

Received Comments

IEEE P802.3cy D3.0 10G+ Auto Task Force Initial Sponsor ballot comments

CI 0 SC 0 P1 L0 # I-1

Hajduczenia, Marek Charter Communications

Comment Type G Comment Status X

It seems unlikely that .3cw (Amendment #8) is approved before .3cy (Amendment #9). I suggest that the order of amendments be swapped, i.e., .3cy becomes Amendment #9 and .3cw becomes Amendment #8.

SuggestedRemedy

Change .3cy amendment number from #9 to #8 and notify .3cw of the change.

Proposed Response Response Status O

CI FM SC FM P1 L10 # I-14

Grow, Robert RMG Consulting

Comment Type E Comment Status X

It appears to me that this project is likely to get to RevCom before P802.3cw (D2.0 being the current draft). I don't find any order dependency between P802.3cw/D2.0 and P802.3cy/D3.0.

SuggestedRemedy

If Mr. Law concurs: 1. renumber to Amendment 8, 2. remove cw from list at line 28 (note that cw is not in proper order now), 3. remove cw description on page 12 and renumber cy to amendment 8.

Proposed Response Response Status O

CI FM SC FM P1 L33 # I-16

Grow, Robert RMG Consulting

Comment Type E Comment Status X

With a 22 Dec 2022 ballot close, it is unlikely D3.1 will be created this year.

SuggestedRemedy

A friendly reminder that in addition to the title page and header draft date the copyright year needs to be updated at page 1, line 33 and page 2 line 46, and in page footer.

Proposed Response Response Status O

CI FM SC FM P2 L1 # I-142

Wienckowski, Natalie General Motors Company

Comment Type E Comment Status X

Incorrect formatting.

SuggestedRemedy

Remove "bold" style from "T" in "This".

Proposed Response Response Status O

CI FM SC FM P7 L24 # I-15

Grow, Robert RMG Consulting

Comment Type E Comment Status X

It looks like Merek has double billing (TF editor above list plus in the list here).

SuggestedRemedy

Delete Mr. Hajduczenia at line 24.

Proposed Response Response Status O

CI FM SC FM P7 L24 # I-143

Wienckowski, Natalie General Motors Company

Comment Type E Comment Status X

Participant name is duplicated. All names of officers are removed from general list except one.

SuggestedRemedy

Remove duplicate of "Hajduczenia, Marek" in general list it is included above as the Task Force Editor-in-Chief.

Proposed Response Response Status O

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CI **FM** SC **FM** P**10** L**4** # **I-17**  
 Grow, Robert RMG Consulting  
 Comment Type **ER** Comment Status **X**  
 This boxed paragraph is published in the approved standard, so the self reference should be IEEE Std 802.3cy-202x.  
 SuggestedRemedy  
 Change P802.3cy to IEEE Std 802.3cy-202x.  
 Proposed Response Response Status **O**

CI **45** SC **45.2.1.16** P**24** L**44** # **I-30**  
 Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M  
 Comment Type **E** Comment Status **X**  
 Table 45-19 is significantly separated from the editing instruction.  
 SuggestedRemedy  
 Change pagination (e.g., force new page before 45.2.1.16) so that Table 45-19 stays with its editing instruction and before editing instruction to insert 45.2.1.16.a  
 Proposed Response Response Status **O**

CI **45** SC **45.2.1.16** P**24** L**47** # **I-144**  
 Wienckowski, Natalie General Motors Company  
 Comment Type **E** Comment Status **X**  
 grammar  
 SuggestedRemedy  
 Change: as shown follows  
 To: as follows  
 Proposed Response Response Status **O**

CI **45** SC **45.2.1.244.1** P**26** L**23** # **I-103**  
 Ran, Adee Cisco Systems, Inc.  
 Comment Type **T** Comment Status **X**  
 "Reed-Solomon interleaving is described in 149.3.2.2.15 for MultiGBASE-T1 and 165.3.2.2.15 for 25GBASE-T1"  
 But the definition of MultiGBASE-T1 in 1.4.407 includes 25GBASE-T1 (in addition to 2.5GBASE-T1, 5GBASE-T1, and 10GBASE-T1).  
 Similarly in the subsequent sentence and in other places (e.g., 45.2.1.246.1, 45.2.1.246.2).  
 SuggestedRemedy  
 Change both instances of "MultiGBASE-T1" to "2.5GBASE-T1, 5GBASE-T1, and 10GBASE-T1".  
 Implement elsewhere as necessary.  
 Proposed Response Response Status **O**

CI **45** SC **45.2.1.244.1** P**26** L**23** # **I-31**  
 Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M  
 Comment Type **E** Comment Status **X**  
 25GBASE-T1 is a MULTIGBASE-T1 PHY as well. This occurs in multiple places in clause 45. (comments marked MGBT1)  
 SuggestedRemedy  
 Change inserted text "for MultiGBASE-T1 and 165.3.2.2.15 for 25GBASE-T1." to "for 2.5GBASE-T1, 5GBASE-T1, and 10GBASE-T1; and 165.3.2.2.15 for 25GBASE-T1."  
 Proposed Response Response Status **O**

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CI 45 SC 45.2.1.244.1 P26 L29 # I-104

Ran, Adee Cisco Systems, Inc.

Comment Type TR Comment Status X

"If bits 1.2311.12:11 are set to these undefined values, the PHY will communicate these values to the link partner"

The term "undefined" (and sometimes "not defined") seems incorrect here - the values are defined, but are invalid in some cases. All the other text in 45.2.1 seems to use the word "invalid" for values that are not allowed.

Also, "will" is deprecated and should only used in statements of fact. In this case, since the value is invalid ("undefined"), saying that the PHY will communicate is likely not a requirement but rather allowed behavior, so "may" is preferable.

Also, it is not stated how a receiver that receives an invalid value and does not support it is expected to behave. To prevent such a receiver from "taking the blame", the behavior should be stated as "undefined".

SuggestedRemedy

Change all instances of "undefined" and "not defined" in 45.2.1.244.1 and 45.2.1.245.1, and in Table 45-206 and Table 45-207, to "invalid".

Change "will" to "may" in 45.2.1.244.1. Change "will indicate" to "indicates" in 45.2.1.245.1.

Append the following sentence to the end of the second paragraph of 45.2.1.244.1 and the second paragraph of 45.2.1.245.1: "The behavior of a receiver that receives an invalid interleave request is undefined".

Proposed Response Response Status O

CI 45 SC 45.2.1.245.1 P27 L9 # I-33

Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M

Comment Type E Comment Status X

25GBASE-T1 is a MULTIGBASE-T1 PHY as well. (MGBT1)

SuggestedRemedy

Change inserted text "for MultiGBASE-T1 and 165.3.2.2.15 for 25GBASE-T1." to "for 2.5GBASE-T1, 5GBASE-T1, and 10GBASE-T1; and 165.3.2.2.15 for 25GBASE-T1."

Proposed Response Response Status O

CI 45 SC 45.2.1.245.1 P27 L10 # I-34

Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M

Comment Type E Comment Status X

25GBASE-T1 is a MULTIGBASE-T1 PHY as well. (MGBT1)

SuggestedRemedy

Change inserted text "for MultiGBASE-T1 and 165.3.2.4.5 for 25GBASE-T1." to "for 2.5GBASE-T1, 5GBASE-T1, and 10GBASE-T1; and 165.3.2.4.5 for 25GBASE-T1."

Proposed Response Response Status O

CI 45 SC 45.2.1.244.1 P27 L24 # I-32

Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M

Comment Type E Comment Status X

25GBASE-T1 is a MULTIGBASE-T1 PHY as well. (MGBT1)

SuggestedRemedy

Change inserted text "for MultiGBASE-T1 and 165.3.2.4.5 for 25GBASE-T1." to "for 2.5GBASE-T1, 5GBASE-T1, and 10GBASE-T1; and 165.3.2.4.5 for 25GBASE-T1."

Proposed Response Response Status O

CI 45 SC 45.2.1.246.1 P27 L26 # I-35

Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M

Comment Type E Comment Status X

25GBASE-T1 is a MULTIGBASE-T1 PHY as well. (MGBT1)

SuggestedRemedy

Change inserted text "for MultiGBASE-T1 and in 165.5.1 and Table 165-11 for 25GBASE-T1." to "for 2.5GBASE-T1, 5GBASE-T1, and 10GBASE-T1; and in 165.5.1 and Table 165-11 for 25GBASE-T1."

Proposed Response Response Status O

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CI 45 SC 45.2.1.246.2 P27 L36 # I-36  
 Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M  
 Comment Type E Comment Status X  
 25GBASE-T1 is a MULTIGBASE-T1 PHY as well. (MGBT1)  
 SuggestedRemedy  
 Change inserted text "for MultiGBASE-T1 and 165.3.2.2.20 for 25GBASE-T1." to "for 2.5GBASE-T1, 5GBASE-T1, and 10GBASE-T1; and 165.3.2.2.20 for 25GBASE-T1."  
 Proposed Response Response Status O

CI 45 SC 45.2.1.246.3 P27 L44 # I-37  
 Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M  
 Comment Type E Comment Status X  
 25GBASE-T1 is a MULTIGBASE-T1 PHY as well. (MGBT1)  
 SuggestedRemedy  
 Change inserted text "for MultiGBASE-T1 and 165.3.2.2.20 for 25GBASE-T1." to "for 2.5GBASE-T1, 5GBASE-T1, and 10GBASE-T1; and 165.3.2.2.20 for 25GBASE-T1."  
 Proposed Response Response Status O

CI 45 SC 45.2.1.246.2 P27 L37 # I-105  
 Ran, Adeo Cisco Systems, Inc.  
 Comment Type E Comment Status X  
 "165.3.2.2.20 25GBASE-T1"  
 Also in 45.2.1.246.3.  
 SuggestedRemedy  
 Change to "in 165.3.2.2.20 for 25GBASE-T1", in both places.  
 Proposed Response Response Status O

CI 45 SC 45.2.3.87.2 P28 L12 # I-38  
 Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M  
 Comment Type TR Comment Status X  
 The rfer\_timer does not appear in the RFER Monitor State Diagram (Fig 149-15 or Figure 165-13), hence it does not appear to control the high\_rfer state. While the variable definition says within one rfer\_timer interval, this is in disagreement with the state diagram, which never starts (or resets) rfer\_timer appears to count RFRX\_CNT\_LIMIT RS-FEC frames. RFRX\_CNT\_LIMIT is a constant set to 88 frames. This equates to 281 600 bit times in clause 149, and 732 160 bit times in clause 165. Note the error rate is still 16 blocks out of 88 blocks received according to the state diagram, which would be high anyways. (note - this appears to be an error in the base standard and the change would correct a double/inconsistent requirement in clause 149)  
 SuggestedRemedy  
 P28 L10 & 11 (2 occurrences): Change "within one rfer\_timer interval" to "within 88 RS-FEC frames"  
 Add 149.3.7.2.2 to the draft, changing the definition of hi\_rfer from "Boolean variable that is asserted TRUE when the rfer\_cnt reaches 16 errors in one rfer\_timer interval." to "Boolean variable that is asserted TRUE when the rfer\_cnt reaches 16 errors in one RFRX\_CNT\_LIMIT interval."  
 Delete definition of rfer\_timer at 165.3.7.2.3 (P67 L35 to 38).  
 Proposed Response Response Status O

CI 45 SC 45.2.1.246.2 P27 L38 # I-145  
 Wienckowski, Natalie General Motors Company  
 Comment Type E Comment Status X  
 missing "for"  
 SuggestedRemedy  
 Insert "for" between 165.3.2.2.20 and 25GBASE-T1.  
 Also on P27L45.  
 Proposed Response Response Status O



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Cl 105 SC 105.1.3 P34 L1 # I-108  
 Ran, Adeo Cisco Systems, Inc.  
 Comment Type E Comment Status X  
 According to the Illuminati order (e.g. in Table 125-1), single twisted pair PHYs are listed after multi-pair ones of the same speed.  
 SuggestedRemedy  
 Change "before the row for 25GBASE-T" to "after the row for 25GBASE-T".  
 Proposed Response Response Status O

Cl 105 SC 105.2 P34 L20 # I-109  
 Ran, Adeo Cisco Systems, Inc.  
 Comment Type E Comment Status X  
 The editorial instruction is phrased out of order; the table has been modified by 802.3cz, not the clauses.  
 SuggestedRemedy  
 Insert "(as modified by IEEE Std 802.3cz-202x)" after "Table 105-2", and delete the same phrase from the end of the instruction.  
 Proposed Response Response Status O

Cl 105 SC 105.5 P35 L21 # I-110  
 Ran, Adeo Cisco Systems, Inc.  
 Comment Type E Comment Status X  
 Table 105-3 is also modified by 802.3cz.  
 SuggestedRemedy  
 Insert "(as modified by IEEE Std 802.3cz-202x)" after "Table 105-3".  
 Proposed Response Response Status O

Cl 165 SC 165.1 P36 L10 # I-7  
 Grow, Robert RMG Consulting  
 Comment Type TR Comment Status X  
 Incorrect use of acronym PHY in text "25GBASE-T1 Physical Layer (PHY)". IEEE Std 802.3-2022, 1.5 says: "PHY Physical Layer device (PHY)". Also, the text is inconsistent with Figure 165-1 where the optional Autonegotiation sublayer is also part of the PHY.  
 SuggestedRemedy  
 Change "Together, the corresponding PCS, PMA sublayers comprise a 25GBASE-T1 Physical Layer (PHY)." to "Together, the corresponding PCS, PMA, and optional Autonegotiation sublayers comprise a 25GBASE-T1 Physical Layer device (PHY)."  
 Proposed Response Response Status O

Cl 165 SC 165.1 P36 L16 # I-93  
 Rolfe, Benjamin Blind Creek Associates  
 Comment Type T Comment Status X  
 "may" is used to describe an optional behavior (requirement) within the scope of this standard. How the standard is used is not within scope of the standard. As an informative statement this is stating a possibility with respect to the use of this standard. The correct word for that is "can".  
 SuggestedRemedy  
 Change "may" to "can"  
 Proposed Response Response Status O

Cl 165 SC 165.1.1 P36 L28 # I-111  
 Ran, Adeo Cisco Systems, Inc.  
 Comment Type E Comment Status X  
 "The term 'MultiGBASE-T1' when used in this clause refers to"  
 Commas would make the parenthetical clearer.  
 SuggestedRemedy  
 Change to "The term 'MultiGBASE-T1', when used in this clause, refers to"  
 Proposed Response Response Status O

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Cl 165 SC 165.1.2 P36 L34 # I-112  
 Ran, Adee Cisco Systems, Inc.  
 Comment Type E Comment Status X  
 "The relationship... are shown" - mismatch  
 SuggestedRemedy  
 Change "are shown" to "is shown"  
 Proposed Response Response Status O

Cl 165 SC 165.1.2 P36 L35 # I-8  
 Grow, Robert RMG Consulting  
 Comment Type TR Comment Status X  
 The PCS and PMA only connect to the medium when the optional AN sublayer is not present.  
 SuggestedRemedy  
 Change to: "The PHY sublayers shown shaded in Figure 165-1 are specified in this clause, while the optional Auto-Negotiation sublayer for a 25GBASE-T1 PHY is defined in Clause 98. The 25GBASE-T1 PHY connects one Clause 4 Media Access Control (MAC) layer to the medium."  
 Proposed Response Response Status O

Cl 165 SC 165.1.3 P37 L31 # I-113  
 Ran, Adee Cisco Systems, Inc.  
 Comment Type T Comment Status X  
 There is only one pair in the medium of this PHY.  
 SuggestedRemedy  
 Delete "on each pair".  
 Proposed Response Response Status O

Cl 165 SC 165.1.3 P38 L7 # I-114  
 Ran, Adee Cisco Systems, Inc.  
 Comment Type TR Comment Status X  
 EEE is not a specification for reducing power consumption; it is an optional way to advertise periods of low link utilization (identified by unspecified means), such that a PHY or its partner may be able reduce power (by unspecified means).  
 Even if EEE is supported, a device does not necessarily save power.  
 SuggestedRemedy

Change "is able to reduce power consumption during periods of low link utilization" to "can indicate periods of low link utilization, providing opportunity for reducing power consumption,"  
 Proposed Response Response Status O

Cl 165 SC 165.1.3 P38 L12 # I-41  
 Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M  
 Comment Type E Comment Status X  
 "The OAM for 25GBASE-T1 information is exchanged" is awkward word order  
 SuggestedRemedy  
 Change "The OAM for 25GBASE-T1 information" to "The OAM information for 25GBASE-T1"  
 Proposed Response Response Status O

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Cl 165 SC 165.1.3 P38 L13 # I-115

Ran, Adee Cisco Systems, Inc.

Comment Type TR Comment Status X

The term "out of band" is defined in 1.4.442 as "using a frequency that is within the pass band of the transmission facility but outside a frequency range normally used for data transmission".

The OAM signaling does not match this definition; on the contrary, it is in-band, per the definition in 1.4.359: "within the bandwidth of the information channel".

There are several instances of this incorrect use of "out of band" in the base standard, which should be dealt with through maintenance; but a new clause should be correct.

(See comment R1-9 against P802.3cz D3.1)

SuggestedRemedy

Change "The OAM for 25GBASE-T1 information is exchanged between two 25GBASE-T1 PHYs out of band, that is, outside of the specified 25 Gb/s Ethernet data stream" to "The OAM for 25GBASE-T1 information is exchanged between two 25GBASE-T1 PHYs in-band, by interleaving it with the 25 GB/s Ethernet data stream".

Alternatively, delete the sentence to avoid the "band" terms.

Proposed Response Response Status O

Cl 165 SC 165.1.3 P38 L19 # I-42

Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M

Comment Type TR Comment Status X

"over the single balanced pair of conductors." in our zeal to reference the conductors, we have left out of the overview any reference to the link segment specified in 165.7. Besides, the only thing matters to the PMA is the link segment. If someone could do this on unbalanced conductors and meet the specs, the PMA would still support it.

SuggestedRemedy

change "over the single balanced pair of conductors" to "over a link segment meeting the specifications of 165.7"

Proposed Response Response Status O

Cl 165 SC 165.1.3.1 P38 L29 # I-116

Ran, Adee Cisco Systems, Inc.

Comment Type TR Comment Status X

"the PCS receives eight 25GMII data octets"

These could be either data or control.

SuggestedRemedy

Delete "data".

Proposed Response Response Status O

Cl 165 SC 165.1.3.1 P38 L35 # I-58

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type E Comment Status X

"an" should be used for 8460-bit block

SuggestedRemedy

change "a 8460-bit block" to "an 8460-bit block"

Proposed Response Response Status O

Cl 165 SC 165.1.3.1 P38 L35 # I-146

Wienckowski, Natalie General Motors Company

Comment Type E Comment Status X

grammar

SuggestedRemedy

Change: a 8460-bit  
To: an 8460-bit

Proposed Response Response Status O

Received Comments

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Cl 165 SC 165.1.3.1 P38 L35 # [redacted]

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type E Comment Status X

It would be better to introduce the term of "RS-FEC input frame" here before introducing "RS-FEC input superframe".

SuggestedRemedy

rewrite to "Next, a 10-bit OAM field is appended to form an 8460-bit RS-FEC input frame."

Proposed Response Response Status O

Cl 165 SC 165.1.3.1 P38 L35 # [redacted]

Ran, Adee Cisco Systems, Inc.

Comment Type E Comment Status X

The terms "RS-FEC frame", "superframe", "training frames", "PHY frame", "framing", in addition to the usual meaning of "frame" as a MAC frame (see 1.4.385); "frame" is often used with not qualifier, leaving it to the reader to understand it from the context.

This loose terminology is unfortunate. Although it originates from earlier projects, there are efforts to use the term "codeword" for RS-FEC blocks (which is quite established and unambiguous), and it may come up in maintenance at some point. Better do it well in each new project...

For completeness consider the following terminology replacements:

Frame (referring to RS-FEC) -> codeword

"Superframe" -> codeword group

"Training frame" - retain (used in several other places) but only as a qualified term

"Framing" -> alignment (in the receive direction), "encoding" (in the transmit direction).

SuggestedRemedy

Change to the terminology described in the comment, with editorial license.

If this is not done, ensure that all instances of "frame" that do not refer to MAC frames are fully qualified.

Proposed Response Response Status O

Cl 165 SC 165.1.3 P39 L32 # [redacted]

Grow, Robert RMG Consulting

Comment Type TR Comment Status X

Figure 165-2 eliminates the optional AN sublayer. (Problems with the bottom left to right arrow at line 46, but also with MDI+ and MDI- at line 32.) This could be handled with a footnote (but mixing NOTE and footnote in the figure is somewhat messy), adding a NOTE 3, or changing the figure to indicate the optional AN layer is not shown.

SuggestedRemedy

I favor: "NOTE 3--The optional AN sublayer is not shown between the PMA sublayer and the MDI." Make consistent changes to Figure 165-3 (if adding the preferred NOTE 3, Figure 165-3 will need a NOTE 1 and NOTE 2).

Proposed Response Response Status O

Cl 165 SC 165.1.3 P39 L39 # [redacted]

Grow, Robert RMG Consulting

Comment Type E Comment Status X

The vertical interface lines are not consistent. On the left, the MII aligns with the transition arrow on the left at lines 30 through 35, but on the right, the MDI line if extended would not transect the line for MDI+/MDI-.

SuggestedRemedy

Adjust the MDI+/MDI- signal lines and placement of the vertical MDI line so that if extended, it would transect the signal lines.

Proposed Response Response Status O

Cl 165 SC 165.1.3 P39 L46 # [redacted]

Grow, Robert RMG Consulting

Comment Type E Comment Status X

Putting PHY and the parenthetical text on different lines makes readability worse.

SuggestedRemedy

Put all the text on one line.

Proposed Response Response Status O

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Cl 165 SC 165.1.3.2 P40 L17 # I-2

Maguire, Valerie Copperopolis

Comment Type E Comment Status X

Enclose the id est examples in parenthesis to be consistent with the parent document.

SuggestedRemedy

Replace, "electrical parameters of the PMA, i.e., test modes and electrical specifications for the transmitter and receiver, are specified" with, "electrical parameters of the PMA (i.e., test modes and electrical specifications for the transmitter and receiver) are specified".

Proposed Response Response Status O

Cl 165 SC 165.1.4 P40 L51 # I-118

Ran, Adee Cisco Systems, Inc.

Comment Type TR Comment Status X

"25GBASE-T1 signaling is performed by the PCS generating continuous code-group sequences"

The "continuous code-group sequences" seem to come from multi-pair PHYs. This PHY has a single pair, and uses a sequence of PAM4 symbols (item b in the list following this paragraph).

Also, in 165.3.2.2, P52 L29, and 165.3.2.3, P61 L50.

SuggestedRemedy

Change "continuous code-group sequences" to "a sequence of PAM4 symbols".

Change "code-groups" to "symbols" in the other two locations provided in the comment.

Proposed Response Response Status O

Cl 165 SC 165.2.2.1.1 P43 L29 # I-147

Wienckowski, Natalie General Motors Company

Comment Type E Comment Status X

grammar

SuggestedRemedy

Change: an 25GMII  
To: a 25GMII  
Also, P43L42, P56L45

Proposed Response Response Status O

Cl 165 SC 165.2.2.9.1 P48 L41 # I-148

Wienckowski, Natalie General Motors Company

Comment Type E Comment Status X

incorrect format

SuggestedRemedy

Change the format for the TRUE and FALSE statements to match the remainder of the document, e.g. remove the "--" and add a tab between TRUE/FALSE and the description.

Proposed Response Response Status O

Cl 165 SC 165.3.2.2 P52 L37 # I-119

Ran, Adee Cisco Systems, Inc.

Comment Type TR Comment Status X

"...the PCS Transmit function shall use a 65B coding technique to generate code-groups that represent data or control"

"code-groups" is inadequate here; it seems to originate from existing BASE-T PHYs. The 65B blocks represent data and control characters, but there are additional processing steps (FEC, OAM) before the data is converted to PAM4 symbols (corresponding to code-groups in other BASE-T PHYs).

The suggested remedy is a possible replacement text; other changes may be possible, but the term "code-group" should not be used.

SuggestedRemedy

Change the quoted sentence to "the PCS Transmit function shall use the transmit process specified in 165.3.2.2.13 through 165.3.2.2.21 to generate the data stream and PAM4 symbol stream, as illustrated in Figure 165-5."

Change the PICS item accordingly.

Proposed Response Response Status O

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Cl 165 SC 165.3.2. P52 L54 # I-88

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type E Comment Status X

The relative relationship between various frame alignments can be confusing and it would be beneficial to add an informative text to better explain this relationship.

*SuggestedRemedy*

Add table on slide 4 of jonsson\_tu\_zimmerman\_3cy\_01\_08\_22\_22, with the following text: "The information in Table 165-XX shows the period and relative offset of the start of various frames. The values are given in terms of PFC24, which are synchronized between master and slave."

Proposed Response Response Status O

Cl 165 SC 165.3.2.2.2 P53 L # I-121

Ran, Adeo Cisco Systems, Inc.

Comment Type E Comment Status X

Incorrect hierarchy; the subclause heading "65B RS-FEC transmission code" addresses all the content in the subsequent subclauses, 165.3.2.2.3 through 165.3.2.2.17, most of which are details of "Use of blocks".

The hierarchy is unnecessarily deep, and can be flattened; 165.3 and 165.3.2 have practically the same title.

*SuggestedRemedy*

Move 163.3.2.2.3 through 163.3.2.2.17 to be below the current 163.3.2.2.2.

Flatten the hierarchy by removing the subclause 165.3.2 ("PCS functions") and promoting its three subclauses upwards to the parent subclause 165.3 ("Physical Coding Sublayer (PCS) functions")

Proposed Response Response Status O

Cl 165 SC 165.3.2.2 P53 L 11 # I-120

Ran, Adeo Cisco Systems, Inc.

Comment Type TR Comment Status X

In Figure 165-5, the "circled large plus sign" seems to denote a bitwise XOR operation (or modulo 2 addition), but it is not stated explicitly. Compare to Figure 165-9 which has a legend for its operations.

Figure 165-6 and Figure 165-7 also use similar, but different, "plus sign in a circle".

The same symbol is also used in Equation 165-4 without explicit definition.

Note that the established convention for XOR is a gate symbol, and in text the caret character (^, see Table 21-1).

*SuggestedRemedy*

Add a legend explaining the "circled plus sign" in the figures.

Change to the "^" symbol in Equation 165-4 and add "where ^ denotes the XOR operation".

Proposed Response Response Status O

Cl 165 SC 165.3.2.2.2 P54 L 17 # I-60

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type E Comment Status X

since the RS-FEC encoder/decoder and interleaver/deinterleaver are specified in different sections, it would be better to have separate function blocks in Figure 165-6 PCS TX bit ordering.

*SuggestedRemedy*

have separate RS-FEC Encoder and interleaver blocks in Figure 165-6 PCS TX bit ordering.

Proposed Response Response Status O

Cl 165 SC 165.3.2.2.3 P55 L 20 # I-63

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type E Comment Status X

Figure 165-7 PCS RX bit ordering should be placed in PCS Receive function section

*SuggestedRemedy*

place somewhere in sections 165.3.2.3 PCS Receive function

Proposed Response Response Status O

Received Comments

IEEE P802.3cy D3.0 10G+ Auto Task Force Initial Sponsor ballot comments

Cl 165 SC 165.3.2.2.3 P55 L20 # I-62

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type E Comment Status X

since the RS-FEC encoder/decoder and interleaver/deinterleaver are specified in different sections, it would be better to have separate function blocks in Figure 165-7 PCS RX bit ordering.

SuggestedRemedy

have separate RS-FEC decoder and deinterleaver blocks in Figure 165-7 PCS RX bit ordering.

Proposed Response Response Status O

Cl 165 SC 165.3.2.2.3 P55 L47 # I-122

Ran, Adeo Cisco Systems, Inc.

Comment Type T Comment Status X

"The value of the data/ctrl header is shown as a binary value. Binary values are shown with the first transmitted bit (the LSB) on the left."

data/ctrl header is a single bit - there is no LSB and no "first" transmitted bit. So this sentence is meaningless and quite confusing.

Note that the value of the data/ctrl header bit is not shown in any figure in this clause; it only appears in Figure 149-8, which is referenced along with 149.3.2.2.4 in 165.3.2.2.4. Also the "notation conventions" in 165.3.2.2.3 already cover binary values. No need to repeat the same information.

SuggestedRemedy

Delete the quoted text.

Proposed Response Response Status O

Cl 165 SC 165.3.2.2.7 P56 L18 # I-123

Ran, Adeo Cisco Systems, Inc.

Comment Type T Comment Status X

In this subclause the text refers to a corresponding subclause in 149 with "shall be as specified"; also in 165.3.2.2.8; in 165.3.2.2.11 it is "shall be specified"; but in all others "is/are as specified".

This is inconsistent, and results in having arbitrary PICS items.

It seems that "shall" is unnecessary here and creates a burden for people who read the PICS (if there are any)..

SuggestedRemedy

Change all instances of references to 149.3.2.2.x to be consistent: "is/are as specified in <reference>".

Delete PICS that become unnecessary as a result of this change.

Proposed Response Response Status O

Cl 165 SC 165.3.2.2.11 P56 L34 # I-102

Rolfe, Benjamin Blind Creek Associates

Comment Type T Comment Status X

"Ordered set control characters shall be specified for MultiGBASE-T1 PHYs in 149.3.2.2.11" is incorrect use of "shall". As written it is declaring a requirement of the standard not the implementation of the standard. The control characters "are as" specified in 149.3.2.2.11? The control characters uses shall be those specified in 149.3.2.2.11? Are we mandating those control characters (and only those) be used or simply saying it's the same as specified in the reference clause? I'm guessing from the prior clause the later...but am probably wrong about that ;-)

SuggestedRemedy

Ordered set control characters are as specified for MultiGBASE-T1 PHYs in 149.3.2.2.11

Proposed Response Response Status O

## Received Comments

## IEEE P802.3cy D3.0 10G+ Auto Task Force Initial Sponsor ballot comments

Cl 165 SC 165.3.2.2.15 P57 L24 # I-124

Ran, Adee Cisco Systems, Inc.

Comment Type ER Comment Status X

In the expression " $m_{\{846 \times L-1\}}$ " and similar ones, the spacing in the subscript is unusual, and suggests that "L-1" is evaluated first (despite having no parentheses).

Also, a dash is used instead of a minus sign.

*SuggestedRemedy*

In this and all similar expressions (in 165.3.2.2.15, 165.3.2.2.16, and Figure 165-8), change the dash to a minus sign (or en dash).

Preferably, remove the spaces around the multiplication sign and add spaces around the minus sign instead.

Proposed Response Response Status

Cl 165 SC 165.3.2.2.16 P57 L34 # I-61

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type E Comment Status X

There are 90 parity symbols, the index goes up to 89 not 33

*SuggestedRemedy*

change from p1,33 to p1,89, and from pL,33 to pL,89  
needs to be updated to " $m_{846 \times L-1}$ ,  $m_{846 \times L-2}$ , ...,  $m_1$ ,  $m_0$ ,  $P_{1,89}$ , ...,  $P_{L,89}$ , ...,  $p_{1,0}$ , ...,  $p_{L,0}$ , ....."

Proposed Response Response Status

Cl 165 SC 165.3.2.2.17 P58 L29 # I-125

Ran, Adee Cisco Systems, Inc.

Comment Type E Comment Status X

The first sentence of this subclause states that "the symbol size is 10 bits".  
The next sentences have three instances of "ten-bit" as an adjective of the symbol, after the number of symbols.

The initial sentence is sufficient, and there is no need to write "ten-bit" every time a symbol is mentioned; combined with the number of symbols, this does not contribute to readability.

*SuggestedRemedy*

Delete "ten-bit" before "RS-FEC" three times in this paragraph.

Proposed Response Response Status

Cl 165 SC 165.3.2.2.17 P58 L41 # I-126

Ran, Adee Cisco Systems, Inc.

Comment Type TR Comment Status X

The primitive polynomial is  $x^{10}+x^3+1$ ; equating it to 0x409 is confusing, and is arguably an abuse of notation.

Note that 802.3cz uses simply  $x^{10}+x^3+1$  (see 166.2.2.4)

*SuggestedRemedy*

Delete "0x409=".

Proposed Response Response Status

Received Comments

IEEE P802.3cy D3.0 10G+ Auto Task Force Initial Sponsor ballot comments

Cl 165 SC 165.3.2.2.17 P58 L43 # I-127

Ran, Adeo Cisco Systems, Inc.

Comment Type TR Comment Status X

"Equation (165-2) 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 (165-3) defines the parity polynomial  $p(x)$  whose coefficients are the parity symbols  $p_{21}$  to  $p_0$ "  
 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 subsequent text.

Also, the encoder illustrated in Figure 165-9 is not just a shift register.

(See comment R1-22 against P802.3cz D3.1)

SuggestedRemedy

Change the quoted sentences to, respectively,

"The contents of the RS-FEC message are represented by a polynomial  $m(x)$  whose coefficients are the message symbols  $m_{521}$  to  $m_0$  as shown in Equation (165-2)"

and

"The parity polynomial  $p(x)$  is calculated as the remainder of polynomial division of  $m(x)$  by  $g(x)$ . Its coefficients  $p_{89}$  to  $p_0$ , as shown in Equation (165-3), are the parity symbols".

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 165-9"

to  
 The calculation of the coefficients of  $p(x)$  is illustrated in Figure 165-9".

Proposed Response Response Status O

Cl 165 SC 165.3.2.2.17 P59 L19 # I-128

Ran, Adeo Cisco Systems, Inc.

Comment Type E Comment Status X

Commas should be placed before and after parentheticals.

SuggestedRemedy

Add commas after "m\_845" and after "p\_0".

Proposed Response Response Status O

Cl 165 SC 165.3.2.2.17 P59 L46 # I-71

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type E Comment Status X

There are two tables marked Table 165-1, one on page 59 and one on page 60.

SuggestedRemedy

Update table numbers to avoid duplicate numbering.

Proposed Response Response Status O

Cl 165 SC 165.3.2.2.17 P59 L50 # I-129

Ran, Adeo Cisco Systems, Inc.

Comment Type E Comment Status X

In Table 165-1, the ruling suggests that the first two columns are separate from others. This should be fixed.

The table could be improved by adding a leftmost column with heading "I" and values from 0 to 12; and change column labels to " $g_{\{i\}}$ ", " $g_{\{13+i\}}$ ", " $g_{\{26+i\}}$ ", etc., such that the content of each cell is clearly described by its row and column headings.

SuggestedRemedy

Change the column ruling to have regular line width between columns 2 and 3.

Consider improving the table as suggested in the comment.

Proposed Response Response Status O

Cl 165 SC 165.3.2.2.18 P60 L27 # I-130

Ran, Adeo Cisco Systems, Inc.

Comment Type T Comment Status X

In this subclause there is no "shall" for the reference to the corresponding clause 149 subclause, unlike the subsequent ones.

Consistency...

SuggestedRemedy

Either add "shall" here or delete it from 165.3.2.2.19 through 165.3.2.2.21.

Adjust PICS accordingly.

Proposed Response Response Status O

Received Comments

IEEE P802.3cy D3.0 10G+ Auto Task Force Initial Sponsor ballot comments

Cl 165 SC 165.3.2.2.22 P61 L9 # I-131

Ran, Adeo Cisco Systems, Inc.

Comment Type E Comment Status X

The indented text seems to be a list of items, but is not formatted as such.

There are some other lists in the draft where this should be applied too.

SuggestedRemedy

Change formatting to a dashed list (DL). Apply elsewhere as necessary with editorial license.

Proposed Response Response Status O

Cl 165 SC 165.3.2.2.22 P61 L41 # I-82

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type TR Comment Status X

Values in Table 165-2 are incorrect.

SuggestedRemedy

Change the values in Table 165-2 to: 16, 48, 15.9744, 28, and 9.3184

Proposed Response Response Status O

Cl 165 SC 165.3.2.3 P61 L50 # I-132

Ran, Adeo Cisco Systems, Inc.

Comment Type T Comment Status X

"The PCS Receive function accepts received code-groups provided by the PMA Receive function"

SuggestedRemedy

Proposed Response Response Status O

Cl 165 SC 165.3.4 P63 L31 # I-133

Ran, Adeo Cisco Systems, Inc.

Comment Type E Comment Status X

The content of this subclause (Side-stream scrambler polynomials) is not helpful; the PCS scrambler is already addressed in 165.3.2.2.18 (by reference to 149.3.2.2.18, which has the required pointer to 149.3.4). There is no reference to this subclause in this draft.

SuggestedRemedy

Delete 165.3.4.

Proposed Response Response Status O

Cl 165 SC 165.3.6 P65 L7 # I-66

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type TR Comment Status X

Figure 165-12 - Incorrect Valid alert start for the Master at 0?

SuggestedRemedy

The alert signal for master at location zero should be removed from Figure 165-12

Proposed Response Response Status O

Cl 165 SC 165.3.6 P65 L7 # I-64

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type E Comment Status X

In Figure 165-11, the master is missing a valid alert starting at 92.

SuggestedRemedy

Add the missing valid alert start at 92 for master

Proposed Response Response Status O

## Received Comments

## IEEE P802.3cy D3.0 10G+ Auto Task Force Initial Sponsor ballot comments

Cl 165 SC 165.3.6 P65 L16 # I-83

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type E Comment Status X

The arrow for lpi\_slave\_offset is not correctly aligned in Figure 165-11.

*SuggestedRemedy*

Change the alignment of the arrow for lpi\_slave\_offset in Figure 165-11, to end at frame 42 (beginning of refresh frame).

Proposed Response Response Status O

Cl 165 SC 165.3.6 P65 L34 # I-84

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type E Comment Status X

The arrow for lpi\_slave\_offset is not correctly aligned in Figure 165-12.

*SuggestedRemedy*

Change the alignment of the arrow for lpi\_slave\_offset in Figure 165-12, to end at frame 42 (beginning of refresh frame).

Proposed Response Response Status O

Cl 165 SC 165.3.6 P66 L9 # I-87

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type E Comment Status X

The names "lpi\_slave\_offset" and "lpi\_master\_offset" can be confusing, because they are similar to "lpi\_offset" used in clause 149, but have a different meaning. They should be changed to "lpi\_slave\_refresh\_start" and "lpi\_master\_refresh\_start".

*SuggestedRemedy*

Replace all occurrences of "lpi\_slave\_offset" with "lpi\_slave\_refresh\_start" and replace all occurrences of "lpi\_master\_offset" with "lpi\_master\_refresh\_start".

Proposed Response Response Status O

Cl 165 SC 165.3.6.1 P66 L18 # I-134

Ran, Adeo Cisco Systems, Inc.

Comment Type ER Comment Status X

"Alert, a four RS-FEC frame long sequence (alert\_length), shall start four frames after the beginning of any eighth RS-FEC frame counting from the start of the QR cycle"

This is an awkwardly phrased sentence, and the "shall" seems inadequate; this is a description of the required alignment of the alert sequence.

Also, the final sentence in this paragraph (only starting at frame 92) contradicts the beginning ("any"), adding to the confusion.

This paragraph is followed by tables which seem to say the same thing in a more formal way. Perhaps it is enough to point to the tables.

*SuggestedRemedy*

Change to "Alert is a sequence of length alert\_length RS-FEC frames (see Table 165-3) that can start only at the beginning of RS-FEC frame u for specific values of u (where u denotes the 0-based index of the RS-FEC frame counting from the start of the QR cycle).

When slow wake is 0, the valid locations for Alert are when  $u \bmod 8 = 4$ . When slow wake is 1, the only valid location for Alert is  $u=92$ ."

Alternatively, delete the text description and use a reference to tables 165-4 and 165-5.

Proposed Response Response Status O

Received Comments

IEEE P802.3cy D3.0 10G+ Auto Task Force Initial Sponsor ballot comments

Cl 165 SC 165.3.6.1 P66 L21 # I-135

Ran, Adee Cisco Systems, Inc.

Comment Type TR Comment Status X

"Slow Wake" is mentioned here for the first time, and does not seem to be defined anywhere. It also appears in tables 165-4 and 165-5.

After a long search I found an InfoField bit called "SlowWakeRequest" defined in 165.4.2.4.5. But there is no variable called "Slow Wake" and it is not defined that SlowWakeRequest in the PHY capability bits is sent based on some variable that has another effect.

SlowWakeRequest and "slow wake" are not the same thing, and readers should not be expected to link them.

SuggestedRemedy

At the minimum, Change "slow wake" to "SlowWakeRequest" and add "(see 165.4.2.4.5)" in some appropriate place in the text.

Preferably, add a variable definition and a more detailed explanation of the SlowWakeRequest bit and the condition for sending alerts one way or the other; I assume is it the local SlowWakeRequest rather than the remote one that controls it?

Proposed Response Response Status O

Cl 165 SC 165.3.6.1 P66 L25 # I-65

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type TR Comment Status X

Sentence above Table 165-4:  
When Slow Wake is active, alert can be transmitted in only a single QR cycle location, starting at RS-FEC frame 92.  
This is only true for the master - the slave can only transmit starting at RS-FEC frame 44.

SuggestedRemedy

Need to add starting position for slave in the paragraph above table 165-4:  
"When Slow Wake is active, alert can be transmitted in only a single QR cycle location, starting at RS-FEC frame 92 for the master and RS-FEC frame 44 for the slave, as shown in Figure 165-12."

Proposed Response Response Status O

Cl 165 SC 165.3.6 P66 L29 # I-85

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type T Comment Status X

The tx\_refresh\_active condition is not correct in table 165-4.

SuggestedRemedy

In Table 165-4, change "lpi\_slave\_offset – lpi\_refresh\_time ≤ mod(u, lpi\_qr\_time) < lpi\_slave\_offset" to "lpi\_slave\_offset ≤ mod(u, lpi\_qr\_time) < lpi\_slave\_offset + lpi\_refresh\_time"

Proposed Response Response Status O

Cl 165 SC 165.3.6.1 P66 L39 # I-136

Ran, Adee Cisco Systems, Inc.

Comment Type E Comment Status X

Why is v used in table 165-5 where u is used in table 165-4? There is only one frame count per PHY, no need for two variables.

SuggestedRemedy

Change "v" to "u" in table 165-5.

Proposed Response Response Status O

Cl 165 SC 165.3.6 P66 L41 # I-86

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type T Comment Status X

The tx\_refresh\_active condition is not correct in table 165-5.

SuggestedRemedy

In Table 165-5, change "lpi\_master\_offset – lpi\_refresh\_time ≤ mod(v, lpi\_qr\_time) < lpi\_master\_offset" to "lpi\_master\_offset ≤ mod(v, lpi\_qr\_time) < lpi\_master\_offset+ lpi\_refresh\_time"

Proposed Response Response Status O

## Received Comments

## IEEE P802.3cy D3.0 10G+ Auto Task Force Initial Sponsor ballot comments

CI 165 SC 165.7.2.3 P67 L31 # I-56  
 Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M  
 Comment Type T Comment Status X  
 There is no mention of XGMI in 149.3.7.2.3 timers. (note that this edit accomodates if the rfer\_timer is deleted as well)  
 SuggestedRemedy  
 Replace first sentence of 165.3.7.2.3 with "The PCS timers are as defined in 149.3.7.2.3 with the following modifications:  
 Proposed Response Response Status O

CI 165 SC 165.3.7.3 P70 L50 # I-12  
 Grow, Robert RMG Consulting  
 Comment Type E Comment Status X  
 Figure 165-14 isn't mandatory, the functionality specified in the figure can be mandatory. Also, a "NOTE" is informative text, I assume the actual normative mandatory statements about this exist somewhere in the draft.  
 SuggestedRemedy  
 NOTE—The functionality in this figure is mandatory for a PHY with the EEE capability.  
 Proposed Response Response Status O

CI 165 SC 165.4.1 P74 L # I-72  
 Jonsson, Ragnar Marvell Semiconductor, Inc.  
 Comment Type E Comment Status X  
 Figure 165-16 - send\_s\_sigdet output from Link Synchronization block is missing  
 SuggestedRemedy  
 Add send\_s\_sigdet to Figure 165-16. Figure 149–26 can be used as reference for how to add send\_s\_sigdet.  
 Proposed Response Response Status O

CI 165 SC 165.4.2.4.5 P78 L39 # I-92  
 Jonsson, Ragnar Marvell Semiconductor, Inc.  
 Comment Type E Comment Status X  
 With change in LPI signaling, there is 1 RS FEC frame gap between end of Refresh and Alert  
 SuggestedRemedy  
 Change "transmit alert only immediately following a refresh" to "transmit alert only in slow wake alert time slot"  
 Proposed Response Response Status O

CI 165 SC 165.4.2.4.5 P78 L44 # I-137  
 Ran, Adeo Cisco Systems, Inc.  
 Comment Type T Comment Status X  
 "The remaining bits shall be reserved and set to 0." - reserved bits are listed in the table; "shall be reserved" is meaningless.  
 Also, reserved should be ignored on receipt, otherwise they can't be defined in the future.  
 Reserved fields are also mentioned in 165.4.2.4.7 with insufficient explanation.  
 SuggestedRemedy  
 Change the quoted sentence in 165.4.2.4.5 to "Reserved bits shall be transmitted as 0 and ignored upon receipt."  
 Change the last sentence in 165.4.2.4.7 to "All reserved fields are transmitted as 0 and ignored upon receipt".  
 Proposed Response Response Status O

Received Comments

IEEE P802.3cy D3.0 10G+ Auto Task Force Initial Sponsor ballot comments

Cl 165 SC 165.4.2.6 P81 L25 # I-94

Rolfe, Benjamin Blind Creek Associates

Comment Type T Comment Status X

Since may is equivalent to "may or may not", I'm not sure what this line means: "The receiver may not necessarily receive a continuous PN sequence between separate periods of the SEND\_S signal." It may or may not not necessarily? Figuring it out from context didn't work either, as the paragraph is an informative description of a possible implementation of the PN sequence generator, and then talking about what the receiver may or may not or may not not receive? Which isn't an optional behavior, but seems to just an observation? No idea what is intended.

SuggestedRemedy

Delete the sentence.

Proposed Response Response Status O

Cl 165 SC 165.4.4.1 P86 L50 # I-95

Rolfe, Benjamin Blind Creek Associates

Comment Type T Comment Status X

Incorrect use of "may". This should be "can".

SuggestedRemedy

Change "may" to "can"

Proposed Response Response Status O

Cl 165 SC 165.4.5 P90 L51 # I-18

Grow, Robert RMG Consulting

Comment Type E Comment Status X

\*\*\* Comment submitted with the file image.png attached \*\*\*

The state diagram isn't required, the functionality is required.

SuggestedRemedy

NOTE--The functionality of this state diagram is only required when the PHY supports EEE.

Proposed Response Response Status O

Cl 165 SC 165.5.1.1 P92 L18 # I-4

Boyer, Rich Aptiv - Signal and Power Solutions

Comment Type T Comment Status X

The BALUN in Figure 165-27 is not defined. Use of BALUN and spectrum analyzer for this measurement is not required. Eliminate the use of the BALUN and spectrum analyzer for the PSD measurement. If the Balun and spectrum analyzer is eliminated, then the PSD measurement can be made with digital signal analyzer (DSA) (a.k.a. Digital Scope or capturing device) instead of a BALUN and spectrum analyzer. If this proposal is accepted, then Figure 165-27 can be removed and existing Figure 165-25 can be referenced for the PSD measurement.

SuggestedRemedy

Remove Figure 165-27 and reference Figure 165-25 for PSD mask test.

Change Figure 165-25 description from.

"Transmitter test configuration 1 for transmitter droop, transmitter linearity, and jitter measurement"

To,

"Transmitter test configuration 1 and 4 for transmitter droop, transmitter linearity, jitter and power spectral density measurement and transmit power level measurements"

Change references concerning Figure 165-27 as follows.

- Remove wording in line 18 page 92 "Figure 165-27".
- Remove Figure 165-27 on page 93.
- Change "165-27" on page 95 line 53 to "165-25".

Proposed Response Response Status O

Cl 165 SC 165.5.1.1 P93 L11 # I-5

McClellan, Brett Marvell Semiconductor, Inc.

Comment Type E Comment Status X

"Figure 165-27—Transmitter test configuration 4 for power spectral density measurement and transmit power level measurement" There are only 3 test configurations defined in this subclause. The label for this configuration should be '3'.

SuggestedRemedy

change 'configuration 4' to 'configuration 3' and associated references, ie. page 95 line 52

Proposed Response Response Status O

Received Comments

IEEE P802.3cy D3.0 10G+ Auto Task Force Initial Sponsor ballot comments

Cl 165 SC 165.5.3 P93 L51 # I-3

Maguire, Valerie Copperopolis

Comment Type E Comment Status X

Enclose the id est example in parenthesis to be consistent with the parent document.

SuggestedRemedy

Replace, "shall be AC-coupled, i.e., it shall present a high DC common-mode impedance at the MDI." with, "shall be AC-coupled (i.e., it shall present a high DC common-mode impedance at the MDI).".

Proposed Response Response Status O

Cl 165 SC 165.5.3 P93 L53 # I-96

Rolfe, Benjamin Blind Creek Associates

Comment Type T Comment Status X

"There may be various methods for AC-coupling in actual implementations." is inappropriate use of "may". Should be "can" (stating a possibility, not a normative option).

SuggestedRemedy

Change "may" to "can"

Proposed Response Response Status O

Cl 165 SC 165.5.3 P94 L17 # I-19

Chang, Jae-yong Keysight Technologies

Comment Type T Comment Status X

Unless specified otherwise, all transmitter measurements and tests defined in 165.5.3 are made at TP2 utilizing a test configuration that meets the specifications in 165.5.5.

SuggestedRemedy

Unless specified otherwise, all transmitter measurements and tests defined in 165.5.3 are made at TP2 utilizing a test system configuration that meets the specifications in 165.5.5 and a fourth-order Bessel-Thomson low-pass filter with 16 GHz @-3 dB bandwidth.

Proposed Response Response Status O

Cl 165 SC 165.5.3 P94 L22 # I-97

Rolfe, Benjamin Blind Creek Associates

Comment Type T Comment Status X

Not sure the intent of "that may not be testable in an implemented system" - is this indicating that the test points are optional in a conforming implementation? Then TP0 and TP5 may be omitted is what is meant? The "may not" is a clue that "may" is being used incorrectly.

SuggestedRemedy

Delete the sentence or rewrite with correct use of normative language.

Proposed Response Response Status O

Cl 165 SC 165.5.3.3 P94 L48 # I-73

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type TR Comment Status X

The jitter requirements have become too strict, and do not strike the right balance between the complexity of the PMA implementation and the complexity of the clock generation, x-tal, etc.

SuggestedRemedy

Change "jitter relative to an unjittered reference shall be less than 0.4 ps" to "jitter relative to an unjittered reference shall be less than 0.4 ps, when measured with bandwidth from 1MHz to 100MHz, and less than 1ps when measured with bandwidth from 10kHz to 1MHz."

Proposed Response Response Status O

Cl 165 SC 165.5.3.3.1 P95 L13 # I-6

McClellan, Brett Marvell Semiconductor, Inc.

Comment Type E Comment Status X

Figure 165-25 is not configuration 3, it is configuration 1.

SuggestedRemedy

change 'configuration 3' to 'configuration 1'

Proposed Response Response Status O

Received Comments

IEEE P802.3cy D3.0 10G+ Auto Task Force Initial Sponsor ballot comments

Cl 165 SC 165.5.5.1 P98 L35 # I-98

Rolfe, Benjamin Blind Creek Associates

Comment Type T Comment Status X

As described in 6.4 of the IEEE SA Standards Board Operations Manual, a note to a figure is informative. So including normative language ("may") is wrong. I think "can" is the correct word. BTW kudos for avoiding "should" here ;-).

SuggestedRemedy

Change "may" to "can"

Proposed Response Response Status O

Cl 165 SC 165.5.5.2 P98 L45 # I-138

Ran, Adeo Cisco Systems, Inc.

Comment Type E Comment Status X

Bad justification

SuggestedRemedy

fix it

Proposed Response Response Status O

Cl 165 SC 165.6 P101 L3 # I-99

Rolfe, Benjamin Blind Creek Associates

Comment Type T Comment Status X

This sentence says that 25GBASE-T1 makes extensive use of functions that may not be provided. So a conforming implementation makes extensive use of functions not present sometimes. Pretty sure that is not what is meant. Not sure what is meant though. Does it mean the optional functions may (or may not) be used WHEN they are provided? Is this an optional requirement, a recommendation, or a mandatory requirement to use these functions when they are available? I can only guess. Also not sure what "extensive use" would be in this context. Less than always and more than never. Hard to write a validation test for that!

Well one guess is given in the proposed change.

SuggestedRemedy

25GBASE-T1 may make use of the management functions provided by the optional MDIO (Clause 45), and the communication and self-configuration functions provided by the optional Auto-Negotiation (Clause 98), when those functions are available.

Proposed Response Response Status O

Cl 165 SC 165.7.1.1 P102 L1 # I-139

Ran, Adeo Cisco Systems, Inc.

Comment Type TR Comment Status X

Figure 165-34 does not illustrate an insertion loss - it is a limit line.

Also applies to Figure 165-35, Figure 165-36, Figure 165-37, Figure 165-38, and Figure 165-39 (different titles, but similar lack of "limit").

SuggestedRemedy

Change "The insertion loss is illustrated in Figure 165-34" to "The 25GBASE-T1 link segment insertion loss limit is illustrated in Figure 165-34".

Change the figure title to "Insertion loss calculated limit in Equation (165-19)". Add a label "meets equation constraint" above the plot in the figure.

Implement corresponding changes in the other figures listed in the comment and the text preceding them.

Proposed Response Response Status O

Cl 165 SC 165.7.1.3.1 P102 L43 # I-55

Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M

Comment Type T Comment Status X

Lower limit of specification for link segment return loss is out of step with other parameters

SuggestedRemedy

Change 30 MHz to 10 MHz

Proposed Response Response Status O

Cl 165 SC 165.7.1.3.2 P103 L29 # I-20

Larsen, Wayne CommScope

Comment Type T Comment Status X

Its good to have the time domain criteria in addition to the usual frequency domain. But the REM peak criteria is sufficient, and ETM is not needed. The frequency domain provides sufficient protection against broad echo.

SuggestedRemedy

Remove the ETM information from the title and table 165-15, and remove sections 165.7.1.3.4 and 165.7.1.3.6.

Proposed Response Response Status O

Received Comments

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Cl 165 SC 165.7.1.3.2 P103 L30 # I-22

Larsen, Wayne CommScope

Comment Type T Comment Status X

If I understand well, the Nyquist frequency is 7031.25 MHz, and the reader is to measure 4096 frequency points at 2.5 MHz spacing. If this is not right, please clarify it. This means there will be frequency points at 7030 and 7032.5 MHz, but not at the Nyquist frequency, yet equation 165-22 requires an adjustment based on the frequency point at the Nyquist frequency.

SuggestedRemedy

Adjust to provide a frequency point at the Nyquist frequency, or otherwise clarify.

Proposed Response Response Status O

Cl 165 SC 165.7.1.3.3 P104 L2 # I-43

Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M

Comment Type E Comment Status X

confusing word order makes it sound like the 100 ohm resistive termination is part of the example of the plug-terminated cable.

SuggestedRemedy

change "the link segment side of the MDI, e.g., the plug if the cable is terminated in a plug, with the far end terminated in 100 \Ohm resistance." to "the link segment side of the MDI with the far end terminated in 100 \Ohm resistance. For example, if the cable is terminated in a plug, the measurement is on the cabling between the (de-embedded) plug and the far end termination."

Proposed Response Response Status O

Cl 165 SC 165.7.1.3.3 P104 L16 # I-23

Larsen, Wayne CommScope

Comment Type T Comment Status X

It seems this minor phase adjustment is to be made to the natrual phase of the whole frequency response, not to the unwrapped phase, but this is not clear.

SuggestedRemedy

Clarify this is wrapped phase, if that is what is meant.

Proposed Response Response Status O

Cl 165 SC 165.7.1.3.3 P104 L29 # I-24

Larsen, Wayne CommScope

Comment Type T Comment Status X

The procedure in step 2b effectively throws away all the frequency repsonse above the Nyquist frequency.

SuggestedRemedy

Either make use of the frequency response points from Nyquist to 10,240 MHz or don't measure them.

Proposed Response Response Status O

Cl 165 SC 165.7.1.3.3 P104 L45 # I-67

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type E Comment Status X

Equation 165-26 looks bad. The exponential is better represented as a function than a power of e. The relative size of sigma and the summation range makes the equation look strange.

SuggestedRemedy

Use  $\exp(j*(2*\pi*k_n)/(2*K_N))$  and adjust the size of sigma.

Proposed Response Response Status O

Cl 165 SC 165.7.1.3.3 P105 L3 # I-90

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type E Comment Status X

Equation 165-27 looks awkward.

SuggestedRemedy

Increase the relative size of sigma compared to the summation limits.

Proposed Response Response Status O

Received Comments

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Cl 165 SC 165.7.1.3.3 P105 L9 # I-25  
 Larsen, Wayne CommScope  
 Comment Type E Comment Status X  
 typo in subscript, apparently  
 SuggestedRemedy  
 In equation 165-28, change from RE(sub-k) to RE(sub-r)  
 Proposed Response Response Status O

Cl 0 SC 0 P105 L11 # I-74  
 Jonsson, Ragnar Marvell Semiconductor, Inc.  
 Comment Type E Comment Status X  
 There is an subscript for RE in equation (165-28)  
 SuggestedRemedy  
 Change subscript for RE from k to r: "RE\_r(k)"  
 Proposed Response Response Status O

Cl 165 SC 165.7.1.3.3 P105 L12 # I-44  
 Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M  
 Comment Type T Comment Status X  
 typo obscures technical meaning of the equation - there is no "r" - subscript of RE (k) should be "r", not "k"  
 SuggestedRemedy  
 Change RE sub k to RE sub r on left hand side of Equation 165-28  
 Proposed Response Response Status O

Cl 165 SC 165.7.1.3.4 P105 L24 # I-75  
 Jonsson, Ragnar Marvell Semiconductor, Inc.  
 Comment Type E Comment Status X  
 The H sequences are introduced as singular, but are always used as plural sequences in the rest of the section.  
 SuggestedRemedy  
 Change "measurement of the insertion loss which is represented as a complex sequence H\_k" to "measurements of the insertion loss which are represented as complex sequences H\_k,i"  
 Proposed Response Response Status O

Cl 165 SC 165.7.1.3.4 P105 L24 # I-76  
 Jonsson, Ragnar Marvell Semiconductor, Inc.  
 Comment Type E Comment Status X  
 Confusing curly bracket in (165-30).  
 SuggestedRemedy  
 Remove the "{" in front of (165-30)  
 Proposed Response Response Status O

Cl 165 SC 165.7.1.3.4 P105 L25 # I-26  
 Larsen, Wayne CommScope  
 Comment Type T Comment Status X  
 Since capital letter H is used in 165.7.1.3.3, it is confusing to use it again here with a different meaning.  
 SuggestedRemedy  
 Use a different letter.  
 Proposed Response Response Status O

Received Comments

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CI 165 SC 165.7.1.3.4 P105 L36 # I-27

Larsen, Wayne CommScope

Comment Type T Comment Status X

This is an unnecessarily restrictive and fancy way of determining the delay, subject to errors and misunderstanding. Also, delay is dependant on frequency, you might consider determining it at each frequency point, instead of applying this estimate of the delay regardless of frequency.

SuggestedRemedy

replace lines 36-50 with 'Determine the delay by any convenient method'

Proposed Response Response Status O

CI 165 SC 165.7.1.3.4 P105 L40 # I-48

Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M

Comment Type TR Comment Status X

Indexed term N sub k is not defined. Is this meant to just be "N"? While there is a value on line 49, there is no indication of how that variexs with the index k.

SuggestedRemedy

Change N sub k to "N" or some other variable, alternatively define a new variable, or the indexing needed.

Proposed Response Response Status O

CI 165 SC 165.7.1.3.3 P105 L40 # I-91

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type E Comment Status X

Equation 165-32 would benefit from better formatting.

SuggestedRemedy

The subscripts and superscripts for the summation symbols need to be smaller and aligned with the respective sigma summation symbols

Proposed Response Response Status O

CI 165 SC 165.7.1.3.4 P105 L42 # I-80

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type T Comment Status X

The calculations in (165-32) relay on "unwrap" in (165-31). If this unwrapping can be error prone, if it is not done carefully, especially at high frequencies on long cables. The calculations in (165-32) would benefit from some mechanism to detect incorrect unwrapping and other outliers, and make the corresponding correction to the calculations.

SuggestedRemedy

Add exception handling for outliers in equation (165-32).

Proposed Response Response Status O

CI 165 SC 165.7.1.3.4 P105 L42 # I-79

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type T Comment Status X

Equation (165-32) is used to calculate delay, which is then key component of following equations. However, there is no metric to evaluate if the calculated delay is accurate or reasonable. If it is not, the metric becomes "confused", so this must be detected.

SuggestedRemedy

Add a calculation of the standard error of the line fit, and set an upper limit on the allowed standard error if the ETM metric is to be used.

Proposed Response Response Status O

CI 165 SC 165.7.1.3.4 P105 L42 # I-78

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type E Comment Status X

Equation (165-32) is more complex than it has to be, since sum of k^ and sum of k can be pre-computed and replaced by function of K\_S and N\_S

SuggestedRemedy

Replace the sum of k and sum of k^2 with fixed terms of K\_s and N\_k

Proposed Response Response Status O

Received Comments

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CI 165 SC 165.7.1.3.4 P105 L42 # I-77  
 Jonsson, Ragnar Marvell Semiconductor, Inc.  
 Comment Type E Comment Status X  
 Improper capitalization of pi in (165-32)  
 SuggestedRemedy  
 Change capitalized pi in (165-32) to lower case pi  
 Proposed Response Response Status O

CI 165 SC 165.7.1.3.4 P105 L43 # I-46  
 Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M  
 Comment Type E Comment Status X  
 equation typo - lower case "pi" is meant in the denominator, not a product operator (upper case pi).  
 SuggestedRemedy  
 change "pi" in denominator of equation 165-32 to lower case.  
 Proposed Response Response Status O

CI 165 SC 165.7.1.3.4 P105 L48 # I-51  
 Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M  
 Comment Type T Comment Status X  
 Low frequency limit of 100 MHz is much higher than specification of other link segment parameters. Likely too high for echo and seems arbitrary.  
 SuggestedRemedy  
 Change 100 MHz to 10 MHz and 4.1 GHz to 4.01 GHz.  
 Proposed Response Response Status O

CI 165 SC 165.7.1.3.4 P105 L49 # I-49  
 Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M  
 Comment Type T Comment Status X  
 "With k\_s = 40, and N\_k = 1600, the linear fit is calculated..." - is this trying to say that k\_s and N\_k are constants used in the calculation? If so, they should be explained and added to table 165-15.  
 SuggestedRemedy  
 Add explanatory text for the meaning of k\_s and N\_k to Table 165-15 and add these values there (apologies, the draft provides insufficient explanation for this commenter to offer a good suggestion). Change sentence at P105 L49 to read "Using the values of k\_s and N\_k in Table 165-15, the linear fit..."  
 Proposed Response Response Status O

CI 165 SC 165.7.1.3.4 P106 L2 # I-45  
 Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M  
 Comment Type TR Comment Status X  
 IF the echo response is truncated, it should be truncated to the MAXIMUM of the two delay estimates, not the minimum, and the floor function further minimizes it.  
 SuggestedRemedy  
 change minimum to maximum and floor to ceil in equation 165-33.  
 Proposed Response Response Status O

CI 165 SC 165.7.1.3.4 P106 L6 # I-28  
 Larsen, Wayne CommScope  
 Comment Type T Comment Status X  
 It is illogical and dangerous to throw away the part of the tail that is past the round trip delay. A short link with low IL cable, and highly reflective connectors, might have secondary reflections that might be harmful, which this ignores.  
 SuggestedRemedy  
 Delete the 3rd row of equation 165-34 and apply the second row for all m < n. An alternative would be, increase L(sub-e) to twice the RT delay, or to 1.2 times the RT delay. There are other alternatives.  
 Proposed Response Response Status O

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Cl 165 SC 165.7.1.3.4 P106 L13 # I-50  
 Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M  
 Comment Type TR Comment Status X  
 "to calculate the associated REM. The ETM(m) is this REM calculated for..." REM is not a single number, it is defined as a function of an argument in equation 165-29. (REM(k)). The definition for ETM needs to specify the value of k to which ETM(m) relates (we know that "m" varies the partial response substituted for h\_n) It appears to be "Ndiscard\_etm".  
 SuggestedRemedy  
 Replace text after "to calculate" in step 8 with "to calculate each ETM(m) using the value of g\sub n\sup m as the value of REM(k) in Equation 165-29 evaluated at k equal to Ndiscard\_etm."  
 Proposed Response Response Status O

Cl 165 SC 165.7.1.3.4 P106 L13 # I-89  
 Jonsson, Ragnar Marvell Semiconductor, Inc.  
 Comment Type E Comment Status X  
 It is not clear what k value in REM(k) to use for the ETM(m)  
 SuggestedRemedy  
 Change "evaluated at Ndiscard\_etm" to "evaluated at k=Ndiscard\_etm"  
 Proposed Response Response Status O

Cl 165 SC 165.7.1.3.5 P106 L16 # I-21  
 Larsen, Wayne CommScope  
 Comment Type T Comment Status X  
 This document specifies a particular way of obtaining a time response, then a numerical acceptance criteria based on it. It is usual to specify acceptance based on the physical phenomenon, not based on a particular way of measuring it. Also, it would benefit from a graphical illustration of the acceptance criteria like figure 165-35.  
 SuggestedRemedy  
 In 165.7.1.3.5, describe the return loss in energy returned per time interval, and the associated limits. Provide a graphical illustration. The present text can be retained as an example of determining compliance.  
 Proposed Response Response Status O

Cl 165 SC 165.7.1.3.5 P106 L17 # I-29  
 Larsen, Wayne CommScope  
 Comment Type E Comment Status X  
 typo in reference, apparently  
 SuggestedRemedy  
 Change the reference 165.7.3.2 to 165.7.3.3. Also on line 33, change 165.7.1.3.2 to165.7.1.3.4.  
 Proposed Response Response Status O

Cl 165 SC 165.7.1.3.4 P106 L30 # I-47  
 Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M  
 Comment Type TR Comment Status X  
 The truncation of the echo response based on delay length is fundamental to the ETM and creates the potential for missing reflections due to mismatch of short segments which can extend the resulting time delay of the echo response relative to the mean-square estimated link segment delay. Additionally, delay dispersion of low frequency echo is assumed to be minimized - complicated and enabled by the 100 MHz cutoff on the measurement of IL. All of the issues noted make the ETM less useful and more problematic than it is worth, in this commenters opinion.  
 SuggestedRemedy  
 Delete 165.7.1.3.4 and 165.7.1.3.6. Change title of 165.7.1.3.2 to Residual echo metric. Delete last row of Table 165-15 (Ndiscard\_etm). Delete PICS LSC4 (P128 L24)  
 Proposed Response Response Status O

Cl 165 SC 165.7.1.3.5 P106 L37 # I-69  
 Jonsson, Ragnar Marvell Semiconductor, Inc.  
 Comment Type E Comment Status X  
 The formatting of equation 165-36 needs improvement  
 SuggestedRemedy  
 The REM\_Limit should be left aligned to the curly bracket, for both conditions. The range of m for the upper line should be better separated , so that it is a limit and not part of the formula.  
 Proposed Response Response Status O

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Cl 165 SC 165.7.1.3.5 P106 L41 # I-68  
 Jonsson, Ragnar Marvell Semiconductor, Inc.  
 Comment Type E Comment Status X  
 The statement "REM\_Limit is the limit of REM as defined in Equation (165-35)" is confusing, because REM\_Limit is not defined in 165-35.  
 SuggestedRemedy  
 Clarify the definition of REM\_Limit  
 Proposed Response Response Status O

Cl 165 SC 165.8.2.1 P109 L21 # I-54  
 Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M  
 Comment Type T Comment Status X  
 Lower limit of specification for MDI return loss is out of step with other parameters  
 SuggestedRemedy  
 Change 5 MHz lower limit to 10 MHz  
 Proposed Response Response Status O

Cl 165 SC 165.7.2.1 P108 L24 # I-52  
 Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M  
 Comment Type TR Comment Status X  
 Lower limit of specification for PSANEXT is impractical and out of step with other parameters  
 SuggestedRemedy  
 Change 1 MHz lower limit to 10 MHz  
 Proposed Response Response Status O

Cl 165 SC 165.9.2.2 P112 L # I-100  
 Rolfe, Benjamin Blind Creek Associates  
 Comment Type T Comment Status X  
 "In addition, the system may need to comply with more stringent requirements for the limitation of electromagnetic interference" is using "may" in a statement of requirement that is out of scope of this standard. Don't need the state the obvious anyway.  
 SuggestedRemedy  
 Delete sentence  
 Proposed Response Response Status O

Cl 165 SC 165.7.2.2 P109 L18 # I-53  
 Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M  
 Comment Type TR Comment Status X  
 Lower limit of specification for PSAACRF is impractical and out of step with other parameters  
 SuggestedRemedy  
 Change 1 MHz lower limit to 10 MHz  
 Proposed Response Response Status O

Cl 165 SC 165.9.2.2 P112 L21 # I-101  
 Rolfe, Benjamin Blind Creek Associates  
 Comment Type T Comment Status X  
 This sentence uses 'may' incorrectly. This could be "can" but really this sentence contains no useful information so best to delete it.  
 SuggestedRemedy  
 Delete sentence  
 Proposed Response Response Status O

Received Comments

IEEE P802.3cy D3.0 10G+ Auto Task Force Initial Sponsor ballot comments

Cl 165 SC 165.9.2.2 P112 L27 # I-13

Grow, Robert RMG Consulting

Comment Type E Comment Status X

In general, we should refer to implementations, not implementers.

SuggestedRemedy

"and PHY implementations conform"

Proposed Response Response Status O

Cl 165 SC 165.10 P112 L32 # I-140

Ran, Adeo Cisco Systems, Inc.

Comment Type TR Comment Status X

"Transmit data delay is measured from the input of a given unit of data at the 25GMII 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 25GMII"

These delays cannot be measured separately in practice; the 25GMII is typically not exposed and the data presented at the 25GMII is not easy to identify on the MDI due to the encoding and scrambling operations.

In other PHY types, the specification is indeed for the sum of the transmit and receive data delays, but there is no separate definition; the reason is that the sum \_is\_ measurable easily, either internally or using test equipment, using a loopback configuration.

It may be acceptable to \_define\_ the delays in each direction, but not using the word "measured", because they cannot be measured separately.

SuggestedRemedy

Change "is measured" to "is defined", twice in the quoted sentences.

Proposed Response Response Status O

Cl 165 SC 165.10 P112 L44 # I-141

Ran, Adeo Cisco Systems, Inc.

Comment Type TR Comment Status X

The delay limits specified in Table 165-16 are very large; I assume they are a result of the long RS-FEC block size with large overhead (RS-FEC(936,846)!), and the interleaving of multiple blocks, required in practice to mitigate error bursts. Therefore, it is likely that the actual delays of real implementations will not be much smaller than the specified maxima. This means the practical round-trip delay will be about 10 microseconds due to the physical layer alone. This is usually not considered attractive.

Add to that the strong receiver required for channels with insertion loss exceeding >30 dB at the fundamental frequency, with PAM4 modulation and full-duplex signaling; Has the power consumption of such receivers been assessed?

The large latency and high power, combined, raise doubts about broad market potential/technical feasibility combination for the new port type.

SuggestedRemedy

Provide an analysis of expected power.

Provide an overview of the targeted applications of 25GBASE-T1 and whether the expected power and latency are acceptable for these applications.

Proposed Response Response Status O

Cl 165A SC 165A.1 P132 L30 # I-57

Zimmerman, George Cisco Systems, Inc.,CME Consulting,CommScope,M

Comment Type T Comment Status X

The clause 165 link segment doesn't need further definition here, and the parenthetical is confusing in context of the figure, suggesting a link longer than 11m... or that the connectors and length are requirements.

SuggestedRemedy

delete "(up to 2 in-line connectors and up to at least 11m length)"

Proposed Response Response Status O

Received Comments

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Cl 165A SC 165A.1 P132 L34 #

Jonsson, Ragnar Marvell Semiconductor, Inc.

Comment Type E Comment Status X

The phrase "at least" should be removed in Figure 165A-1. Otherwise, the cable can be more than 11m, which is not the intention and this would increase the echo canceler complexity

SuggestedRemedy

The words "at least" should be removed  
or  
replace the text in the paranthesis with "see 165.7"

Proposed Response Response Status O