test methods to be used, and even though they usually are CISPR25, there is no need to put that here, and inappropriate to require it.

Suggested Remedy
Delete "The PHY shall be tested according to CISPR 25 test methods defined to measure the PHY’s EMC performance in terms of radio frequency (RF) immunity and RF emissions."

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.

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

Lo, William Axonne Inc.

Comment Type: E  Comment Status: D
Table fix gap in column 3 numbers

Suggested Remedy
Remove the gaps in all the numbers in column 3.

Proposed Response  Response Status: Z
REJECT.

This comment was WITHDRAWN by the commenter.

Wienckowski, Natalie General Motors

Comment Type: E  Comment Status: A

Suggested Remedy
Make "Clause 98" in Feature column a hyperlink.

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.

Wienckowski, Natalie General Motors

Comment Type: E  Comment Status: A

Suggested Remedy
Make "Table 149-10" in Feature column a hyperlink.

Response  Response Status: C
ACCEPT.

Correct the link to improve readability of the draft.

Wienckowski, Natalie General Motors

Comment Type: E  Comment Status: A

Suggested Remedy
Make "Table 149-11" in Feature column a hyperlink.

Response  Response Status: C
ACCEPT.

Correct the link to improve readability of the draft.

Wienckowski, Natalie General Motors

Comment Type: E  Comment Status: A

Suggested Remedy
Make "Clause 98" in Feature column a hyperlink.

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.
SuggestedRemedy
Make "Figure 149–32" in Feature column a hyperlink.

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.

Correct the link to improve readability of the draft.

SuggestedRemedy
Make "149.5.2" in Feature column a hyperlink.

Response

ACCEPT.

SuggestedRemedy
Make "149.5.3" in Feature column a hyperlink.

Response

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.
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
Lo, William  Axonne Inc.
Font size of text in boxes and text in arrows are not consistent

**Suggested Remedy**
Make font sizes of text consistent

**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.

Make all text size 8 to be consistent.

**Comment Type E**  Comment Status A  EZ
Lo, William  Axonne Inc.

Different font sizes in Figure 149B-2

**Suggested Remedy**
Change all text in figure to be 8.0 pt

**Response**  Response Status C
ACCEPT.

**Comment Type E**  Comment Status A  EZ
Wienckowski, Natalie  General Motors
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-3, change the following:
L44: "mr_rx_clear_rec_clear = true" to "mr_rx_clear_rec_clear"
L50: "mr_rx_rec_cleared = true" to "mr_rx_rec_cleared"

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

**Comment Type T**  Comment Status A  EZ
Wienckowski, Natalie  General Motors
The variable "mr_rx_request_rec_clear" is not defined.

**Suggested Remedy**
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_rx_request_rec_clear = true" to "mr_tx_clear_rec = true"
32.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Autom

149C has no information on return loss

Suggested Remedy
- Change: provides information on insertion loss and return loss parameters
- To: provides information on insertion loss parameters

Response Status: REJECT.

This comment was WITHDRAWN by the commenter.

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

Suggested Remedy
- See presentation diminico_3ch_02_0919.pdf
- Add the text proposed in diminico_3ch_02c_0919.pdf with editorial license to conform to IEEE 802.3 style.

Response Status: ACCEPT IN PRINCIPLE.

DiMinico, Christopher
MC Communications

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