Cl **45** *SC* **45.2.1.158a.1** *P* **31** *L* **9** # 1

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **D** *Text improvement*

It should be indicated that the values "0000", "0001" (line 9), "0010" (line 10), "0011" line 11), and "0100" (line 12) are binary.

SuggestedRemedy

add "the value of binary" before the numbers.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.3.87a** *P* **33** *L* **14** # 2

Hayashi, Takehiro HAT Lab.

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

"change" occurs in plus and minus directions.

SuggestedRemedy

Use "increment"

Proposed Response *Response Status* **W**

PROPOSED REJECT. The TXO_MSGT is a single bit that effectively changes with each new transmitted message

Cl **45** *SC* **45.2.3.87a.4** *P* **34** *L* **3** # 3

Hayashi, Takehiro HAT Lab.

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

"change" occurs in plus and minus directions. Use of "increment" can simplify the description.

SuggestedRemedy

Change to "Bit 3.2330.12 is incremented by one bit by the BASE-U based PHY …" and delete "acting as one bit sequence number"

Proposed Response *Response Status* **W**

PROPOSED REJECT. The TXO_MSGT is a single bit that effectively changes with each new transmitted message

Cl **45** *SC* **45.2.3.87b.5** *P* **34** *L* **16** # 4

Hayashi, Takehiro HAT Lab.

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

"content" should be plural.

SuggestedRemedy

"contents"

Proposed Response *Response Status* **W**

PROPOSED REJECT. Content is singlurar refering to a group of bits.

Cl **45** *SC* **45.2.3.87b.5** *P* **34** *L* **16** # 5

Hayashi, Takehiro HAT Lab.

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

"to" is inconsistency of description.

SuggestedRemedy

"through"

Proposed Response *Response Status* **W**

PROPOSED REJECT. The meaning is "Up to the assignee of the OUI or CID"

Cl **45** *SC* **45.2.3.87b.2** *P* **35** *L* **10** # 6

Hayashi, Takehiro HAT Lab.

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

change occurs in plus and minus directions. Use of "increment" can simplify the description.

SuggestedRemedy

Change to "Bit 3.2339.12 is incremented by one bit …" and delete "acting as one bit sequence number"

Proposed Response *Response Status* **W**

PROPOSED REJECT. The RXO_MSGT is a single bit that effectively changes with each new received message

Cl **45** *SC* **45.2.3.87c.2** *P* **36** *L* **4** # 7

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **D** *Text improvement*

The description "(no loopback operation)" is inconsistent.

SuggestedRemedy

"(no loopback mode)"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Use "no loopback" as described in Table 45-313c.

Cl **45** *SC* **45.2.3.87c.2** *P* **36** *L* **5** # 8

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **D** *Text improvement*

The meaning "no test mode is selected in 3.2348.15:13" is not clear.

SuggestedRemedy

"a value of binary 000 in 3.2348.15:13" may be better.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.3.87c.3** *P* **36** *L* **13** # 9

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **D** *Text improvement*

No instruction what operation causes "PMA reset"

SuggestedRemedy

Add "see 166.3.4.1 for details".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Add "(see 166.3.4.1)".

Cl **45** *SC* **45.2.3.87c.4** *P* **36** *L* **21** # 10

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **X** *Text improvement*

No instruction what operation causes "PMA reset"

SuggestedRemedy

Add "see 166.3.4.1 for details".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Add "(see 166.3.4.1)".

Cl **45** *SC* **45.5.3.7** *P* **42** *L* **34** # 11

Hayashi, Takehiro HAT Lab.

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

"to" is inconsistency of description.

SuggestedRemedy

"through"

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Cl **45** *SC* **45.5.3.7** *P* **42** *L* **47** # 12

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **X** *Text improvement*

The description "(no loopback operation)" is inconsistent.

SuggestedRemedy

"(no loopback mode)"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Use "no loopback" as described in Table 45-313c.

Cl **166** *SC* **166.1.4** *P* **64** *L* **31** # 13

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **D** *Unidirectional fiber*

1) The term "unidirectional transmission" is misleading.
2) If the subject of the sentence is "Each fiber", "BASE-AU port" must be at the both end of the "Each fiber".
3) The relation between the description and the following desicription "transmitting on one fiber and receiving on the second fiber" is not rational.

SuggestedRemedy

Change to
"While the transmission in the optical fiber is single directional, the transmission in one optical fiber is counter directional against the transmition in the other optical fiber. BASE-AU ports are on the both ends of the link segment."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change "Each fiber is used for unidirectional transmission with the BASE-AU port on one end of the link segment transmitting on one fiber and receiving on the second fiber." by "Each fiber is used for unidirectional transmission with the BASE-AU port on one end of the link segment transmitting on one fiber and receiving on the other fiber."

Cl **166** *SC* **166.1.4** *P* **64** *L* **33** # 14

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **D** *Unidirectional fiber*

"cross-over" is not the cause but the result of the connection of local TX to remote RX.

SuggestedRemedy

Change to
"Establishing the communication channel, the local PMD transmitter and receiver shall be connected to the remote PMD receiver and transmitter respectively. Therefore, the crossover cabling is required."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Change "A cross-over in the cabling connects the PMD transmitter to the link partner's PMD receiver, and the link partner's PMD transmitter to the local PMD receiver." by "The local PMD transmitter and PMD receiver are connected to the link partner's PMD receiver and PMD transmitter, respectively, by means of a cross-over in the optical cable."

Cl **166** *SC* **166.1.4** *P* **64** *L* **38** # 15

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **D** *Text improvement*

"Type" typo

SuggestedRemedy

"type"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.1** *P* **68** *L* **6** # 16

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **D** *Receiver spec*

No figure to show the PCS receiving function.

SuggestedRemedy

Add a figure for PCS receiving function.

Proposed Response *Response Status* **W**

PROPOSED REJECT. The PCS receive ordering is specified in 166.2.7.3. Particular block diagram in the PCS receiver is up to the implementer. Figures are included in the text with a specific objective, either to illustrate and make easier the understanding of specifications given in text or to provide the specifications themselves as it is the case of state diagrams, which are normative. Including figures should respond to a necessity to get a technically complete specification.

Cl **166** *SC* **166.2.4** *P* **77** *L* **24** # 17

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **D** *Text improvement*

The titles of Figure 166-12 and 166-13 ahould be harmonized.

SuggestedRemedy

Use either of "65-bit block" or "64B/65B block" for both figures

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Replace "64B/65B block" by "65-bit block" in Figure 166-12 caption

Cl **166** *SC* **166.2.6.1.2** *P* **84** *L* **3** # 18

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **D** *Document layout*

incorrect indent

SuggestedRemedy

align the leftmost letter to the previous line.

Proposed Response *Response Status* **W**

PROPOSED REJECT. The indentation follows the IEEE 802.3 rules (see, i.e., IEEE Draft P802.3/D2.2, page 4623 line 20, 113.3.6.2.4)

Cl **166** *SC* **166.2.6.1.2** *P* **84** *L* **13** # 19

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **X** *Document layout*

same as above

SuggestedRemedy

same as above

Proposed Response *Response Status* **W**

PROPOSED REJECT. The indentation follows the IEEE 802.3 rules (see, i.e., IEEE Draft P802.3/D2.2, page 4623 line 20, 113.3.6.2.4)

Cl **166** *SC* **166.2.6.1.2** *P* **84** *L* **15** # 20

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **X** *Document layout*

same as above

SuggestedRemedy

same as above

Proposed Response *Response Status* **W**

PROPOSED REJECT. The indentation follows the IEEE 802.3 rules (see, i.e., IEEE Draft P802.3/D2.2, page 4623 line 20, 113.3.6.2.4)

Cl **166** *SC* **166.2.6.2** *P* **85** *L* **1** # 21

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **D** *Document layout*

The location of Figure 166-16 is in clause 166.2.7, and it is confusing.

SuggestedRemedy

Move the figure 166-16 in clause 166.2.6.2. (Clause 166.2.7 should start after Figure 166-16.)

Proposed Response *Response Status* **W**

PROPOSED REJECT. This draft follows "https://mentor.ieee.org/myproject/Public/mytools/draft/styleman.pdf". In page 33 can be read "Figures should be organized to fit on a single page with the term, “Figure” and the figure number, followed by an em dash and the figure title, centered below the figure, as follows: “Figure 1—Title”.".
The FrameMaker V5.0 template automatically arranges the figures in the document layout.

Cl **166** *SC* **166.2.7** *P* **92** *L* **3** # 22

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **X** *Document layout*

The location of Figure 166-20 is in clause 166.3.1, and it is confusing.

SuggestedRemedy

Move the figure 166-20 in clause 166.2.7

Proposed Response *Response Status* **W**

PROPOSED REJECT. This draft follows "https://mentor.ieee.org/myproject/Public/mytools/draft/styleman.pdf". In page 33 can be read "Figures should be organized to fit on a single page with the term, “Figure” and the figure number, followed by an em dash and the figure title, centered below the figure, as follows: “Figure 1—Title”.".
The FrameMaker V5.0 template automatically arranges the figures in the document layout.

Cl **166** *SC* **166.2.7** *P* **93** *L* **6** # 23

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **X** *Document layout*

The location of Figure 166-21 is in clause 166.3.1, and it is confusing.

SuggestedRemedy

Move the figure 166-21 in clause 166.2.7

Proposed Response *Response Status* **W**

PROPOSED REJECT. This draft follows "https://mentor.ieee.org/myproject/Public/mytools/draft/styleman.pdf". In page 33 can be read "Figures should be organized to fit on a single page with the term, “Figure” and the figure number, followed by an em dash and the figure title, centered below the figure, as follows: “Figure 1—Title”.".
The FrameMaker V5.0 template automatically arranges the figures in the document layout.

Cl **166** *SC* **166.2.7** *P* **88** *L* **8** # 24

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **D** *Document layout*

The location of Figure 166-17 is wrong. (The order of Figure 177-17 and -18 is converse)

SuggestedRemedy

Move the figure 166-17 brfore the figure 166-18.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. PCS receive bit ordering should be first, PCS mapping from a 65-bit block to the XGMII or 25GMII second, and PCS mapping from a 65-bit block to the 50GMII third.

Cl **166** *SC* **166.2.7** *P* **88** *L* **8** # 25

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **X** *Document layout*

The location of Figure 166-17 is in clause 166.2.8.1.1, and it is confusing

SuggestedRemedy

Move the figure 166-17 in clause 166.2.7

Proposed Response *Response Status* **W**

PROPOSED REJECT. This draft follows "https://mentor.ieee.org/myproject/Public/mytools/draft/styleman.pdf". In page 33 can be read "Figures should be organized to fit on a single page with the term, “Figure” and the figure number, followed by an em dash and the figure title, centered below the figure, as follows: “Figure 1—Title”.".
The FrameMaker V5.0 template automatically arranges the figures in the document layout.

Cl **166** *SC* **166.2.7** *P* **87** *L* **8** # 26

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **D** *Document layout*

The location of Figure 166-18 is in clause 166.2.7.6, and it is confusing

SuggestedRemedy

Move the figure 166-18 in clause 166.2.7

Proposed Response *Response Status* **W**

PROPOSED REJECT. Figure 166-18 shows the functionality described in 166.2.7.6

Cl **166** *SC* **166.2.7** *P* **89** *L* **3** # 27

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **X** *Document layout*

The location of Figure 166-19 is in clause 166.2.8.1.1, and it is confusing

SuggestedRemedy

Move the figure 166-19 in clause 166.2.7

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. PCS receive bit ordering should be first, PCS mapping from a 65-bit block to the XGMII or 25GMII second, and PCS mapping from a 65-bit block to the 50GMII third.

Cl **166** *SC* **166.2.8.1.2** *P* **90** *L* **15** # 28

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **X** *Document layout*

incorrect indent

SuggestedRemedy

align the leftmost letter to the previous line.

Proposed Response *Response Status* **W**

PROPOSED REJECT. The indentation follows the IEEE 802.3 rules (see, i.e., IEEE Draft P802.3/D2.2, page 4623 line 20, 113.3.6.2.4)

Cl **166** *SC* **166.2.8.1.2** *P* **90** *L* **19** # 29

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **X** *Document layout*

same as above

SuggestedRemedy

same as above

Proposed Response *Response Status* **W**

PROPOSED REJECT. The indentation follows the IEEE 802.3 rules (see, i.e., IEEE Draft P802.3/D2.2, page 4623 line 20, 113.3.6.2.4)

Cl **166** *SC* **166.2.8.1.2** *P* **90** *L* **22** # 30

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **X** *Document layout*

same as above

SuggestedRemedy

same as above

Proposed Response *Response Status* **W**

PROPOSED REJECT. The indentation follows the IEEE 802.3 rules (see, i.e., IEEE Draft P802.3/D2.2, page 4623 line 20, 113.3.6.2.4)

Cl **166** *SC* **166.2.8.1.2** *P* **90** *L* **25** # 31

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **X** *Document layout*

same as above

SuggestedRemedy

same as above

Proposed Response *Response Status* **W**

PROPOSED REJECT. The indentation follows the IEEE 802.3 rules (see, i.e., IEEE Draft P802.3/D2.2, page 4623 line 20, 113.3.6.2.4)

Cl **166** *SC* **166.2.8.1.2** *P* **90** *L* **36** # 32

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **X** *Document layout*

same as above

SuggestedRemedy

same as above

Proposed Response *Response Status* **W**

PROPOSED REJECT. The indentation follows the IEEE 802.3 rules (see, i.e., IEEE Draft P802.3/D2.2, page 4623 line 20, 113.3.6.2.4)

Cl **166** *SC* **166.2.8.1.2** *P* **90** *L* **40** # 33

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **X** *Document layout*

same as above

SuggestedRemedy

same as above

Proposed Response *Response Status* **W**

PROPOSED REJECT. The indentation follows the IEEE 802.3 rules (see, i.e., IEEE Draft P802.3/D2.2, page 4623 line 20, 113.3.6.2.4)

Cl **166** *SC* **166.2.8.1.2** *P* **90** *L* **43** # 34

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **X** *Document layout*

same as above

SuggestedRemedy

same as above

Proposed Response *Response Status* **W**

PROPOSED REJECT. The indentation follows the IEEE 802.3 rules (see, i.e., IEEE Draft P802.3/D2.2, page 4623 line 20, 113.3.6.2.4)

Cl **166** *SC* **166.3.4.5** *P* **101** *L* **3** # 35

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **X** *Document layout*

The location of Figure 166-25 is in clause 166.3.5.1, and it is confusing

SuggestedRemedy

Move the figure 166-25 in clause 166.3.4.5

Proposed Response *Response Status* **W**

PROPOSED REJECT. This draft follows "https://mentor.ieee.org/myproject/Public/mytools/draft/styleman.pdf". In page 33 can be read "Figures should be organized to fit on a single page with the term, “Figure” and the figure number, followed by an em dash and the figure title, centered below the figure, as follows: “Figure 1—Title”.".
The FrameMaker V5.0 template automatically arranges the figures in the document layout.

Cl **166** *SC* **166.3.4.5** *P* **102** *L* **3** # 36

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **X** *Document layout*

The location of Figure 166-26 is in clause 166.3.5.2, and it is confusing

SuggestedRemedy

Move the figure 166-26 in clause 166.3.4.5

Proposed Response *Response Status* **W**

PROPOSED REJECT. This draft follows "https://mentor.ieee.org/myproject/Public/mytools/draft/styleman.pdf". In page 33 can be read "Figures should be organized to fit on a single page with the term, “Figure” and the figure number, followed by an em dash and the figure title, centered below the figure, as follows: “Figure 1—Title”.".
The FrameMaker V5.0 template automatically arranges the figures in the document layout.

Cl **166** *SC* **166.3.4.5** *P* **102** *L* **27** # 37

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **X** *Document layout*

The location of Figure 166-27 is in clause 166.3.5.2, and it is confusing

SuggestedRemedy

Move the figure 166-27 in clause 166.3.4.5

Proposed Response *Response Status* **W**

PROPOSED REJECT. This draft follows "https://mentor.ieee.org/myproject/Public/mytools/draft/styleman.pdf". In page 33 can be read "Figures should be organized to fit on a single page with the term, “Figure” and the figure number, followed by an em dash and the figure title, centered below the figure, as follows: “Figure 1—Title”.".
The FrameMaker V5.0 template automatically arranges the figures in the document layout.

Cl **166** *SC* **166.3.5.4** *P* **104** *L* **3** # 38

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **X** *Document layout*

The location of Figure 166-28 is in clause 166.4.1, and it is confusing

SuggestedRemedy

Move the figure 166-28 in clause 166.3.5.4

Proposed Response *Response Status* **W**

PROPOSED REJECT. This draft follows "https://mentor.ieee.org/myproject/Public/mytools/draft/styleman.pdf". In page 33 can be read "Figures should be organized to fit on a single page with the term, “Figure” and the figure number, followed by an em dash and the figure title, centered below the figure, as follows: “Figure 1—Title”.".
The FrameMaker V5.0 template automatically arranges the figures in the document layout.

Cl **166** *SC* **166.4.2** *P* **105** *L* **7** # 39

Hayashi, Takehiro HAT Lab.

Comment Type **E** *Comment Status* **D** *Text improvement*

not "Figure"

SuggestedRemedy

delete "Figure"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **Keywor** *SC* **Keywords** *P* **2** *L* **5** # 40

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

Add Physical Medium Dependent, for consistency

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **105** *SC* **105.1.3** *P* **49** *L* **27** # 41

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

Table 105-1, Table 125-1 and 131-1 do not use consistent wording. Unify three tables with same wording.

SuggestedRemedy

Replace with: 25 Gb/s PHY using 64B/65B and Reed-Solomon encoding with NRZ modulation over optical fiber for use in automotive applications (see Clause 166).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **131** *SC* **131.1.3** *P* **59** *L* **32** # 42

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

Table 105-1, Table 125-1 and 131-1 do not use consistent wording. Unify three tables with same wording.

SuggestedRemedy

Replace with: 50 Gb/s PHY using 64B/65B and Reed-Solomon encoding with PAM4 modulation over optical fiber for use in automotive applications (see Clause 166).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **125** *SC* **125.2.3a** *P* **57** *L* **3** # 43

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

Amend for consistency with 105.

SuggestedRemedy

The 2.5GBASE-AU and 5GBASE-AU use the PMD and its corresponding media specified in Clause 166.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **131** *SC* **131.2.2** *P* **59** *L* **48** # 44

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

50GBASE-AU use the PCS specified in Clause 166. Should be “uses” or different wording.

SuggestedRemedy

50GBASE-AU PCS is specified in Clause 166.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **131** *SC* **131.2.3** *P* **59** *L* **53** # 45

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

50GBASE-AU use the PMA specified in Clause 166. Should be “uses” or different wording.

SuggestedRemedy

50GBASE-AU PMA is specified in Clause 166.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.1.6** *P* **29** *L* **43** # 46

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *PMA/PMD type selection*

Description of PMA/PMD type selection should also indicate the PMA/PMD type abilities of the PMA/PMD are also advertised in the BASE-AU PMA/PMD extended ability register.

SuggestedRemedy

Change the text of 45.2.1.6.3 as: “The PMA/PMD type of the PMA/PMD shall be selected using bits 6 to 0. The PMA/PMD type abilities of the PMA/PMD are advertised in bits 9 and 7 through 0 of the PMA/PMD status 2 register; the PMA/PMD extended ability register; the 40G/100G PMA/PMD extended ability register; the 200G PMA/PMD extended ability register; and the 400G PMA/PMD extended ability register; and the BASE-AU PMA/PMD extended ability register.”

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.3.87c.2** *P* **36** *L* **5** # 47

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

“Loopback modes are specified in 166.10.” is redundant with information provided at the beginning f the same paragraph.

SuggestedRemedy

Remove it

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.3.87d.9** *P* **38** *L* **28** # 48

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

Only refresh is transmitted.

SuggestedRemedy

Replace “transmitting refresh and quiet” with “transmitting refresh”.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.3.87d.10** *P* **38** *L* **34** # 49

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

Only refresh is received.

SuggestedRemedy

Replace "refresh and quiet" with “refresh”.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.3.87d.14** *P* **39** *L* **12** # 50

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

When read as one, bit 3.24.0 indicates …

SuggestedRemedy

Should be: When read as one, bit 3.2349.0 indicates

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166,1** *SC* **166,1** *P* **62** *L* **41** # 51

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

… may use the BASE-U operations, …

SuggestedRemedy

Should be: … may use the optional BASE-U PCS-based operations, …

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.1.1** *P* **62** *L* **46** # 52

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

… specifications subject to frequency scaling.

SuggestedRemedy

Should be: … specifications subject to frequency scaling and modulation scheme.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.1.4** *P* **64** *L* **33** # 53

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

… connects the PMD transmitter …

SuggestedRemedy

Should be: … connects the local PMD transmitter …

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.1.4** *P* **64** *L* **38** # 54

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *symetric BASE-AU PHY type*

“and the same BASE-AU Type in TX and RX” is not clear in the meaning. On top of that, it is clear that TX and RX of link partners have to implement the same BASE-AU PHY type, e.g. 25GBASE-AU, because in other case they cannot communicate. However, the specification of clause 166 is compatible with having different BASE-AU type from local TX and local RX of a PHY, e.g. it is possible to establish a bidirectional link where a fiber direction operates at 2.5Gb/s and other fiber direction operates at 50 Gb/s, provided that link segment is compatible with both in terms of attenuation, bandwidth, etc.Disclaimer: the commenter only pursues consistency through spec, but not necessarily indicates preference on asymmetric rates, out of the scope.

SuggestedRemedy

Replace paragraph of lines 37 and 38 with: “This clause specifies the operation between link partners implementing the same BASE-AU PHY type and rate in both link partners for each of the fibers used for unidirectional transmission.” Replace line 40 with: “A BASE-AU PHY TX shall be composed by PCS, PMA and PMD sublayers specified for the same data rate. A BASE-AU PHY RX shall be composed by PCS, PMA and PMD sublayers specified for the same data rate.” Add corresponding PICS item.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.1.4** *P* **64** *L* **44** # 55

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *symetric BASE-AU PHY type*

Figure 166-2 is not 100% accurate. PMA should be split into PMA RX and PMA TX in order to be 100% consistent with specification. PMA TX and PMA RX may operate at different rate, being compatible with the specification in C/ 166. The figure should not reflect a different vision of the spec.Disclaimer: the commenter only pursues consistency through spec, but not necessarily indicates preference on asymmetric rates, out of the scope.

SuggestedRemedy

Replace PMA box with two boxes: PMA TX and PMA RX, in the left and right sides of the topology.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.1.4** *P* **64** *L* **52** # 56

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

The fixed-length Transmit Block …

SuggestedRemedy

Should be: A fixed-length Transmit Block … First time introduced.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.1.4** *P* **65** *L* **33** # 57

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

… provides clock recovery …

SuggestedRemedy

Should be: "… provides clock and data recovery …" Data recovery may need equalization, etc. and it is the final end of the PMA RX.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.1.4** *P* **65** *L* **34** # 58

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

The baud rates are nominal.

SuggestedRemedy

"… provides full duplex communications at nominal 2656.25 MBd for 2.5GBASE-AU, nominal 5312.5 MBd for 5GBASE-AU, nominal 10625 MBd for 10GBASE-AU, and nominal 26562.5 MBd for …"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.1.4** *P* **65** *L* **36** # 59

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

50GBASE-AUover two ….

SuggestedRemedy

Should be: 50GBASE-AU over two …

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.1.4** *P* **66** *L* **28** # 60

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

Suggest to replace "Equalizer" with "Data recovery". Equalizer is not mandatory, it is up to the implementor. Though spec allows training of an equalizer, and equalizer may improve the RX sensitivity, there may be interoperable implementations that do not implement equalizer.

SuggestedRemedy

Replace "Equalizer" with "Data recovery"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.1** *P* **67** *L* **34** # 61

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

codified

SuggestedRemedy

Most extended use is: encoded

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.1** *P* **67** *L* **36** # 62

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

The Physical Header path

SuggestedRemedy

Change to: The Physical Header data path

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.1** *P* **67** *L* **38** # 63

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

checksum, that is concatenated at the end of the PHD

SuggestedRemedy

checksum, which is concatenated at the end of the PHD

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.1** *P* **67** *L* **47** # 64

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

See Figure 166–11 for details on PCS bit ordering. See Figure 166–11 for details on PCS Physical Header bit ordering.

SuggestedRemedy

Replace with: See Figure 166–11 for details on PCS transmit bit ordering. See Figure 166–10 for details on PCS Physical Header Data transmit bit ordering.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.1** *P* **68** *L* **4** # 65

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

PCS bit ordering

SuggestedRemedy

Replace with: PCS transmit bit ordering

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.1** *P* **68** *L* **6** # 66

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

Paragraph of lines 6 through 8 is not complete in summarizing PCS RX function.

SuggestedRemedy

Replace with: The PCS receive function comprises binary descrambling, RS-FEC decoding of the received Transmit Block, 65B/64B decoding of payload portion to extract the xMII receive data stream, and TRC decoding and CRC16 checking of the PHD. The decoded PHD is also provided to the PMA sublayer for coordinated control of local and remote PHYs.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166,2** *SC* **166,2** *P* **87** *L* **28** # 67

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Document layout*

Figure 166-18 is before Figure 166-17 in the text.

SuggestedRemedy

Correct the order of figure insertions. PCS receive bit ordering should be first, PCS mapping from a 65-bit block to the XGMII or 25GMII second, and PCS mapping from a 65-bit block to the 50GMII third.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.1** *P* **68** *L* **16** # 68

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

See 166.2.6 for information on how 65-bit blocks containing control 16 characters are mapped.64B/65B transmission process is ore than a mapping. I suggest replacing “mapped” with “generated”

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.2.1.1** *P* **69** *L* **19** # 69

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

in response to link margin estimation as defined in 166.3.5.1

SuggestedRemedy

Should be: in response to link margin estimation as defined in 166.3.5.2

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.2.1.1** *P* **69** *L* **18** # 70

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

and is provided in log2 units (see 166.3.5.1).

SuggestedRemedy

Should be: and is provided in log2 units (see 166.3.5.2).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.2.1.1** *P* **69** *L* **21** # 71

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

Upon PHD reception,

SuggestedRemedy

Should be: Upon reception of valid PHD,

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.2.1.1** *P* **70** *L* **19** # 72

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

Only one filed exists

SuggestedRemedy

Should be: The field PHD.TX.NEXT.MODE is used by the local PHY to provide the link partner transmission mode of the next Transmit Block, so that the remote PHY can align its reception.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Replace with "The field PHD.TX.NEXT.MODE is used by the local PHY to provide the transmission mode of the next Transmit Block to the remote PHY, so that the remote PHY can align its reception."

Cl **166** *SC* **166.2.2.1.1** *P* **70** *L* **25** # 73

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

Should be period instead of full stop. Next paragraph is about the same thing.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.2.1.4** *P* **71** *L* **50** # 74

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

Then, the second 20-bit chunk is processed, repeated three times, and concatenated to the three 20-bit chunks resulting of the processing of the first 20-bit chunk.What is the meaning of “processed”. In my opinion nothing and it may be confuse in understanding the

SuggestedRemedy

Should be: Then, the second 20-bit chunk is repeated three times and concatenated to the three times repeated 20-bit of the first chunk.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.2.2** *P* **72** *L* **5** # 75

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *PCS process*

“structured into 36 groups of 80 65-bit blocks”.The 64B/65B encoder processes the xMII input regardless the Transmit Block structure, without awareness of groups.

SuggestedRemedy

Replace with: “equivalent to 2880 65-bit blocks”.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.3.87h** *P* **40** *L* **36** # 76

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *RS-FEC counter*

RS-FEC block error counter does not need of BER test mode to operate. It can also work in normal operation mode. The RS-FEC decoder knows for each processed codeword when the correction capability has been overpassed. The error detection capability is double compared with correction capability (22 10-bit symbols vs 11 10-bit symbols), so RS-FEC decoder can indicate a CW is erroneous in its output with high confidence.

SuggestedRemedy

Change: "A 16-bit counter used when operating in BER test mode” to: “A 16-bit counter when operating in normal and BER test modes”

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.3.87h** *P* **40** *L* **42** # 77

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *RS-FEC counter*

RS-FEC codeword error counter operates in BER test mode and normal operation mode.

SuggestedRemedy

Change paragraph to read: “When the BASE-U based PHY receiver is operating in normal and BER test mode , bits 3.2353.15:0 are a 16-bit counter that counts the number of erroneous RS-FEC codewords at the input of the 64B/65B PCS decoder (see 166.2.7.2)”

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.7.2** *P* **86** *L* **27** # 78

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *RS-FEC counter*

RS-FEC codeword error counter operates in BER test mode and normal operation mode.

SuggestedRemedy

Add: “and the codeword shall be counted as a RS-FEC codeword error and reflected in the RS-FEC codeword error counter (see 45.2.3.87h)”

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.5.1** *P* **108** *L* **51** # 79

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Unidirectional BER test mode*

Transmitter is not a PHY. A PHY also includes a receiver.

SuggestedRemedy

Change paragraph to read: “BER test mode is for measurement of the bit error ratio (BER) of the link including the PCS, PMA, and PMD sublayers of two BASE-AU PHYs and a fiber optic cable connected to them. BER test is run between the transmitter of a PHY and the receiver of its link partner. BER test mode can be configured independently for each of the unidirectional transmissions.”

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.5.1** *P* **109** *L* **16** # 80

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

“and does not change value unless a PMA reset takes 16 place.”Operating mode does not change unless PMA reset, and value of PHD.TX.NEXT.MODE is a consequence.

SuggestedRemedy

Remove word “value”.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.5.1** *P* **109** *L* **3** # 81

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Unidirectional BER test mode*

To be clear the BER test mode is unidirectional.

SuggestedRemedy

Change to read “link partner receiver”.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.5.1** *P* **109** *L* **8** # 82

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Unidirectional BER test mode*

To be clear the BER test mode is unidirectional.

SuggestedRemedy

Change to read: “When the link partner receiver”

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.5.1** *P* **109** *L* **14** # 83

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Unidirectional BER test mode*

To be clear the BER test mode is unidirectional.

SuggestedRemedy

Change to read: "The transmitter shall announce to the link partner receiver”

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.5.1** *P* **109** *L* **17** # 84

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Unidirectional BER test mode*

To be clear the BER test mode is unidirectional.

SuggestedRemedy

Change to be: “The link partner receiver shall reconfigure its circuitry”

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.2.5** *P* **74** *L* **46** # 85

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *LFSR*

According to resolution of comment #82 to draft D1.0, it was agreed per https://www.ieee802.org/3/cz/public/may_2021/perezaranda_3cz_04_0521_lfsr.pdf to include an annex with example LFSR sequence. Only data belonging to the beginning and to the end of the Transmit Block would be provided in tabular form as example to allow implementation verification in an informative annex.Annex has not been implemented

SuggestedRemedy

Implement Annex according to https://www.ieee802.org/3/cz/public/may_2021/perezaranda_3cz_04_0521_lfsr.pdf

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.2.5** *P* **74** *L* **47** # 86

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *LFSR*

According to resolution of comment #82 to draft D1.0, it was agreed per https://www.ieee802.org/3/cz/public/may_2021/perezaranda_3cz_04_0521_lfsr.pdf to include an annex with example LFSR sequence. Because the shift register is initialized with different value depending on the parameter G (1 or 2), example sequence should be provided for both initialization values.

SuggestedRemedy

Rubén Pérez-Aranda to generate similar tables of those for resolution of comment 82 for D1.0, but considering init value for G=2. To include examples for G=1 and G=2 in the same missing annex.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. A presentation including 50GBASE-U LFSR (G=2) (perezaranda_3cz_02_220111_LFSR) has been received for discussion.

Cl **166** *SC* **166.1.4** *P* **65** *L* **13** # 87

Pérez - Aranda, Rubén KDPOF

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

The acronym LFSR is used, but not included in clause 1.5 abbreviations (neither 802.3-2018)

SuggestedRemedy

Two options: Add LFSR to C/1.5 as linear feedback shift register or expand acronym in all the occurrences in the text.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Add LFSR to C/1.5 as "linear feedback shift register"

Cl **166** *SC* **166.2.1** *P* **68** *L* **2** # 88

Pérez - Aranda, Rubén KDPOF

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

The acronym LFSR is used, but not included in clause 1.5 abbreviations (neither 802.3-2018)

SuggestedRemedy

Two options: Add LFSR to C/1.5 as linear feedback shift register or expand acronym in all the occurrences in the text.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Add LFSR to C/1.5 as "linear feedback shift register"

Cl **166** *SC* **166.2.2.5** *P* **74** *L* **46** # 89

Pérez - Aranda, Rubén KDPOF

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

It is not clear which shift register is.

SuggestedRemedy

Change to: The linear feedback shift register of the binary scrambler shall be initialized …

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.2.4** *P* **72** *L* **45** # 90

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

ten-bit —> 10-bit, for consistency.This happens in many places

SuggestedRemedy

Per comment, correct in all the occurrences. At least unify. My preference is 10-bit.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Replace all occurrences of "ten-bit" by "10-bit"

Cl **166** *SC* **166.2.2.5** *P* **74** *L* **48** # 91

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

Init value is given using hexadecimal digits, but not binary ones. Indicating "rightmost bit" might be confuse.

SuggestedRemedy

Change "the rightmost bit. " to "least significant bit"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.3** *P* **75** *L* **1** # 92

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Document layout*

"PCS Physical Header Data transmit bit ordering" belongs to PCS transmit function. It should be sub-clause 166.2.2.6.The same for "PCS transmit bit ordering" should be 166.2.2.7, "PCS transmit process" should be 166.2.2.8, "PCS 64B/65B transmission", should be 166.2.2.9.Based on same logics, "PCS receive function" should new 166.2.3, and "PCS 64B/65B reception" should be 166.2.3.7.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Change 166.2 hierarchy to:
166.2.1 PCS functions
166.2.2 PCS transmit function
166.2.2.1 Physical header data path
166.2.2.1.1 Physical header data (PHD) structure
166.2.2.1.2 Physical header encoding
166.2.2.1.3 Physical header CRC16
166.2.2.1.4 Physical header three repetition code (TRC)
166.2.2.2 Payload data path
166.2.2.3 PCS transmit ordering
166.2.2.4 RS-FEC encoder
166.2.2.5 Binary scrambler
166.2.2.6 PCS physical header data transmit bit order
166.2.2.7 PCS transmit bit order
166.2.2.8 PCS 64B/65B encoding
166.2.2.8.1 Notation conventions
166.2.2.8.2 65-bit block structure
166.2.2.8.3 Control codes
166.2.2.8.3.1 Idle (/I/)
166.2.2.8.3.2 LPI (/LI/)
166.2.2.8.3.3 Start (/S/)
166.2.2.8.3.4 Terminate (/T/)
166.2.2.8.3.5 Ordered set (/O/)
166.2.2.8.3.6 Error (/E/)
166.2.2.9 PCS 64B/65B transmit state diagram parameters
166.2.2.9.1 Constants
166.2.2.9.2 Variables
166.2.2.9.3 Functions
166.2.2.10 PCS 64B/65B transmit state diagram
166.2.3 PCS receive function
166.2.3.1 Binary descrambler
166.2.3.2 RS-FEC decoder
166.2.3.3 PCS receiver ordering
166.2.3.4 PHD decoding
166.2.3.5 Invalid 65-bit blocks

166.2.3.6 PCS receive bit order
166.2.3.7 PCS 64B/65B receive state diagram parameters
166.2.3.7.1 Constants
166.2.3.7.2 Variables
166.2.3.7.3 Functions
166.2.3.7.4 Counters
166.2.3.8 PCS 64B/65B receive state diagram

Cl **166** *SC* **166.2.5.1** *P* **78** *L* **24** # 93

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *PCS transmit state machine*

rx_block are from PCS receive functions. They should be defined in that corresponding section, not here.

SuggestedRemedy

Move to “PCS 64B/65B reception”

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Add a reference to 166.2.5.1 Notation conventions in PCS 64B/65B reception section to avoid spread of notation along the document.

Cl **166** *SC* **166.2.5.2** *P* **78** *L* **30** # 94

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Overspecification*

Just description, not specification.

SuggestedRemedy

Remove line

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Move definition of tx_xmii_enable in page 96 line 27 to PCS 64B/65B transmit state variables, amending the text for value false as:
FALSE: The 64B/65B encoder does not encode the xMII transmit data stream. Local Fault ordered set(s) are encoded in transmitted 65-bit blocks, which may be used by the link partner receiver as pre-known sequence to support clock and data recovery.

Move definition of sotxb_synch in page 96 line 16 and rx_xmii_enable in page 96 line 22 to PCS 64B/65B receive state variables

Delete pcs_reset from PCS 64B/65B receive state variables, because already defined before

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Cl **166** *SC* **166.2.5.2** *P* **78** *L* **32** # 95

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Overspecification*

The shall statement should be for the complete PCS 64B/65B transmit state diagram. Generation of LBLOCK_T is already in the state diagram, controlled by the variable tx_xmii_enable in the input to the first state.

SuggestedRemedy

Remove full paragraph

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.5.2** *P* **78** *L* **36** # 96

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Overspecification*

Symbol time Ts as well as symbols themselves are concepts of PMA sublayer. PCS is bit streams aware. Shall statement should be for the entire state diagram. Number of xMII transfers per Transmit Block is information redundant with previous section and the state diagram.

SuggestedRemedy

Remove full paragraph

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Remove this paragraph and add paragraph to page 72, line 5: "5760 XGMII/25GMII or 2880 50GMII data transfers are encoded into a Transmit Block in normal operation mode, when link is established."

Cl **166** *SC* **166.2.5.2** *P* **78** *L* **41** # 97

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Overspecification*

Rate adaption is a matter of implementation and not a matter of interoperability, provided the delay constraints are fulfilled. This paragraph does not provide any specification, just description of potential different implementation situations.Rate adaption specification is already in the corresponding shall statements of control characters /I/ and /LI/.

SuggestedRemedy

Remove full paragraph

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.5.2** *P* **78** *L* **46** # 98

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *PCS transmit state machine*

This is the real specification. It should include shall statement.

SuggestedRemedy

Replace paragraph as: “The PCS transmit process shall generate 65-bit blocks as specified in the PCS 64B/65B transmit state diagram (see166.2.6.2, and Figure166–16). …. “ Move the full paragraph to section “PCS 64B/65B transmission”

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Remove full paragraph as the same shall statement is already in 166.2.2.2, page 72.
Modify page 72 line 3 to be "The incoming data from the xMII shall be encapsulated and encoded into 65-bit blocks (64B/65B encoder in Figure 166–7) for transmission as specified by PCS 64B/65B transmit state diagram (see 166.2.6.2, and Figure166–16)."

Cl **166** *SC* **166.2.5.3** *P* **80** *L* **34** # 99

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *LPI*

All unused values of block type field are reserved. Not 100% accurate, because 0x00 is used in LPI operation to indicate refresh and wake.

SuggestedRemedy

Change to read: “All unused values of block type field are not valid in normal operation. 0x00 is reserved for LPI mode to indicate refresh and wake (see 166.4).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.5.4** *P* **81** *L* **1** # 100

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Control codes*

The control codes in table 166-4 are valid for XGMII and 25GMII. However, some of them (reserved0 to 5) are not valid for 50GMII/XLGMII, at least not defined before. Two separated tables should be used for XGMII/25GMII and 50GMII.

SuggestedRemedy

Use two separate tables per comment, as in clause 113, and modify text accordingly.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT. Use Table 113-1 and Table 113-2 as reference.

Cl **45** *SC* **45.2.3.87a.1** *P* **33** *L* **35** # 101

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

BASE-AU —> BASE-U (PCS). OAM is referred as BASE-U OAM.

SuggestedRemedy

Replace BASE-AU with BASE-U.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.3.87c.2** *P* **36** *L* **4** # 102

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

BASE-AU —> BASE-U (PCS).

SuggestedRemedy

Replace BASE-AU with BASE-U.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.3.87c.4** *P* **36** *L* **18,19** # 103

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

BASE-AU —> BASE-U (PCS).

SuggestedRemedy

Replace BASE-AU with BASE-U.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.3.87d.3** *P* **37** *L* **46** # 104

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

BASE-AU —> BASE-U (PCS).

SuggestedRemedy

Replace BASE-AU with BASE-U.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.3.87d.13** *P* **39** *L* **3,4,5** # 105

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

BASE-AU —> BASE-U (PCS).

SuggestedRemedy

Replace BASE-AU with BASE-U.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.3.87d.14** *P* **39** *L* **12,13,1** # 106

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

BASE-AU —> BASE-U (PCS).

SuggestedRemedy

Replace BASE-AU with BASE-U.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.5.9** *P* **82** *L* **42** # 107

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Overspecification*

This paragraph is redundant with the state diagrams specifications and does not additional specification. “Training mode” is a consequence of the Link Monitor state diagram, the 64B/65B transmit state diagram, and LFSR set to defined init value at the beginning of a Transmit Block. Training mode is not a specification.

SuggestedRemedy

Remove paragraph.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Modify to "Continuous LBLOCK_T are transmitted when link has not been established yet (see 166.2.6.2 and Figure 166-16). For BASE-U PCS connected to XGMII/25GMII, LBLOCK_T contains two Local Fault ordered sets. For BASE-U PCS connected to 50GMII, LBLOCK_T contains only one Local Fault ordered set. The Local Fault ordered set is defined in 46.3.4.”

Cl **166** *SC* **166.3.4.2** *P* **96** *L* **45** # 108

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Overspecification*

“Training mode” is a consequence of the Link Monitor state diagram, the 64B/65B transmit state diagram, and LFSR set to defined init value at the beginning of a Transmit Block. Training mode is not a specification.

SuggestedRemedy

Remove "(training mode)”.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.6.1.1** *P* **83** *L* **26** # 109

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *PCS transmit state machine*

The format for this vector is shown in Figure166–14.

SuggestedRemedy

Replace with: "The format for this vector is shown in Figure 166–14 for 2.5GBASE-AU, 5GBASE-AU, 10GBASE-AU, and 25GBASE-AU PHYs, and Figure 166-15 for 50GBASE-AU PHY.”

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.5.5** *P* **81** *L* **36** # 110

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Document layout*

166.2.5.5 should be 166.2.5.4.1, 166.2.5.6 should be 166.2.5.4.2, 166.2.5.7 should be 166.2.5.4.3, 166.2.5.8 should be 166.2.5.4.4, 166.2.5.9 should be 166.2.5.4.5, and 166.2.5.10 should be 166.2.5.4.6. These subclauses include additional specifications for specific control codes, e.g. /I/, /LI/, etc.

SuggestedRemedy

Per comment.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. See #92

Cl **166** *SC* **166.2.6.1.2** *P* **83** *L* **41** # 111

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

The ENCODE function shall encode the block as specified in 166.2.5.4.

SuggestedRemedy

Change reference as: “The ENCODE function shall encode the block as specified in 166.2.5.”

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.6.1.2** *P* **83** *L* **83** # 112

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *PCS transmit state machine*

T_BLOCK_TYPE will classify /LI/ as error (E), so LPI mode will not be entered even for a PHY supporting LPI. Asymmetries between XGMII/25GMII and 50GMII (i.e. LI).As it is specified in 166.4, the The BASE-U PCS transmit function in LPI operation mode shall monitor codified 65-bit blocks to detect the condition to resume to normal operation mode.In general, the TX state diagram, as it is specified, has the problem of preventing the LPI operation mode in the PHY, because LPI is not encoded in the generated 65-bit blocks. 64B/65B transmit state diagram has to be transparent encoding /LI/ (fast wake LPI principle).

SuggestedRemedy

Use Clause 49 as reference to revise PCS 64B/65B transmit state functions and state diagram encoding XGMII and 25GMII, so that LPI is encoded in a transparent way. PCS 64B/65B TX state diagram has to be identical to C/49, with the difference of generating 65-bit blocks instead of 66-bit-blocks. Use Clause 82 as reference to revise PCS 64B/65B transmit state functions and state diagram encoding 50GMII, so that LPI is encoded in a transparent way. PCS 64B/65B TX state diagram has to be identical to C/82, with the difference of generating 65-bit blocks instead of 66-bit-blocks. Pay attention that state diagrams of Figures 49-16 an 82-16 are identical. Only state functions have differences due to the differences between XGMII/25GMII and 50GMII.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Use IEEE 802.3/D2.2 Figure 49-16 or Figure 82-16 as base for modification.

Cl **166** *SC* **166.2.7** *P* **86** *L* **5** # 113

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

“When the xMII and PMA sublayer data rates are not synchronized, the receive process inserts idles, deletes 5 idles, or deletes sequence ordered sets to adapt between rates.”This is confuse. PMA recovers data and clock, which are provided to PCS. The xMII is source synchronous, so the clock is defined by the PCS. If different clock domains are used for each sublayer is a matter of implementation, nothing to do with interoperability.Rate matching is performed in the PCS transmit function. See 166.2.5.

SuggestedRemedy

Remove paragraph.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.7** *P* **86** *L* **11** # 114

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

Transmission Block

SuggestedRemedy

Change to “Transmit Block”

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.7.1** *P* **86** *L* **19** # 115

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

"using the same polynomial”. To be accurate, it is the same linear-feedback shift register, not just polynomial.

SuggestedRemedy

Change to: "using the same LFSR with same initialization value”

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.7.2** *P* **86** *L* **27** # 116

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

"R_BLOCK_TYPE of the affected 65-bit blocks equal to /E/"/E/ is not valid value for R_BLOCK_TYPE, but E.

SuggestedRemedy

Change to: "R_BLOCK_TYPE of the affected 65-bit blocks equal to E.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.7.3** *P* **86** *L* **33** # 117

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

Figure 166-17 does not specifies PHD sub-blocks concatenation to form a complete encoded PHD.

SuggestedRemedy

Change paragraph to read: "The PCS receiver ordering shall separate from each RS-FEC message the group of 80 65-bit blocks and 20-bit encoded PHD sub-block as specified in Figure 166–17. The 36 20-bit encoded PHD sub-blocks that are in the same Transmit Block shall be concatenated to compose an encoded PHD."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.7.5** *P* **86** *L* **46,47** # 118

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

References to Table 166-14 should be replaced to references to two tables, when control codes for XGMII/25GMII and 50GMII are separated.

SuggestedRemedy

Per comment. Check all the references to Table 166-14 in the text and change by two reference when control codes for XGMII/25GMII and 50GMII are separated.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.7.5** *P* **86** *L* **49** # 119

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

Not clear what is payload.

SuggestedRemedy

Change to: "The 65-bit block contains information from an invalid RS-FEC codeword"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.7.5** *P* **86** *L* **51** # 120

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Invalid block*

Wrong cross reference. Redundant specification.

SuggestedRemedy

In line 24, replace sentence as: "The descrambled bits shall be RS-FEC decoded into RS-FEC messages, with error correction and error detection, consistent with RS-FEC function specified in 166.2.2.4." Remove paragraphs 51 through 54.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Replace lines 44 to 54 by:
"A 65-bit block is invalid and its R_BLOCK_TYPE set to /E/ if any of the following conditions exist:
a) The block type fields contains reserved value (see 166.2.8.1.2).
b) Any control character contains a value not in Table 166-44 and Table 166-xxx (see 166.2.8.1.2).
c) Any O code contains a value not in Table 166-44 and Table 166-xxx (see 166.2.8.1.2).
d) The 65-bit block contains information from the payload of an invalid RS-FEC codeword (see 166.2.7.2)."
Table 166-xxx is a new table to be included if comment #100 is approved.

Cl **166** *SC* **166.2.6.1.1** *P* **83** *L* **18** # 121

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Document layout*

166.2.6.1.1 should be 166.2.6.2, 166.2.6.1.2 should be 166.2.6.3, therefore 166.2.6.2 will be 166.2.6.4.

SuggestedRemedy

Per comment.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. See #92

Cl **166** *SC* **166.2.8.1.1** *P* **87** *L* **48** # 122

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Document layout*

166.2.8.1.1 should be 166.2.8.2, 166.2.8.1.2 should be 166.2.8.3, 166.2.8.1.3 should be 166.2.8.4, therefore 166.2.8.2 will be 166.2.8.5.

SuggestedRemedy

Per comment.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. See #92

Cl **166** *SC* **166.2.7** *P* **84** *L* **37** # 123

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

“including compliance with the associated state variables as specified in 166.2.8.1.1.”Compliance should be with associated state functions and constants as well. However, compliance with variables, constants, counters and functions of a state diagram is implicit with being compliance with the state diagram itself.

SuggestedRemedy

Remove "including compliance with the associated state variables as specified in 166.2.8.1.1.”

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.8.1.1** *P* **89** *L* **28** # 124

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

The format for this vector is shown in Figure166–14.

SuggestedRemedy

Replace with: "The format for this vector is shown in Figure 166–14 for 2.5GBASE-AU, 5GBASE-AU, 10GBASE-AU, and 25GBASE-AU PHYs, and Figure 166-15 for 50GBASE-AU PHY.”

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.8.1.2** *P* **89** *L* **46** # 125

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

The DECODE function shall decode the rx_block based on code specified in 166.2.5.4.

SuggestedRemedy

Change reference as: “The DECODE function shall decode the rx_block based on code specified in 166.2.5.”

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.8.2** *P* **93** *L* **11** # 126

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

LP_BLOCK_R is not defined

SuggestedRemedy

Change to: “LPBLOCK_R”

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.8.2** *P* **93** *L* **18** # 127

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *PCS transmit state machine*

I_BLOCK_R is not define

SuggestedRemedy

Add definition of IBLOCK_R in 166.2.8.1, as “72-bit vector to be sent to the xMII containing /I/ in all the eight character locations.”

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.3.2** *P* **93** *L* **50** # 128

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

"The PMA receive function comprises Transmit Block synchronization, clock recovery for sampling received symbols and adaptive channel equalization."It can be understood that equalization is obligatory. Equalization is up to the implementer, consistent with pg 94, line 4.

SuggestedRemedy

Simplify this introductory paragraph to: "The PMA receive function comprises Transmit Block synchronization and the clock and data recovery from the signal received from the PMD receive function." Symbols are delimited by the clock recovery function in the PMA, which select the optimum sampling instants of time of the received signal. Therefore, I prefer to use the term "signal" instead of "symbol" for the information coming from PMD RX.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.3.3.2** *P* **94** *L* **32** # 129

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

"where the received signal y(n) is sampled by the PMA receive function with the recovered clock"

SuggestedRemedy

Change to: "where the received signal y(n) is the result of sampling by the PMA receive function the signal produced by the PMD receive function"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Replace with "where the received signal y(n) is the result of sampling the signal produced by the PMD receive function"

Cl **166** *SC* **166.3.4.1** *P* **96** *L* **9** # 130

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

decoder operation (see 166.2.7).

SuggestedRemedy

should be: "decoder operation (see 166.2.8.2)."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.3.4.2** *P* **96** *L* **42** # 131

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

specified in 166.2.5

SuggestedRemedy

should be: specified in 166.2.2

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.5.3** *P* **79** *L* **12** # 132

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

"The format of the 65-bit blocks for 2.5GBASE-AU, 5GBASE-AU, 10GBASE-AU, and 25GBASE-AU PCS is as shown …"A more compact form, and taking into account it is about PCS spec:"The format of the 65-bit blocks for BASE-U PCS connected to XGMII/25GMII is as shown …"

SuggestedRemedy

Check full PCS spec and replace to use compact form and avoid the use of BASE-AU instead of BASE-U, in order to be consistent with other sections (PMA, EEE, …)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.6.1.2.3** *P* **110** *L* **28** # 133

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

"Upon receipt of this primitive the PMA performs clock recovery for correct time sampling of received symbols and adaptive channel equalization (see 166.3.2)."Equalization is not mandatory. I suggest using more general wording. Specification for PMA receive function is referenced.

SuggestedRemedy

Change to: "Upon receipt of this primitive the PMA performs clock and data recovery (see 166.3.2)."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.6.1.3.3** *P* **111** *L* **4** # 134

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

In automotive applications, PMD signal detect function is used for implementation of wake-up / sleep functionality. For example, in ECUs integrating 1000BASE-RHC ports, reception of optical power over a threshold is used to wake up a full ECU from deep-sleep state where only few tens of micro-amperes are consumed from the battery.

SuggestedRemedy

Add at the end of line 4: “PMD_RXDETECT.indication(OK) may be used to wake up from deep sleep in a system that includes a BASE-AU PHY.” Add at the end of line 7: “PMD_RXDETECT.indication(FAIL) may be used to transition a system that includes a BASE-AU PHY into deep sleep.”

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166,9** *SC* **166,9** *P* **112** *L* **11** # 135

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

BASE_U

SuggestedRemedy

should be: BASE-U

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **116,1** *SC* **116,1** *P* **112** *L* **45** # 136

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

Figure 166–3shows

SuggestedRemedy

should be: "Figure 166–3 shows”

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **116,11** *SC* **116,11** *P* **113** *L* **2** # 137

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *nt interface baseline proposal*

No baseline.

SuggestedRemedy

Baseline proposal: “PHYs in the BASEA-AU set shall provide the management capabilities described in this clause and the functionality provided by the referenced Clause 45 registers and bits.
The optional MDIO capability of Clause 45 describes several variables that provide control and status for and about the PHY. If the MDIO is not implemented, an implementation shall include the functionality provided by the specified MDIO registers.
PHYs in the BASE-AU set use some generic control bits common with other IEEE 802.3 PHY types. PHY variables shall be mapped as shown in Table XXXX. PHYs in the BASE-AU set also use specific registers (1.72, 1.901, and 3.2330 through 3.2353).
In addition to the normal operation capabilities specified elsewhere in this clause, test modes and loopback modes use these registers and bits to facilitate testing.” Copy Table 115-18, as BASE-AU variable mapping.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **116** *SC* **116.12.1** *P* **113** *L* **17** # 138

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

Reduce examples list. BASE-AU are targeted to automotive.

SuggestedRemedy

change to: "(e.g., automotive) “

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **116** *SC* **116.12.1** *P* **113** *L* **21** # 139

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Temperature grades*

Temperature classes and nomenclature are not consistent with the ones used in the qualification of ICs in the automotive industry, i.e. AEC-Q100.

SuggestedRemedy

Change “temperature classes” to “temperature grades” Change table content to be: Grade 0, -40ºC to +150ºC Grade 1, -40ºC to +125ºC Grade 2, -40ºC to +105ºC Grade 3, -40ºC to +85ºC Grade 4, 0ºC to +70ºC Temperatures are Ambient Operating Temperature Range. Ambient temperature refers to the ambient temperature inside the electronics computing unit (ECU) or equipment where a BASE-AU PHY is integrated.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.3.5.2** *P* **101** *L* **43** # 140

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *LPI*

No information is provided about PHY quality assessment in LPI operation.

SuggestedRemedy

Change: "The noise variance at the symbol detector can be estimated either by measuring the Modulation Error Ratio (MER) at the decision points or measuring the ratio of symbols corrected by the RS-FEC decoder per CW.” to be: “In normal operation mode, the noise variance at the symbol detector can be estimated either by measuring the Modulation Error Ratio (MER) at the decision points or measuring the ratio of symbols corrected by the RS-FEC decoder per CW. In LPI mode, it can be estimated by measuring the MER or the corrected bits in the reception of the 12-time repeated 20-bit encoded PHD sub-block belonging to each LPI refresh codewords (see 166.4).”

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.3.4.2** *P* **96** *L* **50** # 141

Pérez - Aranda, Rubén KDPOF

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

“, also called data mode”This is versus training mode, however both modes are result of operation of 64B/65B encoding state diagram. Does not provide information and can produce confusion.

SuggestedRemedy

remove it.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.3.4.2** *P* **97** *L* **18** # 142

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

(LOCPHD.TX.NEXT.MODE == 0)

SuggestedRemedy

should be: (LOCPHD.TX.NEXT.MODE = 0)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.3.4.3** *P* **97** *L* **42** # 143

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

“When clock is stable (rcvr_clock_lock = OK), the PHY receiver shall train the equalizers to compensate the …”Equalizer is no mandatory, it is implementation dependent.

SuggestedRemedy

should be: When clock is stable (rcvr_clock_lock = OK), the PHY receiver shall train the equalizers (if implemented) to compensate the …

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.3.4.3** *P* **97** *L* **49** # 144

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Redundant shall statement*

Redundant shall statement (already in 166.3.5.4)“As soon as both link partners detect reliable PHD reception (rcvr_hdr_lock = OK), the PHY receiver shall determine according …”

SuggestedRemedy

should be: "As soon as both link partners detect reliable PHD reception (rcvr_hdr_lock = OK), the PHY receiver determines according”

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.3.4.3** *P* **99** *L* **1** # 145

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

"The 65-bit blocks decoding function is stopped until the bidirectional link is re-established (link_status = OK)."I think decoding function is not really stopped, because it is generating LBLOCK_R as xMII transfers. I think this sentence can generate confusion and is not providing additional info not already stated.

SuggestedRemedy

Remove it.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.3.5.1** *P* **100** *L* **52** # 146

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *RFER*

frame error ratio (RFER) is less than 5×10^-10

SuggestedRemedy

it should be less than 4.5×10^-10. Rubén Pérez-Aranda will do a contribution with maths behind the calculation.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Presentation "perezaranda_3cz_01_220111_RFER.pdf" has been received for discussion.

Cl **166** *SC* **166.3.5.2** *P* **101** *L* **43** # 147

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

log2(E[nd^2]) < T_LM. Comparison is not consistent with 166.3.5.4.

SuggestedRemedy

Change to: log2(E[nd^2]) <= T_LM

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.4.1** *P* **103** *L* **48** # 148

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *LPI*

Shall statement is not correct. According to 78.1.3.3.1, Fast wake refers to the mode for which the transmitter continues to transmit signals during Low Power Idle so that the receiver can resume operation with a shorter wake time (as shown in Figure 78–4). For transmit, other than the PCS encoding LPI, there is no difference between fast wake and normal operation. This s partially true for the LPI operation defined for BASE-AU PHYs. It is true that transmitter continues to transmit signals during Low Power Idle. However, it is not true that for transmit, other than the PCS encoding LPI, there is no difference between fast wake and normal operation, e.g. RS-FEC CW are replaced.

SuggestedRemedy

Replace paragraph as (introductory w/o shall statements): A BASE-AU PHY that implements the optional EEE capability follows fast wake mode of LPI operation as specified in 78.1.3.3.1 in the sense the PHY transmitter remains transmitting signals during LPI (same symbol rate and modulation of normal mode). However, the data generated by the PCS sublayer is modified with respect to transparent LPI encoding of normal operation in order to allow power saving, robust OAM side communication channel and robust wake signal detection in the receiver.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.4.2** *P* **104** *L* **52** # 149

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

LPI operation mode as specified in 166.5.

SuggestedRemedy

should be: LPI operation mode as specified in 166.4.2.3.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.4.2** *P* **104** *L* **52** # 150

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

codified 65-bit blocks

SuggestedRemedy

change to: 65-bit blocks generated by the PCS 64B/65B transmit state diagram (see 166.2.6.2).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.4.2** *P* **105** *L* **1** # 151

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

codified 65-bit blocks

SuggestedRemedy

change to: 65-bit blocks generated by the PCS 64B/65B transmit state diagram (see 166.2.6.2).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.4.2.1** *P* **105** *L* **13** # 152

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *LPI*

We shouldn't have shall statements doing reference to 78-4, which is not accurate reflecting the EEE operation of BASE-AU PHYs. On the other hand, I suggest to move this shall statement to 166.4.2.3, leaving 166.4.2.1 just for LPI refresh definition.

SuggestedRemedy

Remove lines 13,14 of page 105. In page 106, add following text after line 12: "The BASE-U PCS transmit function in LPI operation mode shall transmit LPI refresh codewords."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.4.2.3** *P* **106** *L* **25** # 153

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Document layout*

Text "1,0x1E,Cn=0x06" in dashed box is not clearly distinguished.Same problem in figure 166-31.

SuggestedRemedy

Change background pattern or color. Nice to have: Use pattens or colors that are unique in both figures 166-31 and 166-31 to identify very clearly which information is generated by the PCS transmit function in each type of transmitted codeword.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.4.2.3** *P* **106** *L* **34** # 154

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

Text "(fast wake signaling state)" is confuse. This state is not defined as part of any state diagram. It is not necessary for accurate specification.

SuggestedRemedy

Remove parenthetical text from figure.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.4.2.2** *P* **105** *L* **25** # 155

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Redundant shall statement*

This shall statement is redundant with the first one of 166.4.2.4.

SuggestedRemedy

Remove full sentence.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.4.3** *P* **107** *L* **52** # 156

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

The PHY receive function shall

SuggestedRemedy

should be: The PCS receive function. Same for page 108, lines 21,25, 28

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.4.3** *P* **108** *L* **19** # 157

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

(see Figure 166.2.7)

SuggestedRemedy

should be: (see 166.2.7.4)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.4.3** *P* **108** *L* **25** # 158

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Redundant shall statement*

Redundant shall statement with previous one: “The PHY receive function in LPI operation mode shall detect whether the received LPI codeword is an LPI wake codeword.”

SuggestedRemedy

Remove it.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.4.3** *P* **108** *L* **22** # 159

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Text improvement*

which is to detect the transmission of an LPI wake codeword as specified in 166.4.2.

SuggestedRemedy

should be: which is to detect the reception of an LPI wake codeword as specified in 166.4.2.2.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.4.3** *P* **108** *L* **29** # 160

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

(see 166.4.2).

SuggestedRemedy

change to: (see 166.4.2.2).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.4.3** *P* **108** *L* **31** # 161

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *LPI*

“From each LPI codeword received, 12 repetitions of a 20-bit encoded PHD sub-block shall be collected”This shall statement imposes the use of the 12 repetitions to decode the 20-bit PHD sub-blocks, which is not consistent with adopted baseline.Number of repetitions to be used are implementation dependent.

SuggestedRemedy

Replace with: "From each LPI codeword received, the 20-bit encoded PHD sub-block shall be decoded by majority voting using a number of repetitions equal or less than 11. Number of repetitions to be used is implementation dependent.” In Figure 166-32, replace “Detect LPI wake codeword and strip 12 repetitions of 20-bit encoded PHD sub-block” with “Detect LPI wake codeword and decode 20-bit encoded PHD sub-block”

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.4.3** *P* **108** *L* **33** # 162

Pérez - Aranda, Rubén KDPOF

Comment Type **T** *Comment Status* **D** *Redundant shall statement*

Redundant shall statement with the one of line 18.

SuggestedRemedy

Remove full sentence.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.6.1.1** *P* **83** *L* **29** # 163

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

"For 2.5GBASE-AU, 5GBASE-AU, 10GBASE-AU, and 25GBASE-AU PHYs, vector containing two successive XGMII or 25GMII transfers."A more compact form, and taking into account it is about PCS spec: "For a BASE-U PCS connected to XGMII/25GMII, vector containing two successive transfers."

SuggestedRemedy

Check full PCS spec and replace to use compact form and avoid the use of BASE-AU instead of BASE-U, in order to be consistent with other sections (PMA, EEE, …).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT. Same as #132.

Cl **166** *SC* **166.2.6.1.1** *P* **83** *L* **34** # 164

Pérez - Aranda, Rubén KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

"For 50GBASE-AU PHY, vector containing a single 50GMII transfer." A more compact form, and taking into account it is about PCS spec:"For BASE-U PCS connected to 50GMII, vector containing a single transfer."

SuggestedRemedy

Check full PCS spec and replace to use compact form and avoid the use of BASE-AU instead of BASE-U, in order to be consistent with other sections (PMA, EEE, …)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **FM** *SC* **FM** *P* **1** *L* **32** # 165

Grow, Robert RMG Consulting / KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

Don't forget to update copyright year when producing the next draft.

SuggestedRemedy

Update framemaker variable if used, and inspect front two pages and footer(s) to make sure copyright year is current.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **FM** *SC* **FM** *P* **3** *L* **1** # 166

Grow, Robert RMG Consulting / KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

This line recurrs at line 10

SuggestedRemedy

Delete the first line (or text if you need a blank line for the anchor for the Editori's Note).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **FM** *SC* **FM** *P* **3** *L* **32** # 167

Grow, Robert RMG Consulting / KDPOF

Comment Type **E** *Comment Status* **D** *Front matter template version*

This front matter differs from P802.3/D3.0, I'm not sure which is most current. I don't have FrameMaker to check that, but this draft looks like the Word template content (mostly).

SuggestedRemedy

Check and update if needed.

Proposed Response *Response Status* **W**

PROPOSED REJECT. IEEE P802.3cz/D1.2 follows the FrameMaker V5.0 template, dated 2 December 2021 (https://ieee802.org/3/tools/framemaker/index.html)

Cl **30** *SC* **30.3.2.1.2** *P* **21** *L* **20** # 168

Grow, Robert RMG Consulting / KDPOF

Comment Type **E** *Comment Status* **D** *...r P802.3 comment resolution*

It appears that aPhyType is organized by speed in the first column, but not alphabetized, rather sorted within rate by clause number in the description column

SuggestedRemedy

I've entered a comment on P802.3/D3.0, and we should track what is done on sort order for various Clause 30 MIB items there. We may need to write new insert points for all of our Clause 30 inserts.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **78** *SC* **78.1.4** *P* **45** *L* **16** # 169

Grow, Robert RMG Consulting / KDPOF

Comment Type **E** *Comment Status* **D** *...r P802.3 comment resolution*

This table doesn't have a consistent sort order beyond grouping by data rate.

SuggestedRemedy

I've entered a comment on P802.3/D3.0, and we should track what is done on that. We may need to write new insert points for our EEE PHY Types here and in Table 78-4.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **105** *SC* **105.1.1** *P* **47** *L* **18** # 170

Grow, Robert RMG Consulting / KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

Recommend rewriting to eliminate the list of PHY types as we did for Clause 44.

SuggestedRemedy

25 Gigabit Ethernet uses the IEEE 802.3 MAC sublayer, connected through a 25 Gigabit Media Independent Interface (25GMII) to [start underscore] one of a number of 25 Gb/s Physical Layers. [remainder of existing paragraph become strike-through].

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **125** *SC* **125.1.4** *P* **55** *L* **17** # 171

Grow, Robert RMG Consulting / KDPOF

Comment Type **E** *Comment Status* **D** *...r P802.3 comment resolution*

It appears that this table is in 802.3 alphanumeric order, which makes the insert point the wrong place.

SuggestedRemedy

Determine if 802.3 alphanumeric order is to be used, and is so the AU inserts belong at the beginning of the list for each data rate as was done for Table 125-2 and Table 125-3.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **44** *SC* **44.1.4.4** *P* **27** *L* **16** # 172

Grow, Robert RMG Consulting / KDPOF

Comment Type **E** *Comment Status* **D** *...r P802.3 comment resolution*

The sort order in data rate introduction clauses like this are incosistent when listing the PHY Types at a given data rate or ordering sublayers in various delay constraint tables. Comments have been entered on P802.3/D3.0 about this, and we need to remain aware if there are any changes to establish a more global sort order for such tables. This could affect our changes to Clauses 44, 105, 125, and 131.

SuggestedRemedy

Monitor P802.3/D3.0 comment resolutions and update as required.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.6** *P* **109** *L* **24** # 173

Grow, Robert RMG Consulting / KDPOF

Comment Type **T** *Comment Status* **D** *PMD baseline*

We have only had one PMD proposal that addresses all of our rate/reach objectives. This proposal is the most complete proposal, it is consistent with our PAR project scope and with our CSD responses. It also is supported with testing, simulations and strong peer review.

SuggestedRemedy

Merge swanson_3cz_02c_030821_AUTO_MDI_Baseline.pdf into the draft.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **1** *SC* **1.5** *P* **20** *L* **24** # 174

Torres, Luisma KDPOF

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

Add LFSR (used in 166.1.4 and 166.2.1) as abbreviation

SuggestedRemedy

LFSR - Linear Feedback Shift Register

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166A** *SC* **166A** *P* **119** *L* **54** # 175

Torres, Luisma KDPOF

Comment Type **T** *Comment Status* **D** *LFSR*

BASE-U LFSR sequence missed for up to 25GBASE-U and for 50GBASE-U

SuggestedRemedy

Add BASE-U LFSR sequence as approved in comment #82 of D1.0 comment resolution and presentation https://www.ieee802.org/3/cz/public/may_2021/perezaranda_3cz_04_0521_lfsr.pdf. Ask for a 50GBASE-U LFSR sequence presentation

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. A presentation including 50GBASE-U LFSR (parezaranda_3cz_02_220111_LFSR) has been received for discussion.

Cl **166** *SC* **166.1.4** *P* **65** *L* **36** # 176

Torres, Luisma KDPOF

Comment Type **E** *Comment Status* **D** *Text improvement*

Missing space between" 50GBASE-AU" and "over"

SuggestedRemedy

Add space

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.