P802.3ch D2.1

D2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Auton

Comment Type: E Comment Status: D 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 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."

Proposed Response: Response Status: W
PROPOSED ACCEPT.

Comment Type: E Comment Status: D 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 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"

Proposed Response: Response Status: W
PROPOSED 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.

Comment Type: E Comment Status: D EZ
IEEE Std 802.3cn-20xx - Amendment 4

Suggested Remedy
Add: IEEE Std 802.3cn™-20xx Amendment 4—This amendment includes changes to IEEE Std 802.3-2018 and adds 50 Gb/s, 200 Gb/s, and 400 Gb/s Physical Layer specifications and management parameters for operation over single-mode fiber with reaches of at least 40 km.

Proposed Response: Response Status: W
PROPOSED ACCEPT.

Comment Type: E Comment Status: D EZ
IEEE Std 802.3cg-20xx - Amendment 5

Suggested Remedy
Add: Amendment 5— after the title for cg and before "This amendment"

Proposed Response: Response Status: W
PROPOSED ACCEPT.

Comment Type: E Comment Status: D EZ
Missing 149C in the description of the amendment.

Suggested Remedy
Change: adds Clause 149 and Annex 149A and Annex 149B.

Proposed Response: Response Status: W
PROPOSED ACCEPT.
P802.3ch D2.1

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

Comment Type E Comment Status D 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.

Proposed Response Response Status W PROPOSED ACCEPT.

Comment Type E Comment Status D EZ

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.

Proposed Response Response Status W PROPOSED ACCEPT.

Comment Type E Comment Status D EZ

Use oxford comma.

Proposed Response Response Status W PROPOSED ACCEPT.

Comment Type E Comment Status D EZ

I think "gray code" should be "Gray code".

Proposed Response Response Status W PROPOSED ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ch 2.0 and D2.1 or the unsatisfied negative comments from earlier ballots. Hence it is not within the scope of the recirculation ballot.

Change "gray code" to "Gray-code" as "Gray" is based on a name and this is how it is written in this and other Clauses.
Comment Type E Comment Status D EZ
"Minimum SNR margin" - Minimum should not be capitalized (it isn't the first word or an acronym)

Suggested Remedy
Change Minimum to minimum.

Proposed Response Response Status W
PROPOSED 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 D 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 labelled, 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

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Implement change suggested by 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 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 draftific 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 draftific data" and footnote a is "RO = Read only"
Create a new level 5 subclause:
2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Auton

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.

**Proposed Response**

PROPOSED ACCEPT.
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 PrecodeSel 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 : 1.2313.11 | Reserved | Value always 0 | RO

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 45.2.1.196.2 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 PrecodeSel shall be ignored. When bit 1.2313.11 is set to zero, the transmitter shall ignore the bits 1.2313.10:9, and the precoder is set according to the value of PrecodeSel 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 PrecodeSel 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):
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)

Suggested Remedy
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.

Proposed Response  
PROPOSED ACCEPT IN PRINCIPLE.

These lines are removed by comment #124.

---

In Table 45-155b, "EEE Ability" should be "EEE ability".

Suggested Remedy
Change "EEE Ability" to "EEE ability"

Proposed Response  
PROPOSED 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 Auton

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

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.

Suggested Remedy

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 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 PrecodeSel. PrecodeSel 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)."

Proposed Response Response Status W
PROPOSED ACCEPT.

Anslow, Pete Ciena

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)"

Proposed Response Response Status W
PROPOSED 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)"

Tu, Mike Broadcom

The "actual precoder selected" name is confusing to readers.

Suggested Remedy

See proposed changes in tu_3ch_01b_0919.pdf.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.
Change per comment #123 & tu_3ch_01b_0919.pdf slide 3.
"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".

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

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

PROPOSED 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"


P802.3ch D2.1

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

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

Comment Type TR Comment Status D Registers
"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).

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

Proposed Response Response Status W
PROPOSED 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 OAM; 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

Graba, Jim
Broadcom

Comment Type T Comment Status D EZ
These bits are requested by the link partner via Infofield. The current text is confusing.

SuggestedRemedy
Change from: "... communicated to the link partner via Infofields ..."
To: "... communicated by the link partner via InfoFields ..."

Proposed Response Response Status W
PROPOSED 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.

Tu, Mike
Broadcom

Comment Type E Comment Status D EZ
Both "local device" and "local PHY" are used in this document. Maybe we should stay with
"local PHY"?

SuggestedRemedy
Replace all occurrences of "local device" by "local PHY" throughout the document.

Proposed Response Response Status W
PROPOSED 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 "local device" to "local PHY" at the following locations to make the draft consistent:
P41 L5, P41 L12, P46 L8, P55 L45, P55 L49, P153 L40, P153 L43, P153 L44

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: Clause, Subclause, page, line
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"

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

**Proposed Response**  
PROPOSED ACCEPT IN PRINCIPLE.

Change text as requested by comment #1: "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."

---

The use of the vendor specific messages is beyond the scope of this standard, so why is there a restriction that they may only be used by devices from the same vendor?

**Suggested Remedy**

lines 28 and 31  
delete 'when the link partner is from the same vendor '

**Proposed Response**  
PROPOSED ACCEPT IN PRINCIPLE.

This text is removed as rewritten by comment #1.
2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Auto

P802.3ch D2.1

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

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

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"...

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

PROPOSED 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-cleans to indicate ...

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

---

Comment Type E Comment Status D EZ

Anslow, Pete Ciena

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

The highest inserted item is MM231.

**Suggested Remedy**

Change "through MM227" to "through MM231"

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

PROPOSED ACCEPT.

---

Comment Type E Comment Status D EZ

Anslow, Pete Ciena

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

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

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

PROPOSED ACCEPT.

---

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

Anslow, Pete Ciena

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

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

**Suggested Remedy**

Change "an" to "a"

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

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

Lo, William Axonne Inc.

Comment Type: TR  Comment Status: D

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.

Suggested Remedy

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.

Proposed Response

Response Status: W
PROPOSED ACCEPT.
## P802.3ch D2.1

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

<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>104</td>
<td>104.9.4.3</td>
<td>69</td>
<td>12</td>
<td>25</td>
</tr>
<tr>
<td>104</td>
<td>104.9.4.3</td>
<td>69</td>
<td>17</td>
<td>59</td>
</tr>
<tr>
<td>125</td>
<td>125.1.4</td>
<td>72</td>
<td>34</td>
<td>28</td>
</tr>
<tr>
<td>125</td>
<td>125.3</td>
<td>74</td>
<td>12</td>
<td>47</td>
</tr>
<tr>
<td>129</td>
<td>149.1.3.1</td>
<td>77</td>
<td>44</td>
<td>129</td>
</tr>
</tbody>
</table>

### Comment Details

**Wienckowski, Natalie**

**Proposed Response**

**Suggested Remedy**

- Make "Table 104-7" a hyperlink.
- Make "Clause 97" a hyperlink and remove the "forrest green" color.

**Proposed Response**

- Remove the gaps in all the numbers in column 2.
- Change cross-ref from 149.3.2.2.18 to 149.3.2.2.16

**Comment Status**

- D/dispatched
- A/accepted
- R/rejected
- U/unsatisfied
- Z/withdrawn

**Response Status**

- O/open
- W/written
- C/closed

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

**Sort Order:** Clause, Subclause, page, line

---

**Suggested Remedy**

- Make "Table 104-7" a hyperlink.

**Proposed Response**

**Suggested Remedy**

- Make "78" a hyperlink.

**Proposed Response**

**Suggested Remedy**

- "NOTE 2 - AUTO-NEGOTIATION IS OPTIONAL" Auto-Negotiation is only optional for the BASE-T1 PHYs.

**Suggested Remedy**

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

**Proposed Response**

**Suggested Remedy**

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

**Proposed Response**

**Suggested Remedy**

- Change cross-ref from 149.3.2.2.18 to 149.3.2.2.16

**Proposed Response**
"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....

SuggestedRemedy
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."

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

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

Slavick, Jeff
Broadcom

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

SuggestedRemedy
Replace the or with a "."

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

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

Graba, Jim
Broadcom

Comment Type E Comment Status D EZ
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."

Proposed Response Response Status W
PROPOSED ACCEPT.
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)."

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

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 send_s_timer μs. If there is no response from the SLAVE, the MASTER repeats by sending a synchronization sequence every (send_s_timer + sigdet_wait_timer) μs. If the slave detects the sequence, it responds with a synchronization sequence for send_s_timer μs (after the MASTER has stopped transmitting)."

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.

**Proposed Response**

PROPOSED 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.
<table>
<thead>
<tr>
<th>CI</th>
<th>SC</th>
<th>149.2.1.1</th>
<th>P 81</th>
<th>L 16</th>
<th>#</th>
<th>74</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tu, Mike</td>
<td>Broadcom</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Comment Type</strong></td>
<td><strong>Comment Status</strong></td>
<td><strong>Technology Dependent Interface</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is sufficient to say &quot;PHY Link Synchronization&quot;. Delete &quot;algorithm&quot;.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Suggested Remedy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change from: &quot;... the PHY Link Synchronization algorithm to ...&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To: &quot;... the PHY Link Synchronization to ...&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Proposed Response</strong></td>
<td><strong>Response Status</strong></td>
<td><strong>W</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROPOSED ACCEPT IN PRINCIPLE.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Make the following change to correct the draft.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change page 81, line 16 and line 17 from:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;This primitive allows the Auto-Negotiation or the PHY Link Synchronization algorithm to enable and disable operation of the PMA, as draftified in 98.4.2, redraftively.&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;This primitive allows the Auto-Negotiation to enable and disable operation of the PMA, as draftified in 98.4.2.&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CI</strong></td>
<td><strong>SC</strong></td>
<td>149.2.1.1</td>
<td><strong>P 81</strong></td>
<td><strong>L 24</strong></td>
<td>#</td>
<td><strong>75</strong></td>
</tr>
<tr>
<td><strong>Tu, Mike</strong></td>
<td>Broadcom</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Comment Type</strong></td>
<td><strong>Comment Status</strong></td>
<td><strong>Technology Dependent Interface</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PMA_Link.request can be set by either the Auto-Negotiation or the PHY Link Synchronization.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Suggested Remedy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change line 24 and 25 to:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DISABLE Used by the Auto-Negotiation or PHY Link Synchronization function to disable the PHY.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENABLE Used by the Auto-Negotiation or PHY Link Synchronization function to enable the PHY.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Proposed Response</strong></td>
<td><strong>Response Status</strong></td>
<td><strong>Z</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROPOSED REJECT.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This comment was WITHDRAWN by the commenter.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CI</th>
<th>SC</th>
<th>149.2.1.2</th>
<th><strong>P 81</strong></th>
<th><strong>L 30</strong></th>
<th>#</th>
<th><strong>76</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tu, Mike</td>
<td>Broadcom</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Comment Type</strong></td>
<td><strong>Comment Status</strong></td>
<td><strong>Technology Dependent Interface</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PMA_Link.request can be set by either the Auto-Negotiation or the PHY Link Synchronization.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Suggested Remedy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change start of this sentence from: &quot;Auto-Negotiation generates ...&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To: &quot;Auto-Negotiation or PHY Link Synchronization generates ...&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Proposed Response</strong></td>
<td><strong>Response Status</strong></td>
<td><strong>Z</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROPOSED REJECT.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This comment was WITHDRAWN by the commenter.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CI</th>
<th>SC</th>
<th>149.2.1.2</th>
<th><strong>P 81</strong></th>
<th><strong>L 40</strong></th>
<th>#</th>
<th><strong>77</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tu, Mike</td>
<td>Broadcom</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Comment Type</strong></td>
<td><strong>Comment Status</strong></td>
<td><strong>Technology Dependent Interface</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PMA_Link.indication also goes to the PHY Link Synchronization.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Suggested Remedy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change from: &quot;... , and the Auto-Negotiation functions ...&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To: &quot;... , and the Auto-Negotiation or PHY Link Synchronization function ...&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Proposed Response</strong></td>
<td><strong>Response Status</strong></td>
<td><strong>Z</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROPOSED REJECT.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This comment was WITHDRAWN by the commenter.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CI</th>
<th>SC</th>
<th>149.2.1.2</th>
<th><strong>P 82</strong></th>
<th><strong>L 8</strong></th>
<th>#</th>
<th><strong>78</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tu, Mike</td>
<td>Broadcom</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Comment Type</strong></td>
<td><strong>Comment Status</strong></td>
<td><strong>Technology Dependent Interface</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Add a reference to 149.4.2.6.4 PHY Link Synchronization State Diagram.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Suggested Remedy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change from: &quot;The effect of receipt of this primitive is specified in 98.4.1.&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To: &quot;The effect of receipt of this primitive is specified in 98.4.1 for Auto-Negotiation, and in 149.4.2.6.4 for PHY Link Synchronization.&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Proposed Response</strong></td>
<td><strong>Response Status</strong></td>
<td><strong>Z</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROPOSED REJECT.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This comment was WITHDRAWN by the commenter.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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:** Clause, Subclause, page, line  
**PAGE 17 OF 43**  
**8/29/2019  4:11:46 PM**
"The subsequent functions of the PCS Transmit process" is meaningless, because the preceding text no longer talks about the generation of 65B blocks.

**Suggested Remedy**
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**
PROPOSED ACCEPT.

---

**Comment**
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".

**Suggested Remedy**
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, ...

**Response**
PROPOSED ACCEPT.

---

**Comment**
Typo: RS-FE

**Suggested Remedy**
Change 'RS-FE' to 'RS-FEC' in multiple locations

**Response**
PROPOSED ACCEPT IN PRINCIPLE.

---

**Comment**
Typo: RS-FEC should be RS_FEC

**Response**
PROPOSED ACCEPT.

---

**Comment**
Missing C

**Suggested Remedy**
Change "RS-FE symbols" to "RS-FEC symbols"

**Response**
PROPOSED ACCEPT.

---

**Comment**
change 'RS-FE' to 'RS-FEC' in multiple locations
2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Auto

---

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

Incorrect reference. This links to the Link Monitor function. Instead should point to 149.4.2.4.

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

**PROPOSED 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.

---

**Comment Type** T  **Comment Status** D  **Proposed Response**  **Response Status** W

**PROPOSED ACCEPT IN PRINCIPLE.**

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".

Delete this sentence per comment #156

---

**Comment Type** T  **Comment Status** D  **Proposed Response**  **Response Status** W

**PROPOSED ACCEPT IN PRINCIPLE.**

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

**SuggestedRemedy**

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

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

**PROPOSED 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.
P802.3ch D2.1  D2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Auton

Cl 149 SC 149.3.2.2 P 92 L 12 # 150
McClellan, Brett Marvell
Comment Type E Comment Status D EZ
's_n' should be 'S_n' to match usage in 149.3.4
SuggestedRemedy
change 's_n' to 'S_n'
Proposed Response Response Status W
PROPOSED 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.

Cl 149 SC 149.3.2.2.2 P 93 L 52 # 13
Anslow, Pete Ciena
Comment Type E Comment Status D EZ
Figures 149-6 and 149-7 now contain two notes each.
When there is more than one note, the IEEE-SA Standards Style Manual includes "Multiple notes in sequence should be numbered "NOTE 1—", "NOTE 2—", etc."
Also, there should be no spaces either side of the em-dash.
SuggestedRemedy
In Figures 149-6 and 149-7:
Change "Note — This" to "NOTE 1—This"
Change "Note — Figure" to "NOTE 2—Figure"
Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 149 SC 149.3.2.2.3 P 93 L 17 # 103
Grab, Jim Broadcom
Comment Type E Comment Status D EZ
To be consistent, "TxB" should be "tx_coded" and "RxB" should be "rx_coded".
SuggestedRemedy
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."
Proposed Response Response Status W
PROPOSED 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.

Cl 149 SC 149.3.2.2.3 P 93 L 22 # 158
McClellan, Brett Marvell
Comment Type T Comment Status D EZ
There's no signals defined as TXD<32> to TXD<63>. Only the XGMII TXD<0> to TXD<31>.
SuggestedRemedy
delete TXD<0>, TXD<31>, TXD<32>, and TXD<63> and move the XGMII line with signal labels down to align with the arrows.
Proposed Response Response Status W
PROPOSED 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.

Proposed Response
PROPOSED 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

Proposed Response
PROPOSED ACCEPT.

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
PROPOSED 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.

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 Auton

<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>Comment</th>
<th>Suggested Remedy</th>
<th>Proposed Response</th>
<th>Response Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>149</td>
<td>149.3.2.2.14</td>
<td>98</td>
<td>28</td>
<td>91</td>
<td>T</td>
<td>D</td>
<td>Figure 149-6 shows the PCS bit ordering, not Figure 149-8.</td>
<td>Change &quot;Figure 149-8&quot; to &quot;Figure 149-6&quot;.</td>
<td>PROPOSED ACCEPT.</td>
<td></td>
</tr>
<tr>
<td>149</td>
<td>149.3.2.2.17</td>
<td>100</td>
<td>10</td>
<td>83</td>
<td>T</td>
<td>D</td>
<td>The additive scrambler is added after the encoder and interleaver. So this sentence is not quite correct.</td>
<td>Change from: &quot;tx_RSmessage&lt;3259:0&gt; prior to additive scrambling is formed as follows.&quot; To: &quot;tx_RSmessage&lt;3259:0&gt; prior to the RS-FEC (360,326) encoder is formed as follows.&quot; Also add indents at line 12 and line 14.</td>
<td>PROPOSED ACCEPT IN PRINCIPLE.</td>
<td></td>
</tr>
<tr>
<td>149</td>
<td>149.3.2.2.17</td>
<td>100</td>
<td>12</td>
<td>89</td>
<td>T</td>
<td>D</td>
<td>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.</td>
<td>Change line 12 from: &quot;tx_RSmessage&lt;3259:10&gt; = tx_group50x65B&lt;3249:0&gt;.&quot; To: &quot;tx_RSmessage&lt;3249:0&gt; = tx_group50x65B&lt;3249:0&gt;.&quot; Change line 14 from: &quot;tx_RSmessage&lt;9:0&gt; = OAM_field&lt;9:0&gt;.&quot; To: &quot;tx_RSmessage&lt;3259:3250&gt; = OAM_field&lt;9:0&gt;.&quot;</td>
<td>PROPOSED ACCEPT IN PRINCIPLE.</td>
<td></td>
</tr>
</tbody>
</table>

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 Auton

P802.3ch D2.1

Comment Type: E  Comment Status: D  Typo

Suggested Remedy:
change 'an' to 'a'

Proposed Response:  
PROPOSED 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 Type: E  Comment Status: D  Typo

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

Proposed Response:  
PROPOSED 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 changes requested in tu_3ch_02_0919.pdf on slides 4, 5, 6, 7, & 9.

Comment Type: T  Comment Status: D  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 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.

Proposed Response:  
PROPOSED 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 changes requested in tu_3ch_02_0919.pdf on slides 4, 5, 6, 7, & 9.
D2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Auton

Comment Type E Comment Status D
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"

Proposed Response Response Status W
PROPOSED 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 D
The precoder_type is supposed to be assigned to two bits from the InfoFields, which contains 96 bits of information. So which 2 bits should be used?

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

Proposed Response Response Status W
PROPOSED 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.
<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>Page</th>
<th>Line</th>
<th>#</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Response Status</th>
<th>Proposed Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>149</td>
<td>149.3.2.3</td>
<td>105</td>
<td>15</td>
<td>134</td>
<td>T</td>
<td>D</td>
<td>EZ</td>
<td>&quot;and subject to the timing requirements of 46.1.7&quot; - 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?</td>
</tr>
<tr>
<td>149</td>
<td>149.3.2.3.1</td>
<td>105</td>
<td>37</td>
<td>87</td>
<td>T</td>
<td>D</td>
<td></td>
<td>The description should consider the interleaved cases.</td>
</tr>
<tr>
<td>149</td>
<td>149.3.6</td>
<td>108</td>
<td>16</td>
<td>160</td>
<td>T</td>
<td>D</td>
<td>EZ</td>
<td>&quot;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 149.3.2.22. The transmit function of the link partner signals the transition using the sleep signal&quot; awkward language and why reference the link partner? This text is about the local device and LPI signaling.</td>
</tr>
<tr>
<td>149</td>
<td>149.3.6</td>
<td>108</td>
<td>31</td>
<td>154</td>
<td>E</td>
<td>D</td>
<td>EZ</td>
<td>&quot;offset by the link partner's.&quot; awkward language</td>
</tr>
</tbody>
</table>
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

Proposed Response
PROPOSED 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 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."

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

Suggested Remedy

delete the sentence

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

Suggested Remedy

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

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.

Suggested Remedy

"may overlap" to "mostly will not overlap"

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.
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."

**PROPOSED 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.

**Suggested Remedy**

Delete "PMA" from this sentence.

**PROPOSED 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 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."
2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Auton

Comment Type T  Comment Status D  EEE
Mention of Infofield is distracting. And there aren't 128 InfoField bits.

Suggested Remedy
Remove " with the exception that the Infofield consists of a sequence of 128 zeros".

Proposed Response  Response Status W
PROPOSED 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."

Comment Status D  Response Status W

Comment Type E  Comment Status D  EEE
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.

Proposed Response  Response Status W
PROPOSED 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."

Comment Status D  Response Status W

Comment Type T  Comment Status D  EZ
The RFER Monitor state monitors the RS-FEC frame error ratio.

Suggested Remedy
Change from: "... monitors the received signal for high Reed Solomon frame error ratio." To: "... monitors the received signal for high RS-FEC frame error ratio."

Proposed Response  Response Status W
PROPOSED 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.
2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Auton

Comment Type: E
Comment Status: D

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

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

Proposed Response: Response Status: W
PROPOSED 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.

Comment Type: T
Comment Status: D

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 149-19".

Proposed Response: Response Status: W
PROPOSED 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.

Comment Type: TR
Comment Status: D

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)

Proposed Response: Response Status: W
PROPOSED ACCEPT.
2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Auton

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.

**Suggested Remedy**

Change "3.0.14" to "3.2322.14".

**Proposed Response**

PROPOSED 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 improve understanding. Other Clauses reference their specific bits instead of the generic bits even though they have the same impact.

**Zimmerman, George**

**CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisc**

**Comment Type** TR

**Comment Status** D

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 []

**Proposed Response**

PROPOSED 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.

**Wienckowski, Natalie**

**General Motors**

**Comment Type** E

**Comment Status** D

"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.

**Suggested Remedy**

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

**Proposed Response**

PROPOSED 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".

**Comment Status** D

**Response Status** W

**Zimmerman, George**

**CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisc**

**Comment Type** TR

**Comment Status** D

"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.

**Suggested Remedy**

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

**Proposed Response**

PROPOSED 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.
Comment Type: E  Comment Status: D  EZ

Figure 149-23 has been changed so that the coefficient \( A_2 = 1 \) 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 \( A_2 = 1 \)

Suggested Remedy

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.

Proposed Response

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

Comment Type: T  Comment Status: D  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.

Suggested Remedy

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

Proposed Response

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.

Discuss comment #169 first – if no change is made to bring the 100ms time into Figure 149-33, this comment should be rejected for the reason above.

Otherwise:

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 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)
Comment Type TR Comment Status D

Comment Type TR Comment Status D

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.

The PMA Transmit electrical specifications are given in 149.5.2.
### P802.3ch D2.1

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

<table>
<thead>
<tr>
<th>CI</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Response Status</th>
<th>Proposed Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>149</td>
<td>149.4.2.4.5</td>
<td>168</td>
<td></td>
<td></td>
<td>E</td>
<td>R</td>
<td>REJECT</td>
<td>PROPOSED ACCEPT.</td>
</tr>
<tr>
<td>Razavi, Alireza</td>
<td>Aquantia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Suggested Remedy**

- Need to define the bit mapping of InterleaverDepth and PrecodeSel.

**Proposed Response**

- PROPOSED ACCEPT.

<table>
<thead>
<tr>
<th>CI</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Response Status</th>
<th>Proposed Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>149</td>
<td>149.4.2.4.5</td>
<td>73</td>
<td>45</td>
<td></td>
<td>T</td>
<td>D</td>
<td>EZ</td>
<td>PROPOSED ACCEPT.</td>
</tr>
<tr>
<td>Tu, Mike</td>
<td>Broadcom</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Suggested Remedy**

- 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], ..."

**Proposed Response**

- PROPOSED ACCEPT IN PRINCIPLE.

<table>
<thead>
<tr>
<th>CI</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Response Status</th>
<th>Proposed Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>149</td>
<td>149.4.2.4.5</td>
<td>72</td>
<td>47</td>
<td></td>
<td>T</td>
<td>D</td>
<td>EZ</td>
<td>PROPOSED ACCEPT.</td>
</tr>
<tr>
<td>Tu, Mike</td>
<td>Broadcom</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Suggested Remedy**

- Need to define the bit mapping of VendorSpecificData.

**Proposed Response**

- PROPOSED ACCEPT.

<table>
<thead>
<tr>
<th>CI</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Response Status</th>
<th>Proposed Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>149</td>
<td>149.4.2.4.6</td>
<td>136</td>
<td>16</td>
<td></td>
<td>TR</td>
<td>D</td>
<td>W</td>
<td>PROPOSED ACCEPT IN PRINCIPLE.</td>
</tr>
<tr>
<td>Zimmerman, George</td>
<td>CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Suggested Remedy**

- 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 16776960*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.

**Proposed Response**

- PROPOSED 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.

**Response Status**

- MAKE REQUESTED CHANGE TO FIX DEFICIENCY IN CURRENT DRAFT.

<table>
<thead>
<tr>
<th>CI</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Response Status</th>
<th>Proposed Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>149</td>
<td>149.4.2.4.10</td>
<td>54</td>
<td>26</td>
<td></td>
<td>TR</td>
<td>D</td>
<td>W</td>
<td>PROPOSED ACCEPT IN PRINCIPLE.</td>
</tr>
<tr>
<td>Souvignier, Tom</td>
<td>Broadcom</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Suggested Remedy**

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

**Proposed Response**

- PROPOSED 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.

**Response Status**

- 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 change the
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>Time (msec)</th>
</tr>
</thead>
</table>
| Training | Silent | 40.00
| Training | Training | 57.02
| PCS Test | PCS Test | 0.98
| TOTAL | | 98.00 |

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.

P154 L39 Add the following definitions to 149.4.4.2, before minwait_timer:

max_silent_timer

A timer used to determine the maximum amount of time the PHY Control stays
in the SILENT state. This timer will expire 40 msec after being started.

max_training_timer

A timer used to determine the maximum amount of time the PHY Control stays
in the TRAINING state. When config = MASTER, the timer will expire 57.02 msec after
being started. When config = SLAVE, the timer will expire 57.02 msec after being started.

Update Figure 149-33 as shown in farjadrad_3ch_001_0919.pdf, with editorial license to
conform to IEEE802.3 style.

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

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 149-32, change the following:
L25 & L31: “send_s_sigeon = false” to “send_s_sigeon”
L39: “power_on = true” to “power_on”
L40: “mr_main_reset = true” to “mr_main_reset”
L40: “mr_autoneg_enable = true” to “mr_autoneg_enable”
L49: “mr_autoneg_enable = false” to “mr_autoneg_enable”

Proposed Response  Response Status W

PROPOSED 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_sigeon.

---

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 149-33, 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”

Proposed Response  Response Status W

PROPOSED 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.

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"

PROPOSED 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.

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

PROPOSED 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.

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

PROPOSED 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.

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: 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.

PROPOSED 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.

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.

PROPOSED 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.
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.

**Suggested Remedy**
Change the second part "480/2N ≤ f ≤ 3000 MHz" to "480/2N ≤ f < 3000 MHz"

**Proposed Response**
PROPOSED 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.

**Comment Status**
D

**Response Status**
W

---

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.

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

**Proposed Response**
PROPOSED 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.

**Comment Status**
D

**Response Status**
W

---

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"

**Proposed Response**
PROPOSED 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.

**Comment Status**
D

**Response Status**
W

---

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.

**Proposed Response**
PROPOSED 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.

The commenter is encouraged to discuss this with the task force during ad hoc calls and consider entering a comment for SA ballot. It is up to the implementer to design their application to work at the maximum planned speed.
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.

Proposed Response

PROPOSED 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 conform with latest agreed text in other projects.

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."

Proposed Response

PROPOSED 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 CISPR 25 is used for automotive applications.

Remove the text as suggested and remove PICS ES5 on P190 L20.
SuggestedRemedy
Make "Table 149-10" in Feature column a hyperlink.

Proposed Response Response Status W
PROPOSED ACCEPT.

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

Proposed Response Response Status W
PROPOSED ACCEPT.

SuggestedRemedy
Make "Clause 98" in Feature column a hyperlink.

Proposed Response Response Status W
PROPOSED 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.

Proposed Response Response Status W
PROPOSED 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.
### Page 41 of 43

**Comment Type** E   **Comment Status** D   **Proposed Response**   **Response Status** W

<table>
<thead>
<tr>
<th>Cl 149A</th>
<th>SC 149A.2</th>
<th>P 192</th>
<th>L 36</th>
<th># 61</th>
<th>Wienckowski, Natalie General Motors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Clarify that the environmental conditions in 149A are the applicable conditions for the defined test method.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Suggested Remedy</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Change: Measurements are performed at ...</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>To: These test methods are applicable for temperature of ...</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Proposed Response</strong>   <strong>Response Status</strong> W</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>PROPOSED ACCEPT.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cl 149A</th>
<th>SC 149A.5.4</th>
<th>P 197</th>
<th>L 41</th>
<th># 36</th>
<th>Wienckowski, Natalie General Motors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Suggested Remedy</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Make &quot;Figure 149A–3&quot; in Feature column a hyperlink.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Proposed Response</strong>   <strong>Response Status</strong> W</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>PROPOSED ACCEPT IN PRINCIPLE.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cl 149B</th>
<th>SC 149B.4.2.3</th>
<th>P 202</th>
<th>L 15</th>
<th># 19</th>
<th>Wienckowski, Natalie General Motors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Suggested Remedy</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>In state diagrams, the transitions shouldn't include &quot;=true&quot; or &quot;=false&quot;, instead you should have the variable_name for true and !variable_name for false.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Proposed Response</strong>   <strong>Response Status</strong> W</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>PROPOSED ACCEPT.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cl 149B</th>
<th>SC 149B.4.2.3</th>
<th>P 202</th>
<th>L 38</th>
<th># 20</th>
<th>Wienckowski, Natalie General Motors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Suggested Remedy</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Different font sizes in Figure 149B-3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Proposed Response</strong>   <strong>Response Status</strong> W</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>PROPOSED ACCEPT.</strong></td>
</tr>
</tbody>
</table>

**Comment Type** E   **Comment Status** D   **Proposed Response**   **Response Status** W

<table>
<thead>
<tr>
<th>Cl 149B</th>
<th>SC 149B.4.2.3</th>
<th>P 202</th>
<th>L 8</th>
<th># 50</th>
<th>Lo, William Axonne Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Suggested Remedy</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Make font sizes of text consistent</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Proposed Response</strong>   <strong>Response Status</strong> W</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>PROPOSED ACCEPT IN PRINCIPLE.</strong></td>
</tr>
</tbody>
</table>

**Comment Type** E   **Comment Status** D   **Proposed Response**   **Response Status** W

<table>
<thead>
<tr>
<th>Cl 149B</th>
<th>SC 149B.4.2.3</th>
<th>P 202</th>
<th>L 15</th>
<th># 19</th>
<th>Wienckowski, Natalie General Motors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Suggested Remedy</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Change all text in figure to be 8.0 pt</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Proposed Response</strong>   <strong>Response Status</strong> W</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>PROPOSED ACCEPT.</strong></td>
</tr>
</tbody>
</table>

**Comment Type** E   **Comment Status** D   **Proposed Response**   **Response Status** W

<table>
<thead>
<tr>
<th>Cl 149B</th>
<th>SC 149B.4.2.3</th>
<th>P 202</th>
<th>L 38</th>
<th># 20</th>
<th>Lo, William Axonne Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Suggested Remedy</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Different font sizes in Figure 149B-3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Proposed Response</strong>   <strong>Response Status</strong> W</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>PROPOSED ACCEPT.</strong></td>
</tr>
</tbody>
</table>

**Comment Type** E   **Comment Status** D   **Proposed Response**   **Response Status** W

<table>
<thead>
<tr>
<th>Cl 149B</th>
<th>SC 149B.4.2.3</th>
<th>P 202</th>
<th>L 8</th>
<th># 50</th>
<th>Lo, William Axonne Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Suggested Remedy</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Make all text size 8 to be consistent.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Proposed Response</strong>   <strong>Response Status</strong> W</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>PROPOSED ACCEPT IN PRINCIPLE.</strong></td>
</tr>
</tbody>
</table>

**Comment Type** E   **Comment Status** D   **Proposed Response**   **Response Status** W

<table>
<thead>
<tr>
<th>Cl 149B</th>
<th>SC 149B.4.2.3</th>
<th>P 202</th>
<th>L 15</th>
<th># 19</th>
<th>Wienckowski, Natalie General Motors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Suggested Remedy</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Change all text in figure to be 8.0 pt</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Proposed Response</strong>   <strong>Response Status</strong> W</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>PROPOSED ACCEPT.</strong></td>
</tr>
</tbody>
</table>

**Comment Type** E   **Comment Status** D   **Proposed Response**   **Response Status** W

<table>
<thead>
<tr>
<th>Cl 149B</th>
<th>SC 149B.4.2.3</th>
<th>P 202</th>
<th>L 38</th>
<th># 20</th>
<th>Lo, William Axonne Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Suggested Remedy</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Change all text in figure to be 8.0 pt</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Proposed Response</strong>   <strong>Response Status</strong> W</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>PROPOSED ACCEPT.</strong></td>
</tr>
</tbody>
</table>

**Comment Type** E   **Comment Status** D   **Proposed Response**   **Response Status** W

<table>
<thead>
<tr>
<th>Cl 149B</th>
<th>SC 149B.4.2.3</th>
<th>P 202</th>
<th>L 8</th>
<th># 50</th>
<th>Lo, William Axonne Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Suggested Remedy</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Make all text size 8 to be consistent.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Proposed Response</strong>   <strong>Response Status</strong> W</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>PROPOSED ACCEPT IN PRINCIPLE.</strong></td>
</tr>
</tbody>
</table>
This page contains comments and responses related to the physical layer specifications and management parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Auton.

**Comment #65**: The variable "mr_tx_request_rec_clear" is not defined.  
**Suggested Remedy**: In Figure 149B-3, the transition condition should be changed to: "mr_tx_clear_rec = true".  
**Proposed Response**: Change "mr_tx_request_rec_clear = true" to "mr_tx_clear_rec"  
**Comment Status**: D  
**Response Status**: EZ  
**Proposed Accept in Principle**: PROPOSED ACCEPT IN PRINCIPLE.

**Comment #21**: 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_tx_request_rec_clear = true" to "mr_tx_request_rec_clear"  
L50:  "mr_rx_rec_cleared = true" to "mr_rx_rec_cleared"  
**Proposed Response**: Change Max PCB length from 4.5" to 3" more representative of MAX implementations.  
**Suggested Remedy**: In Figure 149C–1 delete 4.5" two places.  
In equation (149C–1) change 4.5" to 3".  
In equation (149C–4) change 4.5" to 3".  
Change Table 149C–1 values per supporting presentation.  
**Proposed Response**: Replace Table 149C-1 with the table at the bottom of slide 3 in diminico_3ch_01_0919.pdf.  
**Comment Status**: D  
**Response Status**: W  
**Proposed Accept in Principle**: PROPOSED ACCEPT IN PRINCIPLE.

**Comment #38**: 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  
**Proposed Response**: PROPOSED ACCEPT IN PRINCIPLE.

**Comment #56**: Add the text proposed in diminico_3ch_02a_0919.pdf.  
**Suggested Remedy**: See presentation diminico_3ch_02_0919.pdf  
**Proposed Response**: Add the text proposed in diminico_3ch_02a_0919.pdf  
**Comment Status**: D  
**Response Status**: EZ  
**Proposed Accept in Principle**: PROPOSED ACCEPT IN PRINCIPLE.

**Comment #55**: 149C missing information on return loss parameters of the channel defined between TX function and RX function illustrated in Figure 149C–1.  
**Suggested Remedy**: In Figure 149C–1 delete 4.5" two places.  
In equation (149C–1) change 4.5" to 3".  
In equation (149C–4) change 4.5" to 3".  
Change Table 149C–1 values per supporting presentation.  
**Proposed Response**: Replace Table 149C-1 with the table at the bottom of slide 3 in diminico_3ch_01_0919.pdf.  
**Comment Status**: D  
**Response Status**: W  
**Proposed Accept in Principle**: PROPOSED ACCEPT IN PRINCIPLE.

**Proposed Text Changes**:  
Replace Table 149C-1 with the table at the bottom of slide 3 in diminico_3ch_01_0919.pdf.
Suggested Remedy
- correct text for space circuit

Proposed Response  Response Status  W
PROPOSED ACCEPT IN PRINCIPLE.

Change "circ uit" to "circuit"