P802.3ch D2.1  32.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Auton

Cl/ 45  SC  45.2.1  P  32  L  31  #  1
Anslow, Pete  Ciena

Comment Type  T  Comment Status  X

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  Response Status  O

Cl/ 45  SC  45.2.1.18  P  34  L  24  #  5
Anslow, Pete  Ciena

Comment Type  E  Comment Status  X

"Add" is not a valid editing instruction.
Table 45-21 is not being changed, so should not be shown.
Notes should use the paragraph tag "Note"

Suggested Remedy
Change the editing instruction to: "Insert the following note below Table 45-21:"
Delete Table 45-21.
Apply Paragraph tag "Note" to the note.

Proposed Response  Response Status  O

Cl/ 45  SC  45.2.1.193.5  P  38  L  8  #  1
Anslow, Pete  Ciena

Comment Type  E  Comment Status  X

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  O

Comment ID 4  Page 1 of 32  8/23/2019  10:09:12 AM
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: Comment ID
P802.3ch D2.1  32.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Auton

Cl 45  SC 45.2.1.194.4  P 39  L 38  # 5
Anslow, Pete  Ciena
Comment Type  E  Comment Status  X
  The convention used in Clause 45 is to use "is one" and "is zero" rather than "is 1" and "is 0".
Suggested Remedy
  Change "is 1" to "is one".
  Change "is 0" to "is zero".
Proposed Response  Response Status  O

Cl 45  SC 45.2.1.196.2  P 41  L 50  # 6
Anslow, Pete  Ciena
Comment Type  E  Comment Status  X
  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  O

Cl 45  SC 45.5.3.3  P 54  L 8  # 7
Anslow, Pete  Ciena
Comment Type  E  Comment Status  X
  The highest inserted item is MM231.
Suggested Remedy
  Change "through MM227" to "through MM231"
Proposed Response  Response Status  O

Cl 78  SC 78.2  P 58  L 53  # 8
Anslow, Pete  Ciena
Comment Type  E  Comment Status  X
  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  O

Cl 78  SC 78.5  P 59  L 17  # 9
Anslow, Pete  Ciena
Comment Type  E  Comment Status  X
  "Insert an 10th paragraph" should be "Insert a 10th paragraph"
Suggested Remedy
  Change "an" to "a"
Proposed Response  Response Status  O

Cl 104  SC 104.9  P 68  L 1  # 10
Anslow, Pete  Ciena
Comment Type  E  Comment Status  X
  The editing instruction at the top of page 68 is redundant as each change has its own editing instruction.
  "Modify" is not a valid editing instruction.
  The instruction is too vague to be of any use anyway.
Suggested Remedy
  Delete the editing instruction at the top of page 68
Proposed Response  Response Status  O
The two items *PSETE and *PDTE are being inserted by IEEE Std 802.3cg-20xx. The redundant editing instruction at the top of the page (proposed to be deleted in another comment) does not change the fact that this editing instruction should include this.

Suggested Remedy

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

Proposed Response

Response Status O

"Modify" is not a valid editing instruction.

Suggested Remedy

Change "Modify item" to "Change item"

Proposed Response

Response Status O

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.

Suggested Remedy

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 O

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

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

Response Status O

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

Suggested Remedy

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

Proposed Response

Response Status O
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: X

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: O

Comment Type: E  Comment Status: X

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

SuggestedRemedy

In Figure 149B-2, change the following:
L15 & L28: "mr_rx_clear_rec=true" to "mr_rx_clear_rec"
L28: "mr_rx_clear_rec=false" to "!mr_rx_clear_rec"

Proposed Response  Response Status: O

Comment Type: E  Comment Status: X

Different font sizes in Figure 149B-2

SuggestedRemedy

Change all text in figure to be 8.0 pt

Proposed Response  Response Status: O

Comment Type: E  Comment Status: X

Different font sizes in Figure 149B-3

SuggestedRemedy

Change all text in figure to be 8.0 pt

Proposed Response  Response Status: O
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 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"

What is "PAM4 mode"?

Change: PAM4 mode
To: PAM4 encoding

Make "Table 104-7" a hyperlink.
Also, P67 L6, P67 L11, P67 L14.

Make "78" a hyperlink.
Also, P67 L4
2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Auton

Cl 149 SC 149.3.9.2.12 P 129 L 17 # 27
Wienckowski, Natalie General Motors
Comment Type E Comment Status X

Suggested Remedy
Change: 149B
To: Annex 149B

Proposed Response
Response Status O

Cl 149 SC 149.3.9.2.12 P 129 L 17 # 27
Wienckowski, Natalie General Motors
Comment Type E Comment Status X

Suggested Remedy
Change: 149B
To: Annex 149B

Proposed Response
Response Status O

Cl 149 SC 149.11.4.1 P 175 L 28 # 28
Wienckowski, Natalie General Motors
Comment Type E Comment Status X

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

Proposed Response
Response Status O

Cl 149 SC 149.11.4.2.1 P 176 L 27 # 29
Wienckowski, Natalie General Motors
Comment Type E Comment Status X

Suggested Remedy
Incorrect link trying to go outside the document.

Proposed Response
Response Status O

Cl 149 SC 149.11.4.3.4 P 184 L 6 # 30
Wienckowski, Natalie General Motors
Comment Type E Comment Status X

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

Proposed Response
Response Status O

Cl 149 SC 149.11.4.3.4 P 184 L 7 # 31
Wienckowski, Natalie General Motors
Comment Type E Comment Status X

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

Proposed Response
Response Status O

Cl 149 SC 149.11.4.3.4 P 184 L 7 # 31
Wienckowski, Natalie General Motors
Comment Type E Comment Status X

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

Proposed Response
Response Status O

Cl 149 SC 149.11.4.3.6 P 185 L 33 # 52
Wienckowski, Natalie General Motors
Comment Type E Comment Status X

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

Proposed Response
Response Status O

Cl 149 SC 149.11.4.3.6 P 185 L 38 # 53
Wienckowski, Natalie General Motors
Comment Type E Comment Status X

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

Proposed Response
Response Status O

Cl 149 SC 149.11.4.6 P 189 L 27 # 54
Wienckowski, Natalie General Motors
Comment Type E Comment Status X

Suggested Remedy
Make "149.5.2" in Feature column a hyperlink.

Proposed Response
Response Status O

Cl 149 SC 149.11.4.6 P 189 L 27 # 54
Wienckowski, Natalie General Motors
Comment Type E Comment Status X

Suggested Remedy
Make "149.5.2" in Feature column a hyperlink.

Proposed Response
Response Status O
P802.3ch D2.1

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

Cl 149 SC 149.11.4.6 P 189 L 28 # 35
Wienckowski, Natalie
General Motors

Comment Type E Comment Status X

Suggested Remedy
Make "149.5.3" in Feature column a hyperlink.

Proposed Response
Response Status O

Cl 149A SC 149A.5.4 P 197 L 41 # 36
Wienckowski, Natalie
General Motors

Comment Type E Comment Status X

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

Proposed Response
Response Status O

Cl FM SC FM P 11 L 4 # 37
Wienckowski, Natalie
General Motors

Comment Type E Comment Status X

Missing 149C in the description of the amendment.

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

Proposed Response
Response Status O

Cl 149C SC 149C.1 P 203 L 11 # 58
Wienckowski, Natalie
General Motors

Comment Type T Comment Status X

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
Response Status O

Cl 104 SC 104.9.4.3 P 69 L 17 # 59
Wienckowski, Natalie
General Motors

Comment Type E Comment Status X

Suggested Remedy
Make "Clause 97" a hyperlink and remove the "forest green" color.

Proposed Response
Response Status O

Cl FM SC P 2 L 5 # 40
Marris, Arthur
Cadence Design Systems

Comment Type E Comment Status X

"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 O
P802.3ch D2.1  
32.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Automotive Electrical Ethernet

Cl 45  SC 45.2.1.193.5  P 37  L 8  #  
Slavick, Jeff  Broadcom

Comment Type  TR  Comment Status  X
Actual precoder requested doesn't really make any sense to me based upon description. I believe this field should be indicating the actual state/control of the receive precoder.

Suggested Remedy
See Presentation tu_3ch_01_0919.pdf

Proposed Response  Response Status  O

Cl 149  SC 149.3.2.2.20  P 102  L 27  #  
Slavick, Jeff  Broadcom

Comment Type  TR  Comment Status  X
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?

Suggested Remedy
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  O

Cl 149  SC 149.5.1.1  P 158  L 24  #  
Gubow, Marty  Keysight Technologies

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

Suggested Remedy
Recommened new figure 149-36

Proposed Response  Response Status  O
P802.3ch D2.1  32.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Auton

Comment ID 47
Lo, William Axonne Inc.

Comment Type: E  Comment Status: X

Table fix gap in column 2 numbers

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

Proposed Response  Response Status: O

Comment ID 48
Lo, William Axonne Inc.

Comment Type: E  Comment Status: X

Spelling
RS-FE should be RS_FEC

Suggested Remedy:
Proposed Response  Response Status: O

Comment ID 49
Lo, William Axonne Inc.

Comment Type: E  Comment Status: X

Table fix gap in column 3 numbers

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

Proposed Response  Response Status: O

Comment ID 50
Lo, William Axonne Inc.

Comment Type: E  Comment Status: X

Font size of text in boxes and text in arrows are not consistent

Suggested Remedy:
Make font sizes of text consistent

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

Comment Type TR Comment Status X
Lo, William Axonne Inc.

Fix corner case out of sync condition between Figure 149-17 and 149-20 Scenario:
LPI is sent 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.

SuggestedRemedy
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)

DiMinico, Christopher MC Communications

Comment Type T Comment Status X
Change Max PCB length from 4.5" to 3" more representative of MAX implementations.

SuggestedRemedy
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.

diminico_3ch_01_0919.pdf

DiMinico, Christopher MC Communications

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

SuggestedRemedy
See presentation diminico_3ch_02_0919.pdf

DiMinico, Christopher MC Communications

Comment Type T Comment Status X
IEEE Std 802.3cn™-20xx - Amendment 4

SuggestedRemedy
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.

Wienckowski, Natalie General Motors

Comment Type E Comment Status X
IEEE Std 802.3cn-20xx - Amendment 4

SuggestedRemedy
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.
P802.3ch D2.1  32.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Auton

Cl     FM     SC     FM     P     L     #  
Wienckowski, Natalie  General Motors

Comment Type E  Comment Status X
IEEE Std 802.3cg-20xx - Amendment 5

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

Proposed Response  Response Status O

Cl     FM     SC     FM     P     L     #  
Wienckowski, Natalie  General Motors

Comment Type E  Comment Status X
IEEE Std 802.3cq-20xx - Amendment 6

SuggestedRemedy
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 O

Cl     FM     SC     FM     P     L     #  
Wienckowski, Natalie  General Motors

Comment Type E  Comment Status X
IEEE Std 802.3cm-20xx - Amendment 7

SuggestedRemedy
Add: IEEE Std 802.3cm™-20xx
Amendment 7—This amendment includes 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 O
P802.3ch D2.1  32.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Auton

Cl 00 SC 0 P 1 L 18 # 64
Maguire, Valerie  The Siemon Company
Comment Type E  Comment Status X
Use oxford comma.
SuggestedRemedy
Proposed Response  Response Status O

Cl 149B SC 149B.4.2.3 P 202 L 44 # 65
Tu, Mike  Broadcom
Comment Type T  Comment Status X
The variable "mr_tx_request_rec_clear" is not defined.
SuggestedRemedy
Proposed Response  Response Status O

Cl 44 SC 44.1.4.4 P 30 L 43 # 66
Tu, Mike  Broadcom
Comment Type E  Comment Status X
I think "gray code" should be "Gray code".
SuggestedRemedy
Proposed Response  Response Status O

Cl 45 SC 45.2.1.192.3 P 36 L 35 # 67
Tu, Mike  Broadcom
Comment Type T  Comment Status X
After exiting the low-power mode, the PHY should go to either Auto-Negotiation or PHY Link Synchronization, instead of going to Figure 149-33 PHY Control state diagram.
SuggestedRemedy
Proposed Response  Response Status O
2.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Autor

**Comment Type** T  Comment Status X

Register 1.2317 contains the Link partner vendor specific data.

SuggestedRemedy
- Under column "Name", change "Reserved" to "Link partner vendor specific data"

**Proposed Response**

**Response Status** O

---

**Comment Type** T  Comment Status X

Need to define the bit mapping of VendorSpecificData.

SuggestedRemedy
- Change line 47 from: "Oct8<7:0> = Vendor Specific Data, and Oct9<7:0> = Vendor Specific Data."
- To: "Oct8<7:0> = Vendor Specific Data[7:0], and Oct9<7:0> = Vendor Specific Data[15:8]."

**Proposed Response**

**Response Status** O

---

**Comment Type** T  Comment Status X

Need to define the bit mapping of InterleaverDepth and PrecodeSel.

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

**Proposed Response**

**Response Status** O

---

**Comment Type** E  Comment Status X

It is sufficient to say "PHY Link Synchronization". Delete "algorithm".

SuggestedRemedy
- Change from: "... the PHY Link Synchronization algorithm to ...
- To: "... the PHY Link Synchronization to ...

**Proposed Response**

**Response Status** O

---

**Comment Type** T  Comment Status X

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

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

**Proposed Response**

**Response Status** O

---

**Comment Type** T  Comment Status X

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

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

**Proposed Response**

**Response Status** O
P802.3ch D2.1

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

Comment ID 149  SC 149.2.1.2  P 81  L 40  # 77
Tu, Mike  Broadcom

Comment Type  T  Comment Status  X

PMA_Link.indication also goes to the PHY Link Synchronization.

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

Proposed Response  Response Status  O

Comment ID 149  SC 149.2.1.2.3  P 82  L 8  # 78
Tu, Mike  Broadcom

Comment Type  T  Comment Status  X

Add a reference to 149.4.2.6.4 PHY Link Synchronization State Diagram.

Suggested Remedy
- Change from: "The effect of receipt of this primitive is specified in 98.4.1."
- To: "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."

Proposed Response  Response Status  O

Comment ID 149  SC 149.3.2.2  P 91  L 13  # 79
Tu, Mike  Broadcom

Comment Type  E  Comment Status  X

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, interfere the RS-FE symbols, ...
- To: "... OAM field, then interleave and add 340 bits of parity for the RS-FEC, ...

Proposed Response  Response Status  O

Comment ID 149  SC 149.3.2.2.5  P 96  L 3  # 82
Tu, Mike  Broadcom

Comment Type  E  Comment Status  X

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

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

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

Suggested Remedy
Change from: "tx_RSmessage<3259:0> prior to additive scrambling is formed as follows."
To: "tx_RSmessage<3259:0> prior to the RS-FEC (360,326) encoder is formed as follows."

Also add indents at line 12 and line 14.

Proposed Response  Response Status  O

Comment Type  E  Comment Status  X
Apply subscript formatting on the index "n" in Dn[0] and Dn[1].

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

Proposed Response  Response Status  O

Comment Type  E  Comment Status  X
Redundant statement?

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

Proposed Response  Response Status  O
32.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Auton

**Comment #87**

**Comment Type:** T  
**Comment Status:** X  
**Proposed Response**  

The description should consider the interleaved cases.

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

**Comment ID 90**

**Comment Type:** T  
**Comment Status:** X  
**Proposed Response**  

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

**Suggested Remedy**  
Change line 31 from: "… takes the 3260-bit vector tx_group50x65B, and …"
To: "… takes the 3260-bit vector tx_group50x65B and the 10-bit OAM_field, and …"

**Comment ID 91**

**Comment Type:** T  
**Comment Status:** X  
**Proposed Response**  

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

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

**Comment ID 92**

**Comment Type:** TR  
**Comment Status:** X  
**Proposed Response**  

The PMA Transmit electrical specifications are given in 149.5.2.
It is not clear what is meant by "each InfoField" since the PFC 24 and CRC16 values will be changing after each PAM2 PHY training frame.

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

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

Suggested Remedy
Change from: "During startup, prior to entering the COUNTDOWN state, the SLAVE shall align …" To: "During startup, prior to entering the TRAINING state, the SLAVE shall align …"

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

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

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

Suggested Remedy
Change from: "During startup, prior to entering the COUNTDOWN state, the SLAVE shall align …" To: "During startup, prior to entering the TRAINING state, the SLAVE shall align …"

In Table 45-155c, "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.
P802.3ch D2.1 32.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Auton

Cl 45 SC 45.2.1.195.1 P 40 L 41 # 99
Graba, Jim Broadcom
Comment Type T Comment Status X
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 O

Cl 149 SC 149.3.2.2.3 P 93 L 17 # 103
Graba, Jim Broadcom
Comment Type E Comment Status X
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 O

Cl 149 SC 149.1.3.3 P 78 L 27 # 100
Graba, Jim Broadcom
Comment Type E Comment Status X
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 O

Cl 149 SC 149.1.3.3 P 78 L 33 # 101
Graba, Jim Broadcom
Comment Type T Comment Status X
PHY Health status is only available when the optional OAM is enabled.
SuggestedRemedy
Change from: "When the PHY Health status received …" To: "When the optional MultiGBASE-T1 OAM is enabled and the PHY Health status received …"
Proposed Response Response Status O
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."

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."

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

**Suggested Remedy**
Delete "PMA" from this sentence.
Comment 149 SC 149.3.6.3 P 111 L 9 # 109
Graba, Jim Broadcom

Comment Type: T Comment Status: X
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: O

---

Comment 149 SC 149.3.6.3 P 111 L 11 # 110
Graba, Jim Broadcom

Comment Type: E Comment Status: X
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: O

---

Comment 149 SC 149.3.7.3 P 117 L 1 # 112
Graba, Jim Broadcom

Comment Type: E Comment Status: X
"65B-RS_FEC" should be "65B RS-FEC".

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

Proposed Response
Response Status: O

---

Comment 149 SC 149.3.8.1 P 117 L 40 # 113
Graba, Jim Broadcom

Comment Type: T Comment Status: X
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: O

---

Comment 149 SC 149.3.8.1 P 117 L 45 # 114
Graba, Jim Broadcom

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

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

Proposed Response
Response Status: O
P802.3ch D2.1

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

Cl 149 SC 149.4.2.6.4 P 151 L 25 # 115
Edem, Brian
Aquantia

Comment Type E Comment Status X
Figure 149-32, transition from SIGDET_WAIT to SILENT_WAIT the condition is misspelled

Suggested Remedy
Change send_ssigdet to send_s_sigid

Proposed Response Response Status O

Cl 149 SC 149.3.2.2.3 P 94 L 7 # 116
Edem, Brian
Aquantia

Comment Type E Comment Status X
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 Response Status O

Cl 00 SC 0 P 10 L 47 # 117
Zimmerman, George
CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisco

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

Suggested Remedy
Insert missing amendments in correct order in front matter

Proposed Response Response Status O

Cl 44 SC 44.1.3 P 28 L 50 # 118
Zimmerman, George
CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisco

Comment Type T Comment Status X
* AUTO-NEGOTIATION IS OPTIONAL should read 'for 10GBASE-T1' otherwise the asterisk looks like a general comment on auto-negotiation rather than specific to the 10GBASE-T1 stack

Suggested Remedy
add "FOR 10GBASE-T1" after "AUTO-NEGOTIATION IS OPTIONAL"

Proposed Response Response Status O

Cl 45 SC 45.2.1 P 32 L 30 # 119
Zimmerman, George
CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisco

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

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

Proposed Response Response Status O

Cl 45 SC 45.2.1 P 32 L 29 # 120
Zimmerman, George
CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisco

Comment Type E Comment Status X
"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 O
### PHYSICAL LAYER SPECIFICATIONS AND MANAGEMENT PARAMETERS FOR 2.5 GB/S, 5 GB/S, AND 10 GB/S AUTO

<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>Comment Type</th>
<th>Comment ID</th>
<th>Comment Status</th>
<th>Response Status</th>
<th>Zimmerman, George</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>45.2.1.7.5</td>
<td>E</td>
<td>#121</td>
<td></td>
<td>O</td>
<td>CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisco</td>
</tr>
</tbody>
</table>

**Comment:** PHY names should not break across lines.

**Suggested Remedy:**
Widen first column of Tables 45-9 and 45-10 and use non-breaking hyphens in BASE-T1 instances. (do both - this way no matter what happens in the future, PHY names won't break across lines.)

**Proposed Response:**

<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>Comment Type</th>
<th>Comment ID</th>
<th>Comment Status</th>
<th>Response Status</th>
<th>Zimmerman, George</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>45.2.1.193.5</td>
<td>ER</td>
<td>#122</td>
<td></td>
<td>O</td>
<td>CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisco</td>
</tr>
</tbody>
</table>

**Comment:** 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".

<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>Comment Type</th>
<th>Comment ID</th>
<th>Comment Status</th>
<th>Response Status</th>
<th>Zimmerman, George</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>45.2.1.193.5</td>
<td>TR</td>
<td>#123</td>
<td></td>
<td>O</td>
<td>CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisco</td>
</tr>
</tbody>
</table>

**Comment:** (Comment PRECD1) The language of "Actual precoder requested" or "selected" is all messed up and confusing. Which precoder parameters relate to the local transmitter and which to the request of the link partner's transmitter is not consistent. The "Link partner" ones are all clear, leaving me to think that it is just the local PHY's REQUEST, which is meant here.

**Suggested Remedy:**
Make the following changes:
Page 37 line 21 (Table 45-155b) change "Actual precoder requested" to "Precoder Selection".
Page 38 line 8 (45.2.1.193.5 header) change "Actual precoder selected" to "Precoder Selection", 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 PrecoderSel 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 Precoder Selection, and when set to a zero the PHY controls the value of PrecoderSel. PrecoderSel is the desired precoder setting communicated to the link partner via Infofields specified in 149.4.2.4.4."

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

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

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

45.2.1.196.2 Local transmitter precoder override (1.2313.11)
When bit 1.2313.11 is set to one, the local transmitter's precoder shall be controlled by the
value of bits 1.2313.10:9, and the precoder requested by the link partner in 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):

Proposed Response | Response Status | O
Comment Type | ER  | Comment Status | X
---|---|---|---
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"...

Comment Type | TR  | Comment Status | X
---|---|---|---
"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 | Response Status | O
---|---|---

Comment Type | TR  | Comment Status | X
---|---|---|---
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 | 149.3.9.4.4 | Conforms to Figure 149-24 and 149-25 | OAM: M | Yes \\
| No |

Proposed Response | Response Status | O
---|---|---

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

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

Proposed Response | Response Status | O
---|---|---

Comment Type | GR  | Comment Status | X
---|---|---|---

Comment ID | 130  
Page 24 of 32  
8/23/2019 10:09:25 AM

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: Comment ID
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, Cisco

Comment Type: E  
Comment Status: X

"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"

Proposed Response  
Response Status: O

Comment Type: E  
Comment Status: X

Typo: RS-FE

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

Proposed Response  
Response Status: O

Comment Type: E  
Comment Status: X

Missing comma on parenthetical phrase: "Each pair of bits, (A, B), where A is the bit arriving first is converted to"

Suggested Remedy
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: O

Comment Type: TR  
Comment Status: X

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.

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

Proposed Response  
Response Status: O
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."
P802.3ch D2.1

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

Cl 149 SC 149.7.1.1 P 164 L 30 # 142
Zimmerman, George CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisco

Comment Type E Comment Status X

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 149-18) reads:

f is the frequency in MHz; 1 <= f <= Fmax.

The insertion loss is illustrated in Figure 149-42.

Proposed Response Response Status O

Cl 149 SC 149.7.2.1 P 169 L 9 # 143
Zimmerman, George CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisco

Comment Type TR Comment Status X

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 Response Status O

Cl 149 SC 149.9.2.1 P 178 L 24 # 144
Zimmerman, George CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisco

Comment Type E Comment Status X

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 Response Status O

Cl 149 SC 149.9.2.2 P 178 L 43 # 145
Zimmerman, George CME Consulting/ADI, APL Gp, Aquantia, BMW, Cisco

Comment Type T Comment Status X

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 Response Status O

Cl 45 SC 45.2.1.196.2 P 41 L 51 # 146
McClellan, Brett Marvell

Comment Type E Comment Status X

Test mode 2 is described in 149.5.2.3.1

Suggested Remedy

change "149.5.2.3" to "149.5.2.3.1"

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

**Comment ID 147**

<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Type</th>
<th>Status</th>
<th>Target</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Proposed Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>147</td>
<td>E</td>
<td>X</td>
<td>45.2.1.199</td>
<td>E</td>
<td>X</td>
<td>change 'Reserved' to 'Link partner vendor specific data'</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment ID 148**

<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Type</th>
<th>Status</th>
<th>Target</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Proposed Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>148</td>
<td>E</td>
<td>X</td>
<td>149.3.2.2</td>
<td>E</td>
<td>X</td>
<td>change 'RS-FE' to 'RS-FEC' in multiple locations</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment ID 149**

<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Type</th>
<th>Status</th>
<th>Target</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Proposed Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>149</td>
<td>E</td>
<td>X</td>
<td>149.3.2.2</td>
<td>E</td>
<td>X</td>
<td>change 's_n' to 'S_n' to match usage in 149.3.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment ID 150**

<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Type</th>
<th>Status</th>
<th>Target</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Proposed Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>E</td>
<td>X</td>
<td>149.3.2.2.3</td>
<td>E</td>
<td>X</td>
<td>reverse the arrow directions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment ID 151**

<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Type</th>
<th>Status</th>
<th>Target</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Proposed Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>151</td>
<td>E</td>
<td>X</td>
<td>149.3.2.2.3</td>
<td>E</td>
<td>X</td>
<td>change 'scrambler' to 'descrambler'</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment ID 152**

<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Type</th>
<th>Status</th>
<th>Target</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Proposed Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>152</td>
<td>E</td>
<td>X</td>
<td>149.3.2.2.3</td>
<td>E</td>
<td>X</td>
<td>change 'an' to 'a'</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment ID 153**

<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Type</th>
<th>Status</th>
<th>Target</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Proposed Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>153</td>
<td>E</td>
<td>X</td>
<td>149.3.2.2.17</td>
<td>E</td>
<td>X</td>
<td>change 'an' to 'a'</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
P802.3ch D2.1  32.1 Physical Layer Specifications and Management Parameters for 2.5 Gb/s, 5 Gb/s, and 10 Gb/s Auton

---

**Comment ID 149 SC 149.3.6 P 108 L 31 # 154**

McClellan, Brett Marvell

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

"offset by the link partner's."

awkward language

**SuggestedRemedy**

change to "offset between the link partners."

**Proposed Response**  **Response Status O**

---

**Comment ID 149 SC 149.3.2.2 P 92 L 2 # 157**

McClellan, Brett Marvell

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

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

**SuggestedRemedy**

Change 'MAC' to 'RS'

**Proposed Response**  **Response Status O**

---

**Comment ID 149 SC 149.3.2.2.3 P 93 L 22 # 158**

McClellan, Brett Marvell

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

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 O**

---

**Comment ID 159 SC 149.4.2.4 P 91 L 41 # 156**

McClellan, Brett Marvell

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

"The 3600 bits in this frame are then encoded into 1800 PAM4 symbols and transferred sequentially to the PMA."

This statement is incorrect.

Following the RS-FEC interleaving, there is no longer a 3600 bit frame for L=2 or 4.

Further, the bits are scrambled prior to PAM4 mapping.

**SuggestedRemedy**

Delete this sentence.

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

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

Proposed Response Response Status O

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 Response Status O
There are several problems with this paragraph. Twice it references 149.3.4 however the Infofield and the training sequence are not specified in 149.3.4. It also fails to refer to the appropriate PAM2 mapping.

Suggested Remedy

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

Proposed Response  Response Status  O
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'