Cl **0** *SC* **0** *P* *L* # R1-2

Ran, Adee Cisco Systems, Inc.

Comment Type **GR** *Comment Status* **D** *Hyperlinks*

The draft documents, both clean and CMP version, do not include a bookmark navigation pane and apparently there are no cross references (neither in a browser view nor in Adobe Acrobat Pro).

An amendment cannot be approved this way - it would be a unfit for users and for future integration into the standard. Additionally, it is very difficult to review.

Seeing that the previous draft did have cross references, I hope it is just a PDF generation error.

SuggestedRemedy

Generate the next draft such that cross references are active bookmarks and a bookmark pane is available.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **0** *SC* **0** *P* *L* # R1-64

Wienckowski, Natalie General Motors Company

Comment Type **GR** *Comment Status* **D** *Hyperlinks*

There are no hyperlinks in the document and there are no bookmarks.

SuggestedRemedy

Add missing hyperlinks and add bookmarks.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **44** *SC* **44.1.1** *P* **26** *L* **18** # R1-1

Ran, Adee Cisco Systems, Inc.

Comment Type **ER** *Comment Status* **D** *Improve wording*

"10 Gigabit Ethernet uses the IEEE 802.3 MAC sublayer, connected through a 10 Gigabit Media Independent Interface (XGMII) to one of a number of 10 Gb/s Physical Layer devices (PHYs) specified in this standard (see Table 44–1)"

The expression "one of a number of" was inserted by this amendment, and is unconventional and wordy. This expression does not appear in the original text nor does it appear in corresponding text in other similar clauses - where simpler language is used instead:

Clause 80: "40 Gigabit Ethernet uses the IEEE 802.3 MAC sublayer operating at a data rate of 40 Gb/s, coupled with any IEEE 802.3 40GBASE Physical Layer implementation".
Clause 116: "200 Gigabit Ethernet uses the IEEE 802.3 MAC sublayer operating at a data rate of 200 Gb/s, coupled with any IEEE 802.3 200GBASE Physical Layer implementation..."
Clause 125: "2.5 Gigabit Ethernet uses the IEEE 802.3 MAC sublayer operating at a data rate of 2.5 Gb/s, coupled with any IEEE 802.3 2.5GBASE Physical Layer implementation"

Note that the XGMII is defined in clause 46 as an optional interface, so it should not be included in this (informal) definition. The other clauses listed do not mention the corresponding xMII.

This comment also applies to 105.1.1, P49L18, where similar text appears for 25 Gb/s.

Removing laundry lists of PHYs, although it is bordering a maintenance action, is a good idea, but the replacement should use established language rather than introduce new language.

SuggestedRemedy

Change the first sentence in 44.1.1 to
"10 Gigabit Ethernet uses the IEEE 802.3 MAC sublayer operating at a data rate of 10 Gb/s, coupled with any IEEE 802.3 10GBASE Physical Layer implementation".

Change the first sentence in 105.1.1 to
"25 Gigabit Ethernet uses the IEEE 802.3 MAC sublayer operating at a data rate of 25 Gb/s, coupled with any IEEE 802.3 25GBASE Physical Layer implementation".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Comment is out of scope for this recirculation ballot.
However, the suggested remedy is accepted.

Cl **166** *SC* **166** *P* *L* # R1-56

Ran, Adee
Cisco Systems, Inc.

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

State diagram figures in clause 166 appear far away from their logical position in the text, sometimes interspersed with unrelated text.
Either each figure should appear in the subclause that refers to it first, or a dedicated subclause should be added to hold all figures related to the topic, such as "State diagrams".

Also, some figures include large white space areas, and can be reduced to fit within the text better. Figure 166–18, Figure 166–1, Figure 166–20, Figure 166–22.

SuggestedRemedy

Reduce the white space in the figures as much as practical.

Prevent the figures from floating, such that they appear in their intended position. If this creates too much white space, create a dedicated subclause for the figures (or separate ones for Tx and Rx related figures)..

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The commenter should note that this clause begins with an Editor's Note that aids readers in knowing which other documents have been considered in writing the amendment. This Editor's Note being removed from the published amendment potentially affects every page of Clause 166.

The commenter therefore is reminded of the SASB Operations Manual 5.4.3.3: "It should be borne in mind that proposed standards are professionally edited prior to publication." Review of pagination and positioning of floating tables and figures is a part of publication preparation.

Cl **166** *SC* **166.1** *P* **61** *L* **30** # R1-7

Ran, Adee
Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *Connectors*

"Connection of PMD to the optical fiber medium is typically with a PMD receptacle and mated plug. PMD and in-line connectors and the cable have to support specific requirements for installation in a vehicle."

The PMD has to meet the specifications in this clause - not just "specific requirements".

"PMD receptable and mated plug" are called "MDI connector" in this standard.

"have to support specific requirements" is not standard language. What does it mean? This draft includes some specifications in 166.6.6. I assume there are additional requirements that are not mentioned in this standard?

"support" is an overloaded word. Requirements should be met.

SuggestedRemedy

Change the quoted sentence to
"The MDI connecting the PMD to the optical fiber medium is typically a receptacle and a mated plug. This clause assumes the fiber optic cabling characteristics in 166.6.6. The MDI connector, in-line connectors, and cable may have additional requirements for installation in a vehicle that are beyond the scope of this standard."

Or delete this sentence, as 166.6.6 covers it anyway.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Comment is out of scope for this recirculation ballot.
Change
"Connection of PMD to the optical fiber medium is typically with a PMD receptacle and mated plug. PMD and in-line connectors and the cable have to support specific requirements for installation in a vehicle."
to
"The MDI connecting the PMD to the optical fiber medium is typically a receptacle and a mated plug. This clause assumes the fiber optic cabling characteristics in 166.6.6. The MDI connector, in-line connectors, and cable may have additional requirements for installation in a vehicle that are beyond the scope of this standard."

Cl **166** *SC* **166.1.4** *P* **64** *L* **29** # R1-9

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *Improve wording*

"The BASE-U OAM information is exchanged between two BASE-AU PHYs out of band, that is, outside of the specified 2.5 Gb/s, 5 Gb/s, 10 Gb/s, 25 Gb/s, or 50 Gb/s Ethernet data stream"

This statement is confusing. If they are outside of the data stream, should there be a separate data stream?

802.3 has a definition, "1.4.442 out-of-band signaling: The transmission of a signal using a frequency that is within the pass band of the transmission facility but outside a frequency range normally used for data transmission".

Usage of "out of band" for OAM does not match the definition. OAM messages are injected into the data stream by the PCS and contained in the data represented by the modulated signal, so they are in-band (per the definition of "in-band" in 1.4.359: "using a frequency that is within the bandwidth of the information channel").

I am aware of the four instances of a similar statement in the base document (in clauses 97 and 149, two places each). These should also be corrected in maintenance; but fixing the error in this project first would help the maintenance process.

SuggestedRemedy

Change the quoted statement to read
"The BASE-U OAM information is exchanged between two BASE-AU PHYs in-band, by interleaving it with the specified 2.5 Gb/s, 5 Gb/s, 10 Gb/s, 25 Gb/s, or 50 Gb/s Ethernet data stream".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Comment is out of scope for this recirculation ballot.
Interleaving / multiplexing and multiple streams topics are already explained before in the same sub-clause, so it is redundant.
Change
"The BASE-U OAM information is exchanged between two BASE-AU PHYs out of band, that is, outside of the specified 2.5 Gb/s, 5 Gb/s, 10 Gb/s, 25 Gb/s, or 50 Gb/s Ethernet data stream"
to
“The BASE-U OAM information is exchanged between two BASE-AU PHYs as a part of the PHD.”

Cl **166** *SC* **166.1.4** *P* **65** *L* **4** # R1-10

Ran, Adee Cisco Systems, Inc.

Comment Type **E** *Comment Status* **D** *Active clause reference*

The clause numbers appear in green, suggesting that they are not included in this amendment. But clause 45 is included, so "Clause 45" should be an active cross reference.

Alternatively, all clause number labels can be removed from this diagram. Cross reference as available in 166.2.1 (immediately following this figure).

Note that similar figures such as Figure 119–2 and Figure 149–2 do not contain these labels.

SuggestedRemedy

It is suggested to remove all clause labels from the diagram.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Comment is out of scope for this recirculation ballot.
Remove all clause labels from Figure 166-3.

Cl **166** *SC* **166.2.1** *P* **67** *L* **10** # R1-13

Ran, Adee Cisco Systems, Inc.

Comment Type **E** *Comment Status* **D** *Improve wording*

"The PCS receive function comprises..."
"Comprises" is a relatively uncommon (and often misused) word which may be confusing for readers. Its meaning "to be made up of" does not fully match the intent here; the PCS receive function also does other things, such as maintaining counters.

"comprises" also appears in 166.2.3.4 and 166.3.2.

SuggestedRemedy

Change to "The PCS receive function includes".

Change the other instances similarly.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Comment is out of scope for this recirculation ballot.
However, the suggested remedy is accepted.

Cl **166** *SC* **166.2.2.1.2** *P* **69** *L* **46** # R1-15

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *ırovement of shall statements*

"The PHD data path includes three stages"
But the list includes four items.

Also, the title of the subclause is "Physical header encoding", and the PICS has only one item for the entire subclause. So there should be one normative requirement about the encoding, regardless of the number of stages it is divided into (which may be implementation dependent).

SuggestedRemedy

Change "The PHD data path includes three stages:" to "The PHD data path shall be functionally equivalent to the result of the following process:"

Change "shall be" to "is" in list items 1, 2, 3, and 4.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Comment is out of scope for this recirculation ballot.
However, the suggested remedy is accepted.

Cl **166** *SC* **166.2.2.1.2** *P* **69** *L* **50** # R1-16

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *Acronym*

"The 16-bit CRC code (CRC16) shall be applied to the PHD"
CRC is not applied to the PHD (the PHD is not changed); it is calculated from the PHD.

As an acronym, CRC should be spelled out on first usage.

SuggestedRemedy

Change to "A 16-bit cyclic redundancy check (CRC16) is calculated from the PHD".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Comment is out of scope for this recirculation ballot.
However, the suggested remedy is accepted.

Cl **166** *SC* **166.2.2.1.4** *P* **70** *L* **45** # R1-18

Ran, Adee Cisco Systems, Inc.

Comment Type **T** *Comment Status* **D** *Improve wording*

"Each group of 240 information bits composed of the concatenation of a PHD and the redundancy bits"

It is not clear on first reading what the "redundancy bits" are. Careful reading reveals that this is the CRC16.

Help the reader understand.

Also in 166.2.2.1.2, two instances.

SuggestedRemedy

Change the quoted phrase to "Each group of 240 information bits composed of the concatenation of a PHD and the CRC16".

Change "redundancy bits" to "CRC16" in 166.2.2.1.2, item 2 and item 3.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Comment is out of scope for this recirculation ballot.
However, the suggested remedy is accepted.

Cl **166** *SC* **166.2.2.4** *P* **72** *L* **13** # R1-21

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *RS-FEC clarification*

Table 166–3 has "g_i" in the header and "RS-FEC(544,522)" in the column title - these are not the right terms.

SuggestedRemedy

Change the paragraph preceding the table to "The coefficients of the generator polynomial for the RS-FEC(544,522) code are presented in Table 166–3."

Change the title of Table 166–3 to "Coefficients of the generator polynomial g(x) (decimal)".

Change the headings of columns 2 and 4 to "g_i".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.2.4** *P* **72** *L* **37** # R1-22

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *RS-FEC clarification*

"Equation (166–2) defines the message polynomial m(x)"

m(x) is not one specific polynomial, and it cannot be defined as such. It is a representation of the data.

"Equation (166–3) defines the parity polynomial p(x) whose coefficients are the parity symbols p21 to p0"

Similarly, the parity polynomial is not defined by this equation, but by the calculation of the remainder of division of m(x) by g(x), as indicated in the text on the next page.

The encoder illustrated in Figure 166–8 is not just a shift register.

SuggestedRemedy

Change to "The contents of the RS-FEC message are represented by a polynomial m(x) as shown in Equation (166–2)"

and
"The parity polynomial p(x) is calculated as the remainder of polynomial division of m(x) by g(x). Its coefficients p21 to p0, as shown in Equation (166–3), are the parity symbols".

In the second paragraph after equation (166-3) change from
"The parity polynomial is the remainder from the division of m(x) by g(x). This can be computed using the shift register implementation illustrated in Figure 166–8."
to
"The calculation of the coefficients of p(x) is illustrated in Figure 166–8."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Comment is out of scope for this recirculation ballot.
Change
"Equation (166–2) defines the message polynomial m(x) whose coefficients are the message symbols m521 to m0."
to
"The contents of the RS-FEC message are represented by a polynomial m(x) whose coefficients are the message symbols m521 to m0 as shown in Equation (166–2)"

Change
"Equation (166–3) defines the parity polynomial p(x) whose coefficients are the parity symbols p21 to p0"
to
"The parity polynomial p(x) is calculated as the remainder of polynomial division of m(x) by g(x). Its coefficients p21 to p0, as shown in Equation (166–3), are the parity symbols"

In the second paragraph after equation (166-3) change from
"The parity polynomial is the remainder from the division of m(x) by g(x). This can be computed using the shift register implementation illustrated in Figure 166–8."
to
"The calculation of the coefficients of p(x) is illustrated in Figure 166–8."

Cl **166** *SC* **166.2.2.7.1** *P* **75** *L* **51** # R1-23

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *PCS encoding*

"64B/65B encodes eight data octets or control characters into a 65-bit block. 65-bit blocks containing control characters also contain a block type field. Data octets are labeled D0 to D7"

Isn't this labeling common for both data octets and control characters?

SuggestedRemedy

Change to
"64B/65B encodes eight data octets or control characters, labeled D0 to D7, into a 65-bit block. 65-bit blocks containing control characters also contain a block type field."

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Comment is out of scope for this recirculation ballot.
Labeling is different for data and control characters, as specified in Figure 166-14 and Figure 166-15.

Cl **166** *SC* **166.2.2.7.1** *P* **78** *L* **24** # R1-24

Ran, Adee Cisco Systems, Inc.

Comment Type **T** *Comment Status* **D** *PCS encoding*

"Binary values are shown with the first transmitted bit (the LSB) on the left."

Here the only binary value is the data/ctrl header, and it has only one bit; so this sentence is not helpful, and may be confusing to the reader.

Note that when displaying bit vectors representing numbers, LSB is customarily the rightmost bit - adding to the possible confusion.

SuggestedRemedy

Delete the quoted sentence.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Comment is out of scope for this recirculation ballot.

Sentence is correct, and emphasizes that there are bits and fields composed of more than one bit (see, i.e., Figure 166-14).

Cl **166** *SC* **166.2.2.7.2** *P* **79** *L* **39** # R1-26

Ran, Adee Cisco Systems, Inc.

Comment Type **T** *Comment Status* **D** *PCS encoding*

"Bits and field positions are shown with the least significant bit on the left."

There are no bits or field positions in the figures that are shown in binary, so this sentence is not helpful, and may be confusing to the reader.

Note that when displaying bit vectors representing numbers, LSB is customarily the rightmost bit - adding to the possible confusion.

SuggestedRemedy

Delete the quoted sentence.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Comment is out of scope for this recirculation ballot.
Sentence is correct, and emphasizes that there are bits and fields composed of more than one bit (see, i.e., Figure 166-14).
The quoted sentence is identical to e.g., 55.3.2.2.5 (IEEE 802.3:2022, Page 2514, third paragraph).

Cl **166** *SC* **166.2.2.7.7** *P* **82** *L* **29** # R1-28

Ran, Adee Cisco Systems, Inc.

Comment Type **E** *Comment Status* **D** *Improve wording*

"For a BASE-U PCS connected to XGMII or 25GMII, block type field values implicitly encode an /S/ as the fifth or first character of the 65-bit block. For a BASE-U PCS connected to 50GMII, block type field values implicitly encode an /S/ as the first character of the 65-bit block. These are the only characters of a 65-bit block on which a start can occur."

This text contains copies of sentences from clause 46 and clause 81, with some changes. The results does not read well logically, and it is hard to understand.

SuggestedRemedy

Change to
"An /S/ as the first character of the block (for a PCS connected to 50GMII) or the first or fifth character of the block (for a PCS connected to XGMII or 25GMII) is implicitly encoded in the block type field. These are the only locations on which an /S/ can occur."

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Specifications are technically correct and easy to understand. They are even with other clauses (Clause 46 and Clause 81).
/S/ does not occur in any location, it is implicitly encoded by the block type field. Suggested proposal is not consistent technically with the requirement.

Cl **166** *SC* **166.2.2.7.9** *P* **83** *L* **12** # R1-30

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *Local Fault reference*

"The Local Fault ordered set is defined in 46.3.4"

Local Fault for 50GMII is different, and is defined in 81.3.4.

SuggestedRemedy

Change to
"The Local Fault ordered set for XGMII and 25GMII is defined in 46.3.4. The Local Fault ordered set for 50GMII is defined in 81.3.4".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.2.3.2** *P* **87** *L* **6** # R1-33

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *Improve wording*

"RS-FEC decoder shall be capable of correcting… and detecting…"
"capable" reads as if correcting and detecting are optional. But these are not defined as optional; they are mandatory requirements that cannot be enabled or disabled.

SuggestedRemedy

Change the second sentence to
"The RS-FEC decoder shall correct any combination of up to t = 11 symbol errors in a codeword and detect any combination of up to 2t = 22 symbol errors in a codeword".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Comment is out of scope for this recirculation ballot.
However, the suggested remedy is accepted.

Cl **166** *SC* **166.3.1** *P* **95** *L* **13** # R1-36

Ran, Adee Cisco Systems, Inc.

Comment Type **E** *Comment Status* **D** *Numbering*

"97 920 bit groups of two bits" is unclear. Especially compared with "195840 single-bit groups" in the previous paragraph.

The digit separating space is harmful in this case.

SuggestedRemedy

Change to "97920 two-bit groups".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **166** *SC* **166.3.1** *P* **95** *L* **33** # R1-37

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *rovement of shall statements*

"Symbols shall be transmitted to the PMD with a transmit symbol period Ts that shall be 1000 / (26.5625 × S) ps nominal, which depends on the BASE-AU PHY."

An implementation can't be verified to have a nominal value. The normative requirement is the range of allowed symbol periods. The nominal value does not need a "shall". If a normative statement is required, the range should be specified.

Also, "Ts" is defined here, but used only in 166.6.1.1.2, where it is described as "Transmit symbol period". There is no need to introduce a symbol that is only used once.

SuggestedRemedy

Change the quoted sentence to
"Symbols are transmitted to the PMD with a nominal symbol period of 1000 / (26.5625 × S) ps".

Delete "Ts" in 166.6.1.1.2.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change
"Symbols shall be transmitted to the PMD with a transmit symbol period Ts that shall be 1000 / (26.5625 × S) ps nominal, which depends on the BASE-AU PHY."
to
"Symbols are transmitted to the PMD with a nominal symbol period of 1000 / (26.5625 × S) ps".

Delete "Ts" in 166.6.1.1.2.

Page 148 Line 9
Remove PMA2 row from the PICS table.

Cl **166** *SC* **166.3.4.3** *P* **97** *L* **49** # R1-38

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *rovement of shall statements*

In addition to the opening "shall" statement, the text of this subclause has "shall"s that describe implementation-specific choices. "shall" indicates a normative requirement, but there is no way to verify the specific behavior in this subclause.

"where Transmit Block synchronization shall be performed"
"fine timing recovery shall be carried out"
"the PHY receiver shall train the equalizers (if implemented)"

These are covered by the opening statement.

SuggestedRemedy

Change the quoted sentences to
"where Transmit Block synchronization is performed"
"fine timing recovery is carried out"
"the PHY receiver may train the equalizers (if implemented)"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Comment is out of scope for this recirculation ballot.

Synchronizing the Transmit Block is not an implementation-specific choice. Without that, no data detection is possible. The scrambler is initiated at the beginning of each Transmit Block to a pre-defined value. If the receiver does not synchronize reception then it will not be able to recognize first symbol of each Transmit Block, align the descrambler, align the Reed-Solomon codewords, align the PHD sub-blocks, etc.
Timing recovery is also necessary, it is not a choice.
However, the three shall statements indicated by the commenter can be removed, because first shall statement to the state diagram already include those specifications.

Change
"where Transmit Block synchronization shall be performed"
to
"where Transmit Block synchronization is performed"

Change
"fine timing recovery shall be carried out"
to
"fine timing recovery is carried out"

Change
"the PHY receiver shall train the equalizers (if implemented)"
to
"the PHY receiver may train the equalizers (if implemented)"

Cl **166** *SC* **166.3.4.4** *P* **100** *L* **2** # R1-39

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *rovement of shall statements*

"For a communication system composed of two connected link partners as shown in Figure 166–2, the time measured from the last deassertion of pma_reset (pma_reset equal to OFF) or pcs_reset (pcs_reset equal to FALSE) on either link partner, until the assertion of the link_status variable to OK on either link partner, shall be less than 25 ms"

It is impossible to have a normative statement for a system with multiple parts that can be supplied by different vendors and assembled by an integrator. Each vendor can only be responsible to the behavior parts it supplies!

This could be replaced by separate requirements: for a receiver to assert link_status within some period after a signal appears at its input, and for a transmitter to generate a compliant signal within some period after deassertion of pma_reset. I am not proposing replacement text - it is too technical and should be decided by the task force.

The statement promises something to the reader/user that may not be true. Unless separate requirements are added, this paragraph should either be removed entirely, or softened, such as using "is expected to"

SuggestedRemedy

Change "shall be" to "is expected to be".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
This requirement is specified for a complete PHY, regardless of whether its implementation is split into multiple components or whether it is implemented as a single component. However, 3cz PHYs are expected to be implemented in a single component like other automotive PHYs.
This requirement is specific of automotive application. It is necessary to allow to meet the corresponding project's objective, which is defined at system level (where the PHY is integrated)
This requirement is similar in other automotive PHYs, see e.g. 802.3ch.
However, the reason for the comment is recognized.
Change
"For a communication system composed of two connected link partners as shown in Figure 166–2, the time measured from the last deassertion of pma_reset (pma_reset equal to OFF) or pcs_reset (pcs_reset equal to FALSE) on either link partner, until the assertion of the link_status variable to OK on either link partner, shall be less than 25 ms"
to
"The time measured from the last deassertion of pma_reset (pma_reset equal to OFF) or pcs_reset (pcs_reset equal to FALSE) until the assertion of the link_status variable to OK shall be less than 25 ms"

Cl **166** *SC* **166.4.1** *P* **104** *L* **48** # R1-41

Ran, Adee Cisco Systems, Inc.

Comment Type **E** *Comment Status* **D** *rovement of shall statements*

"EEE functionality shall be active when both, the transmitted and received fields PHD.CAP.LPI, are equal to one, and disabled otherwise"

"Active" and "disabled" are not matched terms, "enabled" is preferable here as an antonym to "disabled", and to match the clause title.

There seems to be no need for a "shall" here.

The commas are out of place.

A similar issue exists in 166.7 for OAM.

SuggestedRemedy

Change to "EEE functionality is enabled when both the transmitted and received fields PHD.CAP.LPI are equal to one, and disabled otherwise".

Apply a corresponding chance in 166.7.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Comment is out of scope for this recirculation ballot.

"Shall" is necessary, because it is a requirement. It cannot be removed.

Page 104 Line 48
Change
"EEE functionality shall be active when both, the transmitted and received fields PHD.CAP.LPI, are equal to one, and disabled otherwise"
to
"EEE functionality shall be enabled when both the transmitted and received fields PHD.CAP.LPI are equal to one, and disabled otherwise".
Page 136 Line 50 (166.7)
Change "OAM channel functionality shall be active when both, the transmitted and received fields, PHD.CAP.OAM, are equal to one, and disabled otherwise."
to
"OAM channel functionality shall be enabled when both the transmitted and received fields PHD.CAP.LPI are equal to one, and disabled otherwise".

Cl **166** *SC* **166.4.2** *P* **105** *L* **53** # R1-42

Ran, Adee Cisco Systems, Inc.

Comment Type **T** *Comment Status* **D** *Improve wording*

"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."

This sentence is unclear. What does "with respect to transparent LPI encoding of normal operation" mean?

Based on the text in 166.4.3, the codewords generated by the PCS in LPI mode (which do not carry data) are either LPI refresh or LPI wake; "transparent" is not mentioned. Perhaps the intent is that no parity bits are added? This is shown in figure 166-30 but not mentioned in the text.

SuggestedRemedy

Change the quoted sentence to

"The codewords generated by the PCS sublayer during LPI consist of specific characters without RS-FEC encoding, which allow power saving, robust OAM side communication channel, and robust wake signal detection in the receiver.".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Comment is out of scope for this recirculation ballot.
However, the suggested remedy is accepted.

Cl **166** *SC* **166.5.1** *P* **110** *L* **1** # R1-43

Ran, Adee Cisco Systems, Inc.

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

"In the absence of errors, a
continuous sequence of LBLOCK_T 65-bit blocks is expected after the RS-FEC decoder of the link partner receiver. Any data bit difference with respect to a LBLOCK_T binary sequence shall be computed as a bit error in the BER test mode counter (see 45.2.3.94)"

"computed as a bit error" seems like a mistake.

If an RS-FEC codeword is correctable, there will be no errors. If it is uncorrectable, it will have more than 11 symbol errors, and the number of bit errors will be at least 12 (and up to 120).

Is it the intent that the 16-bit BER test mode counter advances only when a codeword is uncorrectable? Or alternatively that the bits are compared before RS-FEC correction, such that correctable errors are also counted?

The suggested remedy assumes the former, but this should be clarified one way or another.

SuggestedRemedy

Change "computed as a bit error" to "counted as a bit error".

Assuming the intent is to count bit errors only in uncorrectable codewords, add the following NOTE after the second paragraph:
"NOTE 1—the BER test mode counter does not advance if a codeword is correctable."

Change the NOTE at the end of the paragraph to "NOTE 2".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Comment is out of scope for this recirculation ballot, also, these changes are non-substantive not requiring recirculation.

The intent is clear in the document:

"Any data bit difference with respect to a LBLOCK_T binary sequence shall be computed as a bit error in the BER test mode counter (see 45.2.3.94)."

In 45.2.3.94: "When the BASE-U based PHY receiver is operating in BER test mode (see 166.5.1), bits 3.2352.15:0 are a 16-bit counter that counts the number of erroneous bits received at the input of the 64B/65B PCS decoder."

Change "computed as a bit error" to "counted as a bit error".

Cl **166** *SC* **166.5.1** *P* **110** *L* **8** # R1-44

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *rovement of shall statements*

"PMA and PMD functions of the two BASE-AU PHYs shall operate as in normal mode (non-test) establishing the bidirectional link."

It is impossible to have a normative statement for a system with multiple parts that can be supplied by different vendors and assembled by an integrator. Each vendor can only be responsible to the behavior parts it supplies!

SuggestedRemedy

Change to
"The PMA and PMD functions of a BASE-AU PHY in BER test mode in either transmit or receiver direction shall operate as in normal mode (non-test)."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Comment is out of scope for this recirculation ballot.

Without bidirectional link there is no data transmission in either direction in normal operation (no BER test). See Link monitor state diagram and other PHY control state diagrams.

The purpose of BER test mode is to check the quality of an established bidirectional link. According to the quality state diagram of the PMA check, if the quality criterion is not reached, we already know that the quality is not good enough.

However, the shall statement can be improved to be focused on a single PHY.

Change
"PMA and PMD functions of the two BASE-AU PHYs shall operate as in normal mode (non-test) establishing the bidirectional link."
to
"PMA and PMD functions of a BASE-AU PHY in BER test mode shall operate as in normal mode (non-test). A BASE-AU PHY shall establish link (link_status = OK) to allow BER test in either traffic direction."

Cl **166** *SC* **166.6.1.2.1** *P* **114** *L* **26** # R1-45

Ran, Adee Cisco Systems, Inc.

Comment Type **T** *Comment Status* **D** *Improve wording*

"This primitive conveys to the PMA via the parameter rx_signal the relative amplitude of the optical signal"

I assume it is the optical power, not the amplitude.

"Relative" to what? I assume it is implementation dependent.

SuggestedRemedy

Change to "This primitive conveys to the PMA, via the parameter rx_signal, the instantaneous power of the optical signal".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change
"This primitive conveys to the PMA via the parameter rx_signal the relative amplitude of the optical signal"
to
"This primitive conveys to the PMA, via the parameter rx_signal, the amplitude relative to the instantaneous power of the optical signal received by the PMD at the MDI (see 166.6.2.3)."

Cl **166** *SC* **166.6.1.2.2** *P* **114** *L* **36** # R1-46

Ran, Adee Cisco Systems, Inc.

Comment Type **T** *Comment Status* **D** *Improve wording*

The PMD service interface is a generic description of what the PMD looks like as a "black box. But "in the form of a communication signal" does not provide any information - what kind of signal?

It can be assumed to be an electrical signal (as the PMD is expected to convert from optical to electrical). Otherwise, implementation dependent.

SuggestedRemedy

Change "a communication signal" to "an electrical signal".

Append "The characteristics of the electrical signal are implementation dependent".

Also, change "communication signal" to "electrical signal" in 166.6.2.3.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change
"The PMD_COMSIGNAL.indication(rx_signal) is continuously generated by the PMD in the form of a communication signal."
to
"The PMD_COMSIGNAL.indication(rx_signal) is continuously generated by the PMD."

Cl **166** *SC* **166.6.2.1** *P* **136** *L* **22** # R1-68

Dawe, Piers J G NVIDIA

Comment Type **TR** *Comment Status* **D** *Connectors*

Following up on a comment against D3.01: for 2.5GBASE-AU, 5GBASE-AU and 10GBASE-AU, up to 10 dB of connector loss is allowed, with a maximum loss per connection of 2.5 dB. For 2.5GBASE-AU, an additional 1.8 dB loss is allowed. As the connector loss can be mode-selective and I could not find anything that says the additional loss cannot, that's 11.8 dB of mode-selective loss. Compare 10GBASE-SR, max channel loss of 2.9 dB from all causes including fiber attenuation. FEC and equalization mean that roughly double the modal noise can be tolerated, but still the difference between 2.9 dB and 11.8 dB seems far too high. Considering the vibrations in vehicles, this is a concern.

It's not clear what use the additional insertion loss allocation is; it should not be used for connectors or similar (such as splices), although the draft could be clearer on that point, and it is not needed for fiber attenuation, considering automotive reaches.

SuggestedRemedy

We need tighter rules on the mode-selective component of the losses. This could be done in the connector specs. Without that, the total connection insertion loss should be reduced from 10 dB to 8 dB or lower, and the "Additional insertion loss allowed" should be set to 0 dB for all speeds

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
It is not clear that physical contact connection will be able to meet environmental (e.g. grease, dust conditions, metallic particles, in car automated assembly plant, or a garage) and mechanical (e.g. vibrations, scoop proof) requirements with the cost constraints of automotive application. During more than two decades, SI-POF has been used in automotive applications (e.g. MOST, 1000BASE-RHC), implementing butt-coupling with air-gap in inline connections to avoid end face surfaces of fiber are damaged by mechanical and environmental conditions. Expanded beam optics, physical contact, and air gap connections are under consideration by connector makers to supply a robust, low cost, and fully automated terminated optical connectivity technology to automotive industry based on OM3 fiber. 802.3cz PHYs are specified to support the highest technically feasible insertion loss that enable OM3 can be accepted by the automotive industry in terms of performance, environmental and mechanical conditions, and cost.
10 dB max insertion loss due to inline connections was considered for 10, 5 and 2.5 Gb/s with respect to 8 dB of 25 Gb/s because lower data-rates support better obtaining sensitivity in the receiver, so it allows to relax the optical connector specifications. Therefore, for 10, 5, and 2.5 Gb/s, considered max insertion loss per inline connection has been 2.5 dB and for 25 and 50 Gb/s 2.0 dB. Because the sensitivity can be even better for 5 and 2.5 Gb/s, the min OMA TX was also reduced and unallocated margin margin assigned to "Additional insertion loss allowed".
Commenter is right pointing out that the additional insertion loss might be MSL. Extra 0.1 dB MN penalty was allocated for 5 and 2.5 Gb/s (Allocation for penalties 0.7 vs 0.6 dB), to consider additional 0.8 dB of 5 Gb/s and 1.8 dB of 2.5 Gb/s. However the additional supported loss is not necessary to meet the objectives of the project.

"Additional insertion loss allowed" is changed to be zero for all the data-rates. as follows:

Page 119 Line 48
In Table 166-11:
Change "Allocation for penalties" for 5GBASE-AU and 2.5GBASE-AU to be 0.6
Remove last row of Table 166–11.

Page 119 Line 9
In Table 166–10:
Replace rows C and D for 5GBASE-AU with -15.1 and -15.0, respectively.
Replace rows C and D for 2.5GBASE-AU with -16.1 and -16.1, respectively
Page 118 Line 48
In Table 166-10:
Replace rows "Stressed receiver sensitivity (OMAouter), condition 1 (max)" and "Stressed receiver sensitivity (OMAouter), condition 2 (max)" for 5GBASE-AU with -14.0 and 15.1, respectively.
Replace rows "Stressed receiver sensitivity (OMAouter), condition 1 (max)" and "Stressed receiver sensitivity (OMAouter), condition 2 (max)" for 2.5GBASE-AU with -15.1 and 16.1, respectively.
Replace "Average receive power (min)" for 5GBASE-AU with -17.0.
Replace "Average receive power (min)" for 2.5GBASE-AU with -18.0.

Cl **166** *SC* **166.6.3.2** *P* **117** *L* **27** # R1-67

Law, David — Hewlett Packard Enterprise

Comment Type **TR** *Comment Status* **D** *Wavelength*

This is a comment in support of unsatisfied previous comments #I-107 and #I-108. While I acknowledge that this issue was debated at length during initial Standards Association ballot comment resolution meetings, I remain particularly concerned that two contributions were received regarding these comments that come to diametrically opposed conclusions about the reliability of 850 nm optical transmitters for the targeted application (see <https://www.ieee802.org/3/cz/public/oct_2022/murty_3cz_01_1022.pdf> and <https://www.ieee802.org/3/cz/public/oct_2022/perezaranda_3cz_02_1022_vcsel_rel.pdf>). There must be a difference in inputs, calculation methods or assumptions that leads to these diametrically opposite results, but I don't believe they have been identified. I also note a recent email contribution to the IEEE P802.3cz email reflector <https://ieee802.org/3/OMEGA/email/msg00395.html> from an individual that I don't believe has been previously involved that may provide further data to consider.

SuggestedRemedy

Please revisit the decision to not include a wide wavelength band (840 – 990 nm) transmitter specification.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
This comment is in support to initial IEEE-SA ballot must be satisfied (MBS) comments associated to a disapprove vote.
There is no new information regarding #I-107 and #I-108 to be discussed at the time of preparing this response.

Cl **166** *SC* **166.6.4.12** *P* **130** *L* **7** # R1-47

Ran, Adee — Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *Receiver sensitivity*

"stressed receiver sensitivity is defined for a transmitter with values of STDFOM..."

The title of this subclause is "Receiver sensitivity", but it mentions "stressed receiver sensitivity" in each paragraph, referring to an equation in this subclause and STDFOM is given. SRS is the subject of the next subclause. This is confusing.

SuggestedRemedy

If the intent of the quoted text is unstressed receiver sensitivity as defined in this subclause- delete "stressed" in all instances of the quoted text.

If the intent is SRS, move these sentences to the next subclause, or clarify.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The statements are technically correct. The stress receiver sensitivity is defined for two values of STDFOM in the transmitter, however, the receiver sensitivity meets the equation in a wider range. This equation is consistent with the SRS OMA values for the defined STDFOM values.

This sub-clause is about receiver sensitivity.

Cl **166** *SC* **166.6.4.12** *P* **130** *L* **8** # R1-48

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *Receiver sensitivity*

"Receiver sensitivity meets Equation (166–20)"
Following a late (unnumbered) comment in initial SA ballot, the text was changed from "shall meet" to "meets".

But Table 166–10 still has "Receiver sensitivity" requirements, and 166.6.3.3 says "The BASE-AU PHY receiver shall meet the specifications in Table 166–10".

"meets" is not a way to make something optional; it is still normative, and effectively equivalent to "shall". So it is still unclear whether unstressed receiver sensitivity is a normative requirement, or a recommendation.

As an example of how unstressed RS is handled in other clauses, Table 121–7 footnote c says "Receiver sensitivity (OMAouter), each lane (max) is optional and is defined for a transmitter with a value of SECQ up to 3.2 dB." and 121.8.9 says "Receiver sensitivity is optional and is defined for a transmitter with a value of SECQ up to 3.2 dB". Something like that can be done here.

SuggestedRemedy

If unstressed sensitivity is not normative, add a footnote to Table 166-10 and text in 166.6.4.12, corresponding to the example in the comment, with necessary adjustments.

If it is normative, restore the "shall" in 166.6.4.12.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Add footnote to Table 116-10: “Receiver sensitivity (OMA_outer) (max) is optional”.

Page 130, Line 36:
Add at the end of the sentence: “and receiver sensitivity is optional”.

Cl **166** *SC* **166.6.4.13.1** *P* **131** *L* **38** # R1-49

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *Stressed receiver*

"The stressed receiver sensitivity OMAouter at TP3 (OMATP3) is obtained after the following steps"

OMATP3 is not the established acronym for stressed receiver sensitivity. My understanding is that the OMA mentioned in parentheses in Table 166–10 and elsewhere (such as Table 121–7) is a condition in which SRS is defined. For example, the text in 121.8.10.2 states: the “Stressed receiver sensitivity (OMAouter), each lane (max)” specified in Table 121–7, and the test sources for the other lanes are set to the “OMAouter of each aggressor lane” specified in Table 121–7.

But in this sentence, the term OMAouter is not in parentheses, and in equation 166-22 OMATP3 is used as a symbol the SRS.

Introducing new and different terminology for established test methods is discouraged.

SuggestedRemedy

Change the quoted sentence to
"The stressed receiver sensitivity (OMAouter) at TP3 is obtained after the following steps".

On line 51, change "The stressed receiver sensitivity OMAouter at TP3 (OMATP3) is calculated using Equation (166–22)" to "The stressed receiver sensitivity is calculated using Equation (166–22)".

In equation 166-22, change "OMATP3" to "Stressed receiver sensitivity".

Make additional changes if necessary to clarify how the OMAouter parameter affects the test (following the example quoted in the comment).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Comment is out of scope for this recirculation ballot.
Page 131 Line 38
Change
“The stressed receiver sensitivity OMA_outer at TP3 (OMA_TP3) is obtained after the following steps”
to
"The stressed receiver sensitivity OMA_outer at TP3 (SRS OMA_outer) is obtained after the following steps”

Page 131 Line 51
Change
“The stressed receiver sensitivity OMA_outer at TP3 (OMA_TP3) is calculated using Equation …”
to
""The stressed receiver sensitivity OMA_outer at TP3 (SRS OMA_outer) is calculated using

Equation …"

Page 131 Line 48 (Equation 166-22)
Change
"OMA_TP3"
to
"SRS OMA_outer"

Page 132 Line 51
Change
"Alternatively, OMATP3 can be measured using the method described in 166.6.4.4"
to
"Alternatively, SRS OMA_outer can be measured using the method described in 166.6.4.4"

Cl **166** *SC* **166.6.4.13.1** *P* **131** *L* **49** # R1-50

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *Stressed receiver*

In item b in the list, the optical attenuation is increased until some condition is met (indicating the receiver does not receiver correctly).

In item c, the attenuation is increased again until none of the conditions are met… but this does not make sense - the received signal is degraded further.

I assume the attenuation should be decreased instead, such that the receiver can get a better signal until it receives correctly.

SuggestedRemedy

In item c, change "increased" to "decreased".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Comment is out of scope for this recirculation ballot.
In item c, change "increased" to "decreased".
Add item d as "Measure average optical power at TP3 (AOP_TP3)".

Cl **166** *SC* **166.6.4.13.4** *P* **134** *L* **20** # R1-65

Wienckowski, Natalie General Motors Company

Comment Type **TR** *Comment Status* **D** *Units conversion (kHz)*

Comment #i-96 was not implemented correctly. The statement "f is given in Hz for the equations in the table" was supposed to be changed to "f is given in kHz for the equations in the table", instead it was deleted. If f is not specified it is assumed to be in Hz which means the text is still not correct.

SuggestedRemedy

Add "f is given in kHz for the equations in Table 166-17 and Table 166-18." at the end of the paragraph.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Comment #i-96 was correctly implemented- After discussion it was agreed to remove the reference to kHz and let the document reader to make the unit change.
However, the change proposed may help with this unit conversion.

Page 134, Line 20
Add
"f is given in kHz for the equations in Table 166-17 and Table 166-18." at the end of the paragraph.

Cl **166** *SC* **166.6.4.13.4** *P* **134** *L* **35** # R1-51

Ran, Adee
Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *Jitter*

The test specifies jitter at frequencies only up to 100 kHz in Table 166–17 and 1 MHz in Table 166–18.

But receivers need to tolerate some minimum jitter at frequencies above the CDR loop bandwidth without failing.

As an example, in Table 121–12, SJ of 0.05 UI at frequencies up to 10*LB.

The current ranges and equations create SJptp values of 0.15 UI or 0.06 UI at the highest given frequency, so using the same method as in Table 121–12, higher frequencies will have the same values as a constant, which may be too stressful. If this is not the intent, the range of the equations may be extended by a factor of 3 so that the constant values become 0.05 UI and 0.02 UI respectively.

SuggestedRemedy

Add a row at the bottom of both tables, with frequency range extending to 10 times the loop bandwidth (either as in Table 121–12, or with explicit values from Table 166–14).

The SJptp value for this row is constant - the value obtained from the highest frequency given in the equation.

Consider extending the frequency range of the second row by a factor of 3 (to 300 kHz and 3 MHz).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change Table 166-17, 2nd entry: "100 kHz" to "300 kHz".
Add row to Table 166-17: "300 kHz < f <= 1 MHz | 0.05".
Change Table 166-18, 2nd entry: "1 MHz" to "3 MHz".
Add row to Table 166-18: "3 MHz < f <= 10 MHz | 0.05 | 0.02"

Cl **166** *SC* **166.11** *P* **140** *L* **33** # R1-52

Ran, Adee
Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *Delay*

The delay in optical PHYs is typically stated as "sum of transmit and receive, including 2 m of fiber". It is practical and relatively easy to measure the sum of the transmit and receive delays with such fiber, e.g. in a loopback configuration, and verify that delay constraints are met.

In this draft, the delays are defined without including any external fiber, which is different from the convention. Additionally, measurements are defined separately in each direction, between the xMII to the MDI - and since the xMII is typically not exposed, there is no practical method to conduct such measurements in the general case.

The delays constraints in the table are in hundreds or thousands of ns. Considering that the delay per meter of fiber is approximately 5 ns per meter, a 2 m fiber would add only 10 ns (3% of or one pause_quantum for the highest speed delay. Thus, short measurement-setup delays can be included in the delay constraint with little or no change.

The NOTE mentions additional delay from the medium and in-line connectors, but this delay is irrelevant for this subclause, which deals with the PHY constraints. Also, surely the delays of in-line connectors are negligible compared to the specified numbers.

I am aware of the existing specifications of some BASE-T PHYs (Table 125-3) which are stated with "does not include delay of cable medium" - these may need to be removed in maintenance (since cable medium is never included). But this is not a BASE-T PHY and should not follow bad precedence.

SuggestedRemedy

Change the second paragraph from
"The sum of the transmit and receive data delays for an implementation of the PHY shall not exceed the limits shown in Table 166–23. Transmit data delay is measured from the input of a given unit of data at the xMII to the presentation of the same unit of data by the PHY to the MDI. Receive data delay is measured from the input of a given unit of data at the MDI to the presentation of the same unit of data by the PHY to the xMII."

to
"The sum of the transmit and receive data delays for an implementation of the PHY, including 2 m of fiber in one direction, shall not exceed the limits shown in Table 166–23".

Delete the NOTE.

Change the last row of the table, adding one pause quantum to compensate for the delay of the fiber as follows (the fiber has negligible effect on other rows):

50GBASE-AU | 15 360 | 30 | 307.2

Update the Notes column in Table 44-2 -4 to state "Includes 2 m of fiber".

Remove the statement "Does not include delay of medium" in the notes of Table 44-2, Table 105-3, Table 125-3, and Table 131-4. In Table 44-2 and Table 131-4, add "Includes 2 m of fiber" instead (to match the existing rows).

In Table 131-4, update the numbers as listed above

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Comment is out of scope for this recirculation ballot.

The sum of the transmit and receive data delays for an implementation of the PHY considering delimitations of TX and RX are important, because the clause define the PHY using xMII as PCS service interface.
The user can do the math based on the test setup in order to compensate the delay results.

Cl **166** *SC* **166.12.7** *P* **148** *L* **45** # R1-53

Ran, Adee Cisco Systems, Inc.

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

The PICS tables should follow their headings, not float to the next page.

SuggestedRemedy

Apply table formatting as appropriate.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The commenter should note that this clause begins with an Editor's Note that aids readers in knowing which other documents have been considered in writing the amendment. This Editor's Note being removed from the published amendment potentially affects every page of Clause 166.

The commenter therefore is reminded of the SASB Operations Manual 5.4.3.3: "It should be borne in mind that proposed standards are professionally edited prior to publication." Review of pagination and positioning of floating tables and figures is a part of publication preparation.

Cl **166B** *SC* **166B** *P* **158** *L* **8** # R1-54

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *Improve wording*

The annex title, "RS-FEC codeword example", is too generic. It is a specific RS-FEC. There are other ones in 802.3.

SuggestedRemedy

Change the title to "RS-FEC(544,522) codeword example".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Comment is out of scope for this recirculation ballot.
However, the suggested remedy is accepted.

Cl **166B** *SC* **166B.1** *P* **158** *L* **14** # R1-55

Ran, Adee Cisco Systems, Inc.

Comment Type **T** *Comment Status* **D** *Improve wording*

The text of this subclause is written as if there are several tables, but in this annex there is only one.

Also, the description of the table is split between 166B.1 and 166B.2, and the order of the sentences makes it hard to follow. It should be in the same subclause of the table, 166B.2.

The suggested remedy re-orders the description for clarity.

SuggestedRemedy

Change the content of 166B.1 to
"This annex provides an example RS-FEC(544,522) codeword produced by the encoder defined in Clause 166 (see 166.2.2.4), presented in tabular form."

Change the text of 166B.2 to
"Table 166B–1 contains a 5440-bit RS-FEC(544,522) codeword in hexadecimal representation. Each row contains 256 bits except the last one that contains 64 bits. Underscore ("_") symbols separate 64-bit groups to improve readability.

The transmission order is from left to right within each row, starting from the top row and ending at the bottom row, where the most significant bit of each hexadecimal symbol is transmitted first. Therefore, the most significant bit of the first hexadecimal symbol is CW<0>, and the least significant bit of the last hexadecimal symbol is CW<5439>.

The first 5220 transmitted bits of the codeword CW<5219:0> constitute the message portion of the codeword. The parity is computed using the encoder defined in 166.2.2.4 and it is appended to the message to complete the 5440-bit codeword.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.