Cl **00** *SC* **FM** *P* **9** *L* **2** # 6

Anslow, Pete — Ciena

Comment Type **E** *Comment Status* **A** *EZ*

There is text to the left of the list of WG ballot members on page 9 that should be below the list

SuggestedRemedy

Move the text to be below the list.
This can be done by changing the anchoring position of the frame containing the list to be "Below Current Line"

Response *Response Status* **C**

ACCEPT.

Cl **00** *SC* **FM** *P* **12** *L* **52** # 351

Anslow, Pete — Ciena

Comment Type **E** *Comment Status* **A** *Late*

Summary text for the IEEE Std 802.3cg-20xx amendmet is missing from the frontmatter here.

SuggestedRemedy

Add summary text for the IEEE Std 802.3cg-20xx amendment here:
IEEE Std 802.3cgTM-20xx
This amendment includes changes to IEEE Std 802.3-2018 and adds Clause 146 through Clause 148 and Annex 146A and Annex 146B. This amendment adds 10 Mb/s Physical Layer (PHY) specifications and management parameters for operation on a single balanced pair copper cable.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Add summary text for the IEEE Std 802.3cg-20xx amendment:

IEEE Std 802.3cgTM-20xx
This amendment includes changes to IEEE Std 802.3-2018 and adds Clause 146 through Clause 148 and Annex 146A and Annex 146B. This amendment adds 10 Mb/s Physical Layer specifications and management parameters for operation on a single balanced pair copper cable.

Cl **00** *SC* **0** *P* **0** *L* **0** # 223

Kim, Yong — NIO

Comment Type **TR** *Comment Status* **A** *Big Ticket Item - Definitions*

Use of the word "collision" and use of term "logical collision" "local collision", and "physical collision. This is a pile on comment to unresolved D2.0 draft comment. Use of terms other than just "collisoin" in .3cg bothered me. This time, I went through some research. 1.1.2.1 Half duplex operation states "...if... message collides...to ensure propogation of collision through out the system." states collision is system wide. 1.4.202 collsion: A condition that results from concurrent transmission from multiple data terminal equipment (DTE) sources wihtin an single collision domain. And 1.4.203 collision domain: A single, half duplex mode CSMA/CD network. If two or more Media Access Control (MAC) sublayers are within the same collsion domain and both transmit at the same time, a collision will occur. MAC sublayers separated by a repater..." All of these prompt whether .3cg's use of "logical collsion" or "local collision" are proper use of the word collsion. "physical collision" should just be "collsion". In addition, the use of "logical collision" to describe an event that is not an observable event on the medium is confusing to 802.3 readers, who associates collision to an event on the shared medium.

SuggestedRemedy

Please consider careful global search and replace of "physical coillsion" to just "collsion" and use some other term for "logical collision" and "local collision" if that remains in the draft. Cannot commup with a good suggestion for the alternate word, since the "local collision" function within .3cg in my mind is access control mechanism.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Note: the terms "logical collision" and "physical collision" are removed from the draft by these changes and other comments:

P224 L6: Delete "This is called a logical collision."

P225, L10: Replace, "and a logical collision is triggered" with, "and a collision is triggered"

P183, L17: Replace, "When operating in half-duplex mode, the 10BASE-T1S PHY shall detect physical collisions on the media during data transmission." with, "When operating in half-duplex mode, the 10BASE-T1S PHY shall detect when a transmission initiated locally results in a corrupted signal at the MDI as a collision."

P213, L44-45: Delete, "At any time, only the owner of the current transmit opportunity is allowed to send data over the medium, therefore avoiding physical collisions."

P218, L26: Delete, "PLCA Control state diagram is responsible for synchronizing transmit opportunities across the multidrop network to avoid physical collisions."

P224, L42: Delete, ", which would normally result in a physical collision"

P225, L1: Replace, "The variable delay line is a small buffer that is necessary in order to

avoid physical collisions by delaying transmission to the MII until the exclusive transmit opportunity for the node arrives." with, "The variable delay line is a small buffer that aligns transmission with the transmit opportunity."

Cl **00** *SC* **0** *P* **9** *L* **3** # 75

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

When the IEEE-SA Standards Board approved . text is accidently written in vertical direction.

SuggestedRemedy

Format text to be below the names list.

Response *Response Status* **C**

ACCEPT.

Cl **00** *SC* **0** *P* **15** *L* **17** # 76

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

Within the table of contents in several lines there is no space between the Clause number and the Cause title text.

SuggestedRemedy

Add a space after the Clause numbers in the affected lines or format the table of contents in a way, so that there is enough space there. Affected pages are 15, 21, 23 (several lines on each page)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Update the tab stop and left indents in the TOC as follows:
For H3 from 65 to 70
For H4 from 90 to 95
For H5 from 115 to 120

Cl **01** *SC* **1.1.3** *P* **27** *L* **8** # 7

Anslow, Pete — Ciena

Comment Type **E** *Comment Status* **A** *EZ*

The editing instruction is "Change the text at the bottom of the right column of Figure 1-1 as follows:" but there are changes in the NOTE that are not marked as changes and not covered by this editing instruction.
Also "of 10BASE-T1L and 10BASE-T1S and 100 Mb/s and above" has too many "and"s

SuggestedRemedy

Replace the editing instruction with "Change the text at the bottom of the right column and in the NOTE in Figure 1-1 as follows:"
Change the inserted text in the NOTE to : ""10BASE-T1L, 10BASE-T1S, and" in underline font.

Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1.3** *P* **27** *L* **52** # 117

Maguire, Valerie — The Siemon Company

Comment Type **E** *Comment Status* **A** *EZ*

Incorrect title and date referenced for IEC 60079-0.

SuggestedRemedy

Replace: "IEC 60079-0: 2014, Explosive atmospheres. Part 1. Equipment protection by flameproof enclosures" with "IEC 60079-0: 2017, Explosive atmospheres - Part 0: Equipment - General requirements"

Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1.3** *P* **28** *L* **6** # 79

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

IEC 61000-4-5: 2017

SuggestedRemedy

IEC 61000-4-5:2017 (remove spaces before 2017)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace, "IEC 61000-4-5: 2017"

with, "IEC 61000-4-5:2017"

Cl **01** *SC* **1.4.389a** *P* **29** *L* **16** # 196

Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *Big Ticket Item - Definitions*

This could be a pile on comment. .avoid physical collision on the medium. There is a definition for collision and contention. What is "physical collision" on the medium conveyed in the definitions.

SuggestedRemedy

change "physical collision" to "collision". Or expand why the word "physical" is needed.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Replace, "A method for generating transmit opportunities for 10BASE-T1S multidrop PHYs operating on mixing segments in order to avoid physical collisions on the medium. (See IEEE Std 802.3, Clause 148.)"

with, "A method for generating transmit opportunities for 10BASE-T1S operating on mixing segments. (See IEEE Std 802.3, Clause 148.)"

Cl **01** *SC* **1.4.495a** *P* **29** *L* **18** # 5

Wienckowski, Natalie General Motors

Comment Type **T** *Comment Status* **A** *Editorial*

Missing Type E PoDL definition

SuggestedRemedy

Editors instuction: Insert the Type E PoDL System definition into the list after 1.4.495 Type D PoDL System as follows:
Text: "Type E PoDL System: A system comprising a PoDL PSE, link section, and PD that are compatible with 10BASE-T1L."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert Editor's instruction on line 19, "Insert the Type E PoDL System definition into the list after 1.4.494 Type D PoDL System (re-numbered from 1.4.495 due to the deletion of 1.4.294 by IEEE Std 802.3bt-2018) as follows:"

Followed by text, "1.4.494a Type E PoDL System: A system comprising a PoDL PSE, link section, and PD that are compatible with 10BASE-T1L."

Cl **22** *SC* **22.2.2.4** *P* **31** *L* **20** # 80

Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

148.4.5.1 is in the wrong font size.

SuggestedRemedy

Please correct font size to match normal text.

Response *Response Status* **C**

ACCEPT.

Cl **22** *SC* **22.2.2.4** *P* **31** *L* **22** # 133

Beruto, Piergiorgio Canova Tech Srl

Comment Type **E** *Comment Status* **D** *PLCA*

The values of TXD that shall have no effect upon the PHY are already listed in Table 22-1, text could simply point to the table instead of listing them again.

SuggestedRemedy

Replace "When TX_EN is deasserted and TX_ER is asserted, values of TXD<3:0> other than 0001, 0010, and 0011
shall have no effect upon the PHY" with "When TX_EN is deasserted and TX_ER is asserted, values of TXD<3:0> other than the ones listed in table 22-1 shall have no effect upon the PHY"

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **22** *SC* **22.2.2.4** *P* **33** *L* **13** # 198

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *Big Ticket Item - Definitions*

Also 22.2.2.5, 22.2.2.8 22.8.3.2 CL22 MII is an existing exposed interoperability test point. Any material changes to its function effect interoperability to installed base. EEE related modifications prior connects to EEE services client, not MAC. These proposed changes directly effect interoperability to existing installed base to MAC services.

SuggestedRemedy

Reverse all proposed modifications to CL22 that effect shall shatement that existed prior. A good test for this would be that there is no modifications to the PICS table with status "M". See Slides 4~6 in http://www.ieee802.org/3/cg/public/Nov2018/Kim_3cg_01a_1118.pdf for a complext context.

Response *Response Status* **W**

REJECT.

Commenter fails to identify a specific compatibility problem or specific PICS items. Compatibility is satisfied and has been demonstated. Refer to http://www.ieee802.org/3/cg/public/Jan2019/baggett_3cg_01_0119.pdf, http://www.ieee802.org/3/cg/public/July2018/PLCA%20overview.pdf (slides 16 through 21), and http://www.ieee802.org/3/cg/public/Jan2019/Tutorial_cg_0119_final.pdf (slides 29, 34, and 35) for examples.

Other than PICS item SF17, which has been modified to exclude the new PHYs in this draft, there are no changes to add new Mandatory PICS items other than those conditioned on new options (see 22.8.2.3).

Cl **22** *SC* **22.2.2.5** *P* **31** *L* **49** # 325

Brandt, David Rockwell Automation

Comment Type **T** *Comment Status* **A** *PLCA*

According to Clause 148, PLCA is exclusively a 10BASE-T1S feature and not a 10BASE-T1L feature. Associated implementation does not apply to 10BASE-T1L.

SuggestedRemedy

Change from:
"with the exception of 10BASE-T1L and 10BASE-T1S"

To:
"with the exception of 10BASE-T1S"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change, "10BASE-T1L and 10BASE-T1S"

to, "10BASE-T1L (see 146.3.3.1) and 10BASE-T1S (see 147.3.2.1, Figure 147-4)"

Cl **22** *SC* **22.2.2.8** *P* **32** *L* **7** # 8

Anslow, Pete Ciena

Comment Type **E** *Comment Status* **A** *EZ*

"148.4.5.1" should be a cross-reference

SuggestedRemedy

make "148.4.5.1" a cross-reference

Response *Response Status* **C**

ACCEPT.

Cl **22** *SC* **22.8.3.2** *P* **33** *L* **36** # 326

Brandt, David — Rockwell Automation

Comment Type **T** *Comment Status* **R** *PLCA*

According to Clause 148, PLCA is exclusively a 10BASE-T1S feature and not a 10BASE-T1L feature. Associated implementation does not apply to 10BASE-T1L.

SuggestedRemedy

Change from:
"with the exception of 10BASE-T1L and 10BASE-T1S"

To:
"with the exception of 10BASE-T1S"

Response *Response Status* **C**

REJECT.

This text is related to an area where an end of stream delimiter with error is transmited (not PLCA). It applies to both 10BASE-T1S and 10BASE-T1L.The related change to normative text proposed in comment #325 was not made.

Cl **30** *SC* **30.2.2.1** *P* **34** *L* **13** # 199

Kim, Yong — NIO

Comment Type **TR** *Comment Status* **R** *ig Ticket Item - Management*

PHY is NOT the same as Physcal Layer in layer definition. PHY has xMII on one side and MDI on the other (1.4.391). RS in Physical Layer but not in PHY. So by definition, oPLCA CANNOT be in oPHYEntity. Note: look at other RS related entities in Fig 30-3 to see the consistency

SuggestedRemedy

Change the text so that the oPLCA is iin oMAC (not oPHY), and make other appropirate changes

Response *Response Status* **W**

REJECT.

PLCA management was moved under the PHY entity in response to satisfied TR comment 301 on initial working group ballot.

Additional information: The Reconciliation Sublayer extensions specified in Clause 65 for point-to-point emulation extend the Reconciliation Sublayer to support multiple MACs above a single PHY, see Figure 65-1 'RS location in the OSI protocol stack'. These extensions effectively add a set of functions above the PLS service interface at the 'top' of the existing Reconciliation Sublayer specified in Clause 35 to provide support for multiple instances of the PLS service interface. These functions include replacing some of the preamble on transmit with information protected by a CRC8, and examining this information on receive to determine which of the multiple MACs a packet is forwarded to. These are in effect a set of functions operating between the existing Reconciliation Sublayer and the multiple MACs, and as a result, the oOMPEmulation object to support these additional functions has to be placed between the multiple oMACEntity objects and the single oPHYEntity object. Note the many-to-one mapping from the oMACEntity object to the oOMPEmulation object in Figure 30-3 DTE System entity relationship diagram.

This is not the case for Energy-Efficient Ethernet or Time Synchronisation which did not impact the interface presented to the MAC. As a result, the additional attributes were either placed in the oPHYEntity object, this was the case for Energy-Efficient Ethernet, or in an object contained within the oPHYEntity object, this the case for Time Synchronisation where the oTimeSync object was added. It is for the same reasons that the oPLCA object should be contained within the oPHYEntity object too.

Cl **30** *SC* **30.2.3** *P* **34** *L* **19** # 201

Kim, Yong NIO

Comment Type **ER** *Comment Status* **R** *Editorial*

The editting instruction says "Replace Figure 30-3 to add oPLCA as follows". Shouldn't it be "Change Figure.." Meaning allow other projects to change this Figure without such change being lost?

SuggestedRemedy

Consider use of "Change"

Response *Response Status* **W**

REJECT.

The use of the replace editing instruction is aligned with the text on page 26 that says, "Replace is used to make changes in figures or equations by removing the existing figure or equation and replacing it with a new one." A Change instruction would required the use of underlines and strikethroughs, which are impractical for figure blocks. Subsequent projects can change or replace this figure as needed.

Cl **30** *SC* **30.2.3** *P* **35** *L* **37** # 200

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *Big Ticket Item - Management*

PHY is NOT the same as Physcal Layer in layer definition. PHY has xMII on one side and MDI on the other (1.4.391). RS in Physical Layer but not in PHY. So by definition, oPLCA CANNOT be in oPHYEntity. Note: look at other RS related entities in Fig 30-3 to see the consistency

SuggestedRemedy

Move oPLCA from below oPHY and locate it below oMAC

Response *Response Status* **W**

REJECT.

PLCA management was moved under the PHY entity in response to satisfied TR comment 301 on initial working group ballot.

Additional information: The Reconciliation Sublayer extensions specified in Clause 65 for point-to-point emulation extend the Reconciliation Sublayer to support multiple MACs above a single PHY, see Figure 65-1 'RS location in the OSI protocol stack'. These extensions effectively add a set of functions above the PLS service interface at the 'top' of the existing Reconciliation Sublayer specified in Clause 35 to provide support for multiple instances of the PLS service interface. These functions include replacing some of the preamble on transmit with information protected by a CRC8, and examining this information on receive to determine which of the multiple MACs a packet is forwarded to. These are in effect a set of functions operating between the existing Reconciliation Sublayer and the multiple MACs, and as a result, the oOMPEmulation object to support these additional functions has to be placed between the multiple oMACEntity objects and the single oPHYEntity object. Note the many-to-one mapping from the oMACEntity object to the oOMPEmulation object in Figure 30-3 DTE System entity relationship diagram.

This is not the case for Energy-Efficient Ethernet or Time Synchronisation which did not impact the interface presented to the MAC. As a result, the additional attributes were either placed in the oPHYEntity object, this was the case for Energy-Efficient Ethernet, or in an object contained within the oPHYEntity object, this the case for Time Synchronisation where the oTimeSync object was added. It is for the same reasons that the oPLCA object should be contained within the oPHYEntity object too.

Cl **30** *SC* **30.3.9.1.2** *P* **38** *L* **28** # 202
Kim, Yong NIO

Comment Type **ER** *Comment Status* **A** *PLCA*

"..aPLCAStatus is driven by plca_status variable.." The word "driven" is poor choise of word - does not define how plca_status variable value maps to aPLCAStatus.

SuggestedRemedy

Use "equal" or "same as" or other words that offer more explicit meaning

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Replace "is driven by" with "maps to".

Provide editorial license to align this text in other places.

(Editor's note: This is the common language used in clause 30.)

Cl **30** *SC* **30.3.9.2.1** *P* **38** *L* **40** # 203
Kim, Yong NIO

Comment Type **E** *Comment Status* **R** *PLCA*

"This action provides a means to alter aPLCAAdminState." is completely superfluous.

SuggestedRemedy

Consider deleting the sentence. This comment is on text that has not changed and has no unresolved disapprove.

Response *Response Status* **C**

REJECT.

This style of text is aligned with similar BEHAVIOUR DEFINED AS text for other actions in clause 30.

Cl **30** *SC* **30.3.9.2.3** *P* **39** *L* **11** # 134
Beruto, Piergiorgio Canova Tech Srl

Comment Type **E** *Comment Status* **A** *PLCA*

aPlcaNodeCount speified the exact number of nodes getting a transmit opportunity, not the maximum.

SuggestedRemedy

Change "the maximum number of nodes" into "the number of nodes"

Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.3.9.2.3** *P* **39** *L* **12** # 344
Brandt, David Rockwell Automation

Comment Type **T** *Comment Status* **A** *PLCA*

Default is not defined. Define consistently with Clause 45.2.13.2.2.

SuggestedRemedy

Add "The default value is 255 (unassigned)."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add "The default value is 255."

Cl **30** *SC* **30.3.9.2.5** *P* **39** *L* **28** # 131
Beruto, Piergiorgio Canova Tech Srl

Comment Type **E** *Comment Status* **A** *PLCA*

Syntax does not include the range as for other integer attributes.

SuggestedRemedy

At line 28 replace "INTEGER" with "INTEGER VALUE in the following range (inclusive): 1 to 255"

At line 33 replace "is an integer number between 1 and 255, expressed as" with "represents"

Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.3.9.2.5** *P* **39** *L* **31** # 204
Kim, Yong NIO

Comment Type **ER** *Comment Status* **A** *PLCA*

"for a specific LocalNodeID" the word "specific" is not clear. "aPLCATransmitOppotunity maps to the duration", the word "maps" is not clear. "See 148.4.5.4 for further information", "for further information" is not used, just "See <ref>.".

SuggestedRemedy

Suggest using "given" instead of "specific", use "related" instead of "maps", and delete "for further information"

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Replace, "a specific LocalNodeID" with "the node".

Delete "for further information".

Cl **30** *SC* **30.3.9.2.5** *P* **39** *L* **32** # 135

Beruto, Piergiorgio — Canova Tech Srl

Comment Type **E** *Comment Status* **D** *PLCA*

The sentence "This value is assigned to define the time between PLCA transmit opportunities for a specific LocalNodeID" sounds odd.

SuggestedRemedy

Replace "for a specific LocalNodeID" with "for a specific node"

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **30** *SC* **30.3.9.2.5** *P* **39** *L* **34** # 345

Brandt, David — Rockwell Automation

Comment Type **T** *Comment Status* **A** *PLCA*

Default is not defined. Define consistently with Clause 45.2.13.2.2.

SuggestedRemedy

Add "The default value is 20."

Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.3.9.2.6** *P* **39** *L* **44** # 9

Anslow, Pete — Ciena

Comment Type **E** *Comment Status* **A** *Editorial*

As pointed out by comment #36 against D2.0 and again in comment #96 against D2.1:
The 802.3 web page:
http://www.ieee802.org/3/WG_tools/editorial/requirements/words.html#mib
says: "In IEEE Std 802.3 the spelling 'behaviour' is used throughout MIB clauses and their associated Annexes, and in any references to the behaviours defined there."

SuggestedRemedy

Change "behavior" to "behaviour"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace, "in a single transmit
opportunity. Behavior is specified in"

with, "in a single transmit
opportunity as specified in"

(Editor's note: BEHAVIOUR in clause 30 is a reserved word and should be avoided in explanatory text.)

Cl **30** *SC* **30.3.9.2.7** *P* **39** *L* **47** # 205

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *PLCA Burst*

aPLCABurstTimer has at least two isseus. 1) name seem to indicate timer burst, but the definition says wait timer before terminating burst. Should rename to reduce confustion.
2) With infinitely fast statemachines and atomic frame transfers, and RS being above the xMII counters in bit times makes little sense. Obviously exposed interfaces are exceptions. If the intention is to allow building a non-complaint PHY that includes PLCA in the PHY, then this timer may be relevant in implementations (not to the specification which is done in architectural frame work). I assum this is not the intent. If this is the intent, please go through appropriate process.

SuggestedRemedy

WRT to 1) please consider chaning the timer name to more descriptive name, if 2) is rejected. If 2) is accepted, then please ignore 1) comment.

Response *Response Status* **W**

REJECT.

This appears to be two comments in one.

1 (re:timer naming): Commenter provides insufficient information for remedy.
aPLCABurstTimer is consistent with the timer named in clause 148.
2 (re: process): Commenter provides insufficient information for remedy. Commenter is incorrect; the timer is in the physical layer and not the MAC.

Cl **30** *SC* **30.5.1.1.2** *P* **40** *L* **10** # 10

Anslow, Pete Ciena

Comment Type **E** *Comment Status* **A** *Editorial*

Comment #41 against D2.0 and Comment #98 against D2.1 both point out that it is not appropriate to list the two new 10 Mb/s PHYs after 1000 Mb/s PHYs.
The response to Comment #98 against D2.1 was:
ACCEPT IN PRINCIPLE.
Replace "1000BASE-T" with "10BASE-FL"
There are two issues with this:
1) it has been replaced with "1000BASE-FL" (which does not exist) rather than "10BASE-FL"
2) "10BASE-FL" would make the list:
10BASE-FP in Clause 16
10BASE-FB in Clause 17
10BASE-FL in Clause 18
10BASE-T1L in Clause 146
10BASE-T1S in Clause 147
10BASE-FLHD in Clause 18
10BASE-FLFD in Clause 18
which places the two new PHYs in the middle of the three PHYs defined in Clause 18.
It seems more appropriate to put them at the end of the 10 Mb/s PHYs.

SuggestedRemedy

Change "1000BASE-FL" to "10BASE-FLFD"

Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.15.1.1.4** *P* **40** *L* **36** # 1

Wienckowski, Natalie General Motors

Comment Type **T** *Comment Status* **A** *PoDL*

Missing Type E PSE

SuggestedRemedy

Editors instruction: insert the following new entry in the APPROPRIATE SYNTAX section of 30.15.1.1.4 after the entry for "typeD":
Text: "typeE Type E PoDL PSE"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert new section on page 40, line 36

"30.15 Layer management for Power over Data Lines (PoDL) of Single Balanced Twisted-Pair Ethernet

30.15.1 PoDL PSE managed object class

30.15.1.1 PoDL PSE attributes

30.15.1.1.4 aPoDLPSEType

Insert the following new entry in the APPROPRIATE SYNTAX section of 30.15.1.1.4 after the entry for "typeD":

typeE Type E PoDL PSE"

Cl **30** *SC* **30.15.1.1.5** *P* **40** *L* **37** # 2

Wienckowski, Natalie General Motors

Comment Type **T** *Comment Status* **A** *PoDL*

Missing Type E PD

SuggestedRemedy

Editors instruction: insert the following new entry in the APPROPRIATE SYNTAX section of 30.15.1.1.5 after the entry for "typeD":
Text: "typeE Type E PoDL PD"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert after the new text inserted by comment #1:

"30.15.1.1.5 aPoDLPSEDetectedPDType

Insert the following new entry in the APPROPRIATE SYNTAX section of 30.15.1.1.5 after the entry for "typeD":

typeE Type E PoDL PD"

Cl **45** *SC* **45.2.1.186d** *P* **47** *L* **28** # 11

Anslow, Pete Ciena

Comment Type **E** *Comment Status* **A** *EZ*

"Table 45-150d" should be a cross-reference

SuggestedRemedy

make "Table 45-150d" a cross-reference

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.186d.1** *P* **48** *L* **12** # 32

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *PMA*

Reads from all other bits shall be ignored.

SuggestedRemedy

Reads from all other bits are indeterminate and the values are invalid. (align with 10BASE-T1L text and also adjust PICS entry MM184 by removing "Reads for all other bits are ignored").

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace, "Reads for all other bits shall be ignored."

with, "Reads from all other bits are indeterminate and the values are invalid."

Delete, "Reads for all other bits are ignored" and the "." after 1.0.15

Cl **45** *SC* **45.2.1.186e** *P* **49** *L* **25** # 81

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *PMA*

Receive Fault Bit should have a latching high behavior (do the same change as we did for the last draft in 10BASE-T1L)

SuggestedRemedy

Change RO to RO/LH in R/W column, Add LH = Latching High to legend of table 45-150e.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace, "RO" with, "RO/LH" in the R/W column for bit 1.2298.1.

Insert, ", LH = Latching high" after "RO = Read only" at the bottom of table 45-150e.

Cl **45** *SC* **45.2.1.186e.5** *P* **50** *L* **7** # 28

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *PMA*

For 10BASE-T1L the receive fault bit behavior has been changed to latching high behavior in the last draft. 10BASE-T1S should implement the same.

SuggestedRemedy

Add sentence: The receive fault bit shall be implemented with latching high behavior. Add also associated PICS entry.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert, "This bit shall be implemented with latching high behavior." at the end of the paragraph.

Insert new PICS MM204 after MM203:

Item: MM204
Feature: The 10BASE-T1S PMA receive fault bit is implemented with latching high behavior
Subclause: 45.2.1.186e.5
Value/Comment: [blank]
Status: PMA:M
Support: Yes [ ] N/A [ ]

Cl **45** *SC* **45.2.3.68b** *P* **52** *L* **20** # 12

Anslow, Pete — Ciena

Comment Type **E** *Comment Status* **A** *EZ*

The name of register 3.2279 is "10BASE-T1L PCS status" (not status 1). See comment #110 against D2.1

SuggestedRemedy

Change "status 1" to "status" in the title and also the first line of 45.2.3.68b

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.68b** *P* **52** *L* **20** # 149
Griffiths, Scott — Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

[EZ] Cleanup; there is only one PCS status register for T1L.

SuggestedRemedy

Change "PCS status 1 register" to "PCS status register".

Response *Response Status* **C**

ACCEPT.

Resolved by comment #12. The resolution to comment #12 is:

Change "status 1" to "status" in the title and also the first line of 45.2.3.68b

Cl **45** *SC* **45.2.3.68b** *P* **52** *L* **22** # 150
Griffiths, Scott — Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

[EZ] Cleanup; there is only one PCS status register for T1L.

SuggestedRemedy

Change "PCS status 1 register" to "PCS status register".

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.68b** *P* **52** *L* **40** # 30
Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *PCS*

10BASE-T1S PCS fault bit is latching high. 10BASE-T1L should therefore also be latching high to be consistent.

SuggestedRemedy

Change RO to RO/LH in R/W column of table 45-237b for bit 3.2279.7. Add sentence at the end of Clause 45.2.3.68b.5: The fault bit shall be implemented with latching high behavior. Add also associated PICS entry.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace, "RO" with, "RO/LH" in the R/W column for bit 3.2279.7.

Insert, "This bit shall be implemented with latching high behavior." at the end of 45.2.3.68b.5.

Insert new PICS RM172 after RM171 and re-number subsequent PICS:

Item: RM172
Feature: The 10BASE-T1L PCS fault bit is implemented with latching high behavior
Subclause: 45.2.3.68b.5
Value/Comment: [blank]
Status: PMA:M
Support: Yes [ ] N/A [ ]

Cl **45** *SC* **45.2.3.68b.6** *P* **53** *L* **37** # 82
Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *PCS*

This bit is a latching low reflection of .

SuggestedRemedy

This bit shall be a latching low reflection of . (as for several other latching register bits, this needs to be a shall statement). The shall is also already reflected in the PICS (RM172).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace, "This bit is a latching low reflection of the variable scr_status."

With, "This bit shall be implemented with latching low behavior and is a reflection of the variable scr_status."

Cl **45** *SC* **45.2.3.68c** *P* **54** *L* **8** # 13

Anslow, Pete — Ciena

Comment Type **E** *Comment Status* **A** *EZ*

The name of register 3.2291 is "10BASE-T1S PCS control" (See comment #112 against D2.1)

SuggestedRemedy

In the title of Table 237c, change "control" to "PCS control"

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.68c.3** *P* **54** *L* **52** # 324

McClellan, Brett — Marvell

Comment Type **T** *Comment Status* **A** *PCS*

The duplex mode bit does not apply when in Multidrop mode. Modify the bit description to account for this.

SuggestedRemedy

change "Bit 3.2291.8 is used to configure the PCS duplex_mode variable when Auto-Negotiation enable bit 7.512.12 is set to zero"
to "Bit 3.2291.8 is used to configure the PCS duplex_mode variable when not operating in Multidrop mode and when Auto-Negotiation enable bit 7.512.12 is set to zero"

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.68d.1** *P* **55** *L* **27** # 211

Kim, Yong — NIO

Comment Type **TR** *Comment Status* **A** *PLCA*

PLCA Support (3.2292.15) means there is a 10BASE-T1S PHY and 10BASE-T1S PLCA PHY. So Is the PLCA RS function or RS, PCS, and possibly PMA function? Based on this setting, it seems to indicate that PLCA is not limited to RS. It would be good to clarify where all the layers PLCA optinoal feature/function/option reside

SuggestedRemedy

Either delete this, or clarify which layer PLCA resides.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Replace, "indicates the PCS does not support PLCA RS required functions"

with, "indicates the PCS does not support the encodings of BEACON and COMMIT".

Cl **45** *SC* **45.2.3.68d.2** *P* **55** *L* **33** # 151

Griffiths, Scott — Rockwell Automation

Comment Type **T** *Comment Status* **A** *PCS*

Table 45-237d indicates the Fault bit (3.2292.7) is latching high, but the text does not discuss latching behavior. The fault bit in T1L's PCS status register does not latch. Is latching really desired for T1S?

SuggestedRemedy

If latching behavior is desired, add text in section 45.2.3.68d.2 to indicate this. Also add PICS item in section 45.5.3.7.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved by comment #29. The resolution to comment #29 is:

Insert, "This bit shall be implemented with latching high behavior." at the end of 45.2.3.68d.2.

Insert new PICS RM188 after RM187 and re-number subsequent PICS:

Item: RM188
Feature: The 10BASE-T1S PCS fault bit is implemented with latching high behavior
Subclause: 45.2.3.68d.2
Value/Comment: [blank]
Status: PMA:M
Support: Yes [ ] N/A [ ]

Cl **45** SC **45.2.3.68d.2** P **55** L **37** # 29
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *PCS*

The 10BASE-T1S PCS status register fault bit is stated to use latching high behavior in table 45-237d, but this behavior is missing in the text of Clause 45.2.3.68d.2 and the associated PICS.

SuggestedRemedy

Add sentence at the end of Clause 45.2.3.68d.2: The fault bit shall be implemented with latching high behavior. Add also associated PICS entry.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert, "This bit shall be implemented with latching high behavior." at the end of 45.2.3.68d.2.

Insert new PICS RM188 after RM187 and re-number subsequent PICS:

Item: RM188
Feature: The 10BASE-T1S PCS fault bit is implemented with latching high behavior
Subclause: 45.2.3.68d.2
Value/Comment: [blank]
Status: PMA:M
Support: Yes [ ] N/A [ ]

Cl **45** SC **45.2.3.68e** P **55** L **41** # 14
Anslow, Pete Ciena

Comment Type **E** *Comment Status* **A** *EZ*

The name of register 3.2293 is "10BASE-T1S PCS diagnostic 1".
This means that references to it should be: "10BASE-T1S PCS diagnostic 1 register"

SuggestedRemedy

On lines 41 and 42 change "10BASE-T1S PCS diagnostic register 1" to "10BASE-T1S PCS diagnostic 1 register" (2 instances)
On line 43 change "10BASE-T1S PCS 1 diagnostic register" to "10BASE-T1S PCS diagnostic 1 register"
In the title of Table 45-237e change "10BASE-T1S diagnostic register" to "10BASE-T1S PCS diagnostic 1 register" (add PCS and 1)

Response *Response Status* **C**

ACCEPT.

Cl **45** SC **45.2.3.68e** P **55** L **43** # 152
Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

[EZ] Text cleanup; the correct name of the register appears to be "PCS diagnostic 1"

SuggestedRemedy

Change occurances of "PCS 1 diagnostic register" and "PCS diagnostic register 1" to "PCS diagnostic 1 register"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved by comment #14. The resolution to comment #14 is:

On lines 41 and 42 change "10BASE-T1S PCS diagnostic register 1" to "10BASE-T1S PCS diagnostic 1 register" (2 instances)

On line 43 change "10BASE-T1S PCS 1 diagnostic register" to "10BASE-T1S PCS diagnostic 1 register"

In the title of Table 45-237e change "10BASE-T1S diagnostic register" to "10BASE-T1S PCS diagnostic 1 register" (add PCS and 1)

Cl **45** SC **45.2.3.68f** P **56** L **9** # 15
Anslow, Pete Ciena

Comment Type **E** *Comment Status* **A** *EZ*

"Table 45-150f" should be a cross-reference

SuggestedRemedy

make "Table 45-150f" a cross-reference

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.68f** *P* **56** *L* **10** # 16

Anslow, Pete — Ciena

Comment Type **E** *Comment Status* **A** *EZ*

The name of register 3.2294 is "10BASE-T1S PCS diagnostic 2".
This means that references to it should be: "10BASE-T1S PCS diagnostic 2 register"

SuggestedRemedy

On line 10 change "10BASE-T1S PCS diagnostic register 2" to "10BASE-T1S PCS diagnostic 2 register". Also, change the "-" in "10BASE-T1S" to be non-breaking (Ctrl space).
In the title of Table 45-237f change "10BASE-T1S PCS status 2 register" to "10BASE-T1S PCS diagnostic 2 register" (status to diagnostic).

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.68f** *P* **56** *L* **11** # 154

Griffiths, Scott — Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

[EZ] Text cleanup; the correct name of the register appears to be "PCS diagnostic 2"

SuggestedRemedy

Change "PCS diagnostic register 2" to "PCS diagnostic 2 register"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved by comment #16. The resolution to comment #16 is:

On line 10 change "10BASE-T1S PCS diagnostic register 2" to "10BASE-T1S PCS diagnostic 2 register".

Also, change the "-" in "10BASE-T1S" to be non-breaking (Ctrl space).

In the title of Table 45-237f change "10BASE-T1S PCS status 2 register" to "10BASE-T1S PCS diagnostic 2 register" (status to diagnostic).

Cl **45** *SC* **45.2.3.68f** *P* **56** *L* **17** # 287

Jones, Peter — Cisco Systems

Comment Type **T** *Comment Status* **A** *Editorial*

The description of PhysicalColCnt in Table 45-237f "16 bits field counting the number of remote jabber errors received since last read of this register" is a copy of the description of Remote Jabber Count in Table 45-237e

SuggestedRemedy

Fix description
"16 bit field counting the number of physical collisions that occured since last read of this register"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace, "16 bits field counting the number of remote jabber errors received since last read of this register"

with, "16 bit field counting the number of physical collisions that occured since last read of this register"

Cl **45** *SC* **45.2.3.68f** *P* **56** *L* **18** # 212

Kim, Yong — NIO

Comment Type **ER** *Comment Status* **A** *PLCA*

Description says "..remote jabber errors received.." Should say "collision"

SuggestedRemedy

My preference is "collsions" not "physical collision" (I have a separate commnet WRT this)

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Replace, "16 bits field counting the number of remote jabber errors received since last read of this register"

with, "16 bit field counting each time a transmission initiated locally results in a corrupted signal at the MDI since last read of this register"

Cl **45** *SC* **45.2.3.68f** *P* **56** *L* **18** # 214
Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *PLCA*

I see the benefits of # of collisions experienced for a given packet transmit attempts -- indicates some qualitative measure of congestion. I don't see the value nor relevance of counting collisions since beginning of time. I cannot locate (easily, anway) justification for adding this counter -- and even more so in PHY/PCS rather than in the MAC.

SuggestedRemedy

Please delete this counter, or reject this comment and point me to the rationale and utility of this counter.

Response *Response Status* **W**

REJECT.

When optional PLCA RS is enabled, the MAC will count the number of collisions reported by the RS via the PLS_SIGNAL.indication primitive. Having a register that counts the number of corrupted transmissions at the MDI detected at the PCS or PMA sublayer is, as commenter says, a useful indication for diagnosing misconfiguration problems and to evaluate the line quality.

Cl **45** *SC* **45.2.3.68f.1** *P* **56** *L* **25** # 157
Griffiths, Scott Rockwell Automation

Comment Type **T** *Comment Status* **A** *PLCA*

Wrapping behavior of the counter is not defined.

SuggestedRemedy

Indicate that this counter shall not wrap; add similar text as is found in 45.2.3.68e.1.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert, "When the maximum allowed value (65 535) is reached, the count stops until this register is cleared by a read operation."

after, "since last time register 3.2294 was read."

Cl **45** *SC* **45.2.3.68f.1** *P* **56** *L* **25** # 213
Kim, Yong NIO

Comment Type **ER** *Comment Status* **A** *PLCA*

"..i.e., excluding the ones triggered by the optional PLCA RS).." makes little sense. How do you exclude events in RS in PHY, and also "triggered" is vague. Please clarify.

SuggestedRemedy

Please clarify how RS layer events could be excluded in PHY (via references may be) or some other way.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Replace, "Bits 3.2294.15:0 reports the number of physical collisions (i.e., excluding the ones triggered by the optional PLCA RS) occurred since last time register 3.2294 was read."

with, "Bits 3.2294.15:0 count up each time a transmission initiated locally results in a corrupted signal at the MDI."

Cl **45** *SC* **45.2.3.68f.1** *P* **56** *L* **27** # 288
Jones, Peter Cisco Systems

Comment Type **E** *Comment Status* **A** *EZ*

missing word "the number of physical collisions (..) occurred since last time"

SuggestedRemedy

missing word "the number of physical collisions (..) that occurred since last time"

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.7** *P* **56** *L* **33** # 17
Anslow, Pete Ciena

Comment Type **E** *Comment Status* **A** *EZ*

The title of Table 45-309 is "Auto-Negotiation MMD registers"

SuggestedRemedy

Change the title of Table 45-309 from "PMA/PMD registers" to "Auto-Negotiation MMD registers"

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.7.25** *P* **57** *L* **4** # 218

Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *AutoNeg*

Note -- this comment may be on the text that did not change from D2.1 to D2.2. The bit 7.526.15 describes 10BASE-T1L full duplex ability advertisement. Question? Is there any other mode? Then this is grossly unnecessary. Please consider deleting this bit.

SuggestedRemedy

Please consider deleting this bit and corresponding bit in 7.527. Case and point, there is no effect to CL146 behavior from this value.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Resolved by comment #158. The resolution to comment #158 is:

Replace (P57, L4),

"1 = Advertise that the 10BASE-T1L PHY has full duplex ability (default)
0 = Do not advertise that the 10BASE-T1L PHY has full duplex ability"

with,
"1 = Advertise that the PHY has 10BASE-T1L full duplex ability (default)
0 = Do not advertise that the PHY has 10BASE-T1L full duplex ability",

in the Description for bit 7.526.15 in Table 45-330a, and similarly for the link partner bit 7.527.15 in Table 45-330b. The descriptions of the bits in the text are clear.

Cl **45** *SC* **45.2.7.25** *P* **57** *L* **29** # 215

Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *PLCA*

Note -- this comment may be on the text that did not change from D2.1 to D2.2. in both 7.527.5 and 7.527.4 "..link partner is advertising that the PHY has PLCA ability" has a concerns. PHY is between PCS to MDI. RS is not in PHY. Also referenced PHY should be 10BASE-T1S PHY, unless it is the intention to auto-negotiate PLCA ability with other PHY. Only one reference to PHY is in that form. Also I thought PLCA is only relevant to P2MP shared medium operation, where autonegotation is not appropriate.

SuggestedRemedy

Please change 1) PHY to 10BASE-T1S PHY in five places, 2) add PLCA appropriate layer, RS. In four places. I'll search, but there is a reference to P2MP auto-negotation function, I would live to get it. Before being satisfied with this comment, I need to see why autonegotation of shared medium feature is is needed (or even how it would work).

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Resolved by comment #148. The resolution to comment #148 is:

1) remove A20 and A21 entries from table 98B-1
2) delete "7.526.5 and 7.526.4" entries from table 45-330a
3) delete subclause 45.2.7.25.7 and 45.2.7.25.8
4) remove entries AM102 and AM103 from table 45.5.3.9 on page 71
5) delete "7.527.5 and 7.527.4" entries from table 45-330b

Cl **45** *SC* **45.2.7.25** *P* **57** *L* **29** # 341

Brandt, David Rockwell Automation

Comment Type **T** *Comment Status* **A** *PLCA*

PLCA only applies to multidrop, which does not have Auto-negotiation.

SuggestedRemedy

Remove 7.526.4 and 7.526.4 and renumber Reserved bit range.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved by comment #148. The resolution to comment #148 is:

1) remove A20 and A21 entries from table 98B-1
2) delete "7.526.5 and 7.526.4" entries from table 45-330a
3) delete subclause 45.2.7.25.7 and 45.2.7.25.8
4) remove entries AM102 and AM103 from table 45.5.3.9 on page 71
5) delete "7.527.5 and 7.527.4" entries from table 45-330b

Cl **45** *SC* **45.2.7.25.4** *P* **58** *L* **9** # 31

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg*

., and the 2.4 Vpp transmit voltage operation is desired, bit 7.526.12 is set to one.

SuggestedRemedy

., and the 2.4 Vpp transmit voltage operation is desired, bit 7.526.12 shall be set to one. (change to a shall statement as for the other bits in the same register and also add an associated PICS entry).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert after "is set to one.",

"Bit 7.526.12 is used to select whether or not Auto-Negotiation advertises a request to operate the 10BASE-T1L PHY in increased transmit level mode. If bit 7.526.12 is set to one the PHY shall advertise a request to operate the 10BASE-T1L PHY in increased transmit level mode. If bit 7.526.12 is set to zero, the PHY shall not advertise a request to operate the 10BASE-T1L PHY in increased transmit level mode."

Insert new PICS AM98 after AM97 and renumber subsequent bits.

Item: AM98
Feature: When bit 7.526.12 is set to one, a request to operate the 10BASE-T1L PHY in increased transmit level mode is advertised.
Value/Comment: [blank]
Status: AN:M
Support: Yes [ ] N/A [ ]

Cl **45** *SC* **45.2.7.25.7** *P* **58** *L* **26** # 342

Brandt, David — Rockwell Automation

Comment Type **T** *Comment Status* **A** *PLCA*

PLCA only applies to multidrop, which does not have Auto-negotiation.

SuggestedRemedy

Remove clauses 45.2.7.25.7 and 45.2.7.25.8.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved by comment #148. The resolution to comment #148 is:

1) remove A20 and A21 entries from table 98B-1
2) delete "7.526.5 and 7.526.4" entries from table 45-330a
3) delete subclause 45.2.7.25.7 and 45.2.7.25.8
4) remove entries AM102 and AM103 from table 45.5.3.9 on page 71
5) delete "7.527.5 and 7.527.4" entries from table 45-330b

Cl **45** *SC* **45.2.7.25.8** *P* **58** *L* **30** # 217

Kim, Yong — NIO

Comment Type **TR** *Comment Status* **A** *PLCA*

Note -- this comment may be on the text that did not change from D2.1 to D2.2. This is the ONLY place where "PLCA coordinator" is optionally present, or conversely, it is not clear whether every PLCA RS must be able to serve as the coordinator for conformance. And this caused entry to 98B.3. The refereced 148.2 does not describe optional presence. Ideally CL148.2 describes this cleary -- whether this is an optional feature or optional operation or whatever. Management clause is not the good place to put such specification (and also as stated, it is being grossly inferred by this commentor).

SuggestedRemedy

Clarify the optional/mandatory intent of "PLCA coordinator " in CL148 RS.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Resolved by comment #148. The resolution to comment #148 is:

1) remove A20 and A21 entries from table 98B-1
2) delete "7.526.5 and 7.526.4" entries from table 45-330a
3) delete subclause 45.2.7.25.7 and 45.2.7.25.8
4) remove entries AM102 and AM103 from table 45.5.3.9 on page 71
5) delete "7.527.5 and 7.527.4" entries from table 45-330b

Cl **45** *SC* **45.2.7.26** *P* **59** *L* **30** # 216

Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *PLCA*

Note -- this comment may be on the text that did not change from D2.1 to D2.2. in both 7.527.5 and 7.527.4 "..link partner is advertising that the PHY has PLCA ability" has a concerns. PHY is between PCS to MDI. RS is not in PHY. Also referenced PHY should be 10BASE-T1S PHY, unless it is the intention to auto-negotiate PLCA ability with other PHY. Also I thought PLCA is only relevant to P2MP shared medium operation, where autonegotation is not appropriate.

SuggestedRemedy

Please change 1) PHY to 10BASE-T1S PHY in six places, 2) add PLCA appropriate layer, RS. In four places. I'll search, but there is a reference to P2MP auto-negotation function, I would live to get it. Before being satisfied with this comment, I need to see why autonegotation of shared medium feature is is needed (or even how it would work).

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Resolved by comment #148. The resolution to comment #148 is:

1) remove A20 and A21 entries from table 98B-1
2) delete "7.526.5 and 7.526.4" entries from table 45-330a
3) delete subclause 45.2.7.25.7 and 45.2.7.25.8
4) remove entries AM102 and AM103 from table 45.5.3.9 on page 71
5) delete "7.527.5 and 7.527.4" entries from table 45-330b

Cl **45** *SC* **45.2.7.26** *P* **59** *L* **30** # 343

Brandt, David Rockwell Automation

Comment Type **T** *Comment Status* **A** *PLCA*

PLCA only applies to multidrop, which does not have Auto-negotiation.

SuggestedRemedy

Remove 7.527.4 and 7.527.4 and renumber Reserved bit range.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved by comment #148. The resolution to comment #148 is:

1) remove A20 and A21 entries from table 98B-1
2) delete "7.526.5 and 7.526.4" entries from table 45-330a
3) delete subclause 45.2.7.25.7 and 45.2.7.25.8
4) remove entries AM102 and AM103 from table 45.5.3.9 on page 71
5) delete "7.527.5 and 7.527.4" entries from table 45-330b

Cl **45** *SC* **45.2.9.2** *P* **60** *L* **33** # 3

Wienckowski, Natalie General Motors

Comment Type **T** *Comment Status* **A** *PoDL*

Missing Type E PSE

SuggestedRemedy

Editors instruction: Change the row for PSE Type (as modified by IEEE Std 802.3cg-201x) in Table 45-340 as follows (unchanged rows not shown):.
Change 1 x x = Reserved row to to 1 0 0 = Type E PSE and
1 0 1 = Reserved and
1 1 x = Reserved.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace "Change row for Bits 13.1.6:3 in Table 45-340 as follows (unchanged rows not shown):"

with, "Change rows for Bits 13.1.6:3 and Bits 13.1.9:7 in Table 45-340 as follows (unchanged rows not shown):"

Insert row for Bits 13.1.9:7 (PSE Type) from 802.3-2018 into Table 45-340 above row for 13.1.6:3 (PD Class)

Replace, "1 x x = Reserved" with, "1 0 0 = Type E PSE"

Add 1 0 1 = Reserved
Add 1 1 x = Reserved

Cl **45** *SC* **45.2.9.2.7** *P* **60** *L* **53** # 4

Wienckowski, Natalie — General Motors

Comment Type **T** *Comment Status* **A** *PoDL*

Missing Type E PSE

SuggestedRemedy

Need to add Type E PSE to the text: and when read as 100 a Type E PSE is indcated. Values of 101 and 11x are reserved.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert after Table 45-340:

45.2.9.2.7 PSE Type (13.1.9:7)

Change 45.2.9.2.7 as follows:

Use formatting to show existing text changing from:

Bits 13.1.9:7 report the PSE Type of the PSE as specified in 104.4.1. When read as 000, bits 13.1.9:7 indicate a Type A PSE, when read as 001 a Type B PSE is indicated, and when read as 010 a Type C PSE is indicated. and when read as 011 a Type D PSE is indicated. Values of 1xx are reserved.

To:

Bits 13.1.9:7 report the PSE Type of the PSE as specified in 104.4.1. When read as 000, bits 13.1.9:7 indicate a Type A PSE, when read as 001 a Type B PSE is indicated, when read as 010 a Type C PSE is indicated, when read as 011 a Type D PSE is indicated, and when read as 100 a Type E PSE is indcated. Values of 101 and 11x are reserved.

(Editor's implementation note: there is a formatting issue for the Type D PSE in the original text that is corrected editorially by this implementation.

Cl **45** *SC* **45.2.9.2.8** *P* **61** *L* **3** # 18

Anslow, Pete — Ciena

Comment Type **E** *Comment Status* **A** *EZ*

"42.2.9.2.8" should be "45.2.9.2.8"

SuggestedRemedy

change "42.2.9.2.8" to "45.2.9.2.8"

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.13** *P* **62** *L* **13** # 45

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

PLCA TO Timer

SuggestedRemedy

PLCA TO timer (align with the rest of the text).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace, "PLCA TO Timer"

with, "PLCA TO timer"

Cl **45** *SC* **45.2.13.1.1** *P* **62** *L* **43** # 221

Kim, Yong — NIO

Comment Type **TR** *Comment Status* **A** *PLCA*

"The PHY shall be place in PLCA mode.". PLCA is in RS. PHY is between PCS and MDI. Physcal layer is between RS and MDI. Please make the appropriate change here and also in the whole document that seem to be inconsistent as to where PLCA resides.

SuggestedRemedy

"The RS shall be palced in PLCA mode." would be correct statement.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Replace, "The PHY shall be placed in PLCA mode of operation when bit 28.0.15 is set to one."

with, "Bit 28.0.15 shall map to plca_en (see 148.4.5.2). When bit 28.0.15 is set to one, plca_en = TRUE. When bit 28.0.15 is set to zero, plca_en = FALSE."

Cl **45** *SC* **45.2.13.2.1** *P* **63** *L* **19** # 289

Jones, Peter — Cisco Systems

Comment Type **T** *Comment Status* **A** *PLCA*

plca_node_count (for node 0) is defined as "number of active PLCA nodes on the mixing segment.", but is shown as R/W with a default of 8. A default makes no sense for ""number of active PLCA nodes". Is this supposed to match the text for aPLCANodeCount which says "the maximum number of nodes getting..."

SuggestedRemedy

If this is "active nodes", make it R/O and remove the default.
If this should match aPLCANodeCount, change "number of active PLCA nodes on the mixing segment" to "defines the maximum number of active PLCA nodes on the mixing segment".
Same change in Table 45-351c 28.1.15:8

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved by comment #219. The resolution to comment #219 is:

Replace, "number of active PLCA nodes"

with, "maximum number of PLCA nodes".

Make the same change as appropriate in Table 45-351c (p. 63, line 9), and 148.4.5.2 p. 223 line 5.

Cl **45** *SC* **45.2.13.2.1** *P* **63** *L* **19** # 219

Kim, Yong — NIO

Comment Type **E** *Comment Status* **A** *PLCA*

".active PLCA nodes.". Is there any other type of nodes on the same segment? How about just "..nodes."

SuggestedRemedy

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace, "number of active PLCA nodes"

with, "maximum number of PLCA nodes".

Make the same change as appropriate in Table 45-351c (p. 63, line 9), and 148.4.5.2 p. 223 line 5.

Cl **45** *SC* **45.2.13.3** *P* **63** *L* **31** # 19

Anslow, Pete — Ciena

Comment Type **E** *Comment Status* **A** *EZ*

The name of register 28.2 is "PLCA TO Timer".

SuggestedRemedy

Change the title of Table 45-351d from "PLCA to_timer register bit definitions" to "PLCA TO timer register bit definitions"

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.13.4** *P* **64** *L* **64** # 220

Kim, Yong — NIO

Comment Type **TR** *Comment Status* **R** *PLCA Burst*

Related to my other comment on 30.2.9.2.7 (and should consider together), 1) name seem to indicate timer burst, but the definition says wait timer before terminating burst. Should rename to reduce confustion. 2) With infinitely fast statemachines and atomic frame transfers, and RS being above the xMII counters in bit times makes little sense. Obviously exposed interfaces are exceptions. If the intention is to allow building a non-complaint PHY that includes PLCA in the PHY, then this timer may be relevant in implementations (not to the specification which is done in architectural frame work). I assum this is not the intent. If this is the intent, please go through appropriate process.

SuggestedRemedy

WRT to 1) please consider chaning the timer name to more descriptive name, if 2) is rejected. If 2) is accepted, then please ignore 1) comment.

Response *Response Status* **W**

REJECT.

This appears to be two comments in one.

1 (re:timer naming): Commenter provides insufficient information for remedy. aPLCABurstTimer is consistent with the timer named in clause 148.
2 (re: process): Commenter provides insufficient information for remedy. Commenter is incorrect; the timer is in the physical layer and not the MAC.

Cl **45** *SC* **45.2.13.6** *P* **64** *L* **32** # 346
Brandt, David Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

Wrong register name.

SuggestedRemedy

Change "Control 1 register" to "Status register".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved by comment #159. The resolution to comment #159 is:

Replace, "PLCA Control 1 register"

with, "PLCA status register"

Cl **45** *SC* **45.2.13.6** *P* **64** *L* **32** # 159
Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

[EZ] Incorrect section header

SuggestedRemedy

Change "PLCA Control 1" to "PLCA status".

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.5.3.9** *P* **71** *L* **31** # 347
Brandt, David Rockwell Automation

Comment Type **T** *Comment Status* **A** *PLCA*

PLCA only applies to multidrop, which does not have Auto-negotiation.

SuggestedRemedy

Delete PICS AM102 and AM103.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved by comment #148. The resolution to comment #148 is:

1) remove A20 and A21 entries from table 98B-1
2) delete "7.526.5 and 7.526.4" entries from table 45-330a
3) delete subclause 45.2.7.25.7 and 45.2.7.25.8
4) remove entries AM102 and AM103 from table 45.5.3.9 on page 71
5) delete "7.527.5 and 7.527.4" entries from table 45-330b

Cl **45** *SC* **45.5.3.24** *P* **72** *L* **7** # 20
Anslow, Pete Ciena

Comment Type **E** *Comment Status* **A** *EZ*

Item "*PLCA" has a status entry of "PLCA:O", which is not as per comment #131 against D2.1 and is self-referencing.
Item "*PLCA" has a support entry of "Yes [ ] N/A [ ]", which is not as per comment #131 against D2.1 (should be "Yes [ ] No [ ]"

SuggestedRemedy

Change "PLCA:O" to "O"
Change "Yes [ ] N/A [ ]" to "Yes [ ] No [ ]"

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **Table 45-237e** *P* **55** *L* **46** # 153
Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

[EZ] Text cleanup; incorrect table title.

SuggestedRemedy

Change "10BASE-T1S diagnostic register" to "10BASE-T1S PCS diagnostic 1 register"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved by comment #14. Resolution to comment #14 is:

On lines 41 and 42 change "10BASE-T1S PCS diagnostic register 1" to "10BASE-T1S PCS diagnostic 1 register" (2 instances)

On line 43 change "10BASE-T1S PCS 1 diagnostic register" to "10BASE-T1S PCS diagnostic 1 register"

In the title of Table 45-237e change "10BASE-T1S diagnostic register" to "10BASE-T1S PCS diagnostic 1 register" (add PCS and 1)

Cl **45** *SC* **Table 45-237f** *P* **56** *L* **14** # 155
Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

[EZ] Text cleanup; incorrect table title.

SuggestedRemedy

Change "10BASE-T1S PCS status 2" to "10BASE-T1S PCS diagnostic 2"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved by comment #16. The resolution to comment #16 is:

On line 10 change "10BASE-T1S PCS diagnostic register 2" to "10BASE-T1S PCS diagnostic 2 register".

Also, change the "-" in "10BASE-T1S" to be non-breaking (Ctrl space).

In the title of Table 45-237f change "10BASE-T1S PCS status 2 register" to "10BASE-T1S PCS diagnostic 2 register" (status to diagnostic).

Cl **45** *SC* **Table 45-237f** *P* **56** *L* **17** # 156
Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **A** *Editorial*

Description of PhysicalColCnt in the table is wrong; it appears to be a copy & paste error.

SuggestedRemedy

Replace text in the description column of the table with appropriate text derived from 45.2.3.68f.1.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved by comment #287. The resolution to comment #287 is:

Replace, "16 bits field counting the number of remote jabber errors received since last read of this register"

with, "16 bit field counting the number of physical collisions that occured since last read of this register"

Cl **45** *SC* **Table 45-330a** *P* **57** *L* **1** # 158
Griffiths, Scott Rockwell Automation

Comment Type **T** *Comment Status* **A** *AutoNeg*

T1L is full duplex only. Why bother advertising a T1L full duplex ability?

SuggestedRemedy

Set bit 7.526.15 to reserved.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace (P57, L4),

"1 = Advertise that the 10BASE-T1L PHY has full duplex ability (default)
0 = Do not advertise that the 10BASE-T1L PHY has full duplex ability"

with,
"1 = Advertise that the PHY has 10BASE-T1L full duplex ability (default)
0 = Do not advertise that the PHY has 10BASE-T1L full duplex ability",

in the Description for bit 7.526.15 in Table 45-330a, and similarly for the link partner bit 7.527.15 in Table 45-330b. The descriptions of the bits in the text are clear.

Cl **78** *SC* **78.2** *P* **73** *L* **32** # 33
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *EEE*

Tq Min = 20 000, Tq Max = 21 000

SuggestedRemedy

Tq Min = 6000, Tq Max = 6300 (change from a 1 : 100 refresh to quiet rate to a 1 : 30 refresh to quiet rate). Background is, that a 1 : 100 rate for an echo cancelled PHY is only used for 1000BASE-T (which uses a well defined synchronization between both PHYs, but is still quite tricky related to EEE). For all other echo cancelled PHYs, the rate is much lower than a 1 : 100. Most PHYs have a 1 : 20 or 1 : 30 rate, thus it seems to be more suitable to go for a 1 : 30 ratio, which provides less burden on the clock recovery and echo canceller tracking requirements and seems to be technically more feasible).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace Tq Min value of "20 000" with "6000" in Table 78-2.

Replace Tq Max value of "21 000" with "6300" in Table 78-2.

Cl **98** *SC* **98.2.1.1.2** *P* **74** *L* **12** # 222
Kim, Yong NIO

Comment Type **E** *Comment Status* **A** *Editorial*

This whole paragraph would be better placed under CL 98.2.1 after the existing paragraph (and fix up spelled out acronyms, etc)

SuggestedRemedy

Consider moving it there and do reasonable editorial changes.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change editing instruction at P74 L11 to "Insert new text as new second paragraph in 98.2.1 as follows:" and move instruction and new paragraph to subclause 98.2.1.

Cl **98** *SC* **98.2.1.1.2** *P* **74** *L* **15** # 95
Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **A** *AutoNeg*

The sentence "HSM serves all single-pair Ethernet PHYs except 10BASE-T1L." is contradictory with a later sentence "If Auto-Negotiation is implemented, 10BASE-T1L PHYs shall support LSM and may optionally support HSM."

SuggestedRemedy

Delete the sentence "HSM serves all single-pair Ethernet PHYs except 10BASE-T1L."

Response *Response Status* **W**

ACCEPT.

Cl **98** *SC* **98.2.1.1.2** *P* **74** *L* **17** # 160
Griffiths, Scott Rockwell Automation

Comment Type **T** *Comment Status* **R** *AutoNeg*

How can T1S support high-speed mode with a rate of 16.667 Mb/s? This means Auto-Negotiation would happen at a higher data rate than normal data transmission.

SuggestedRemedy

T1S should only support LSM Auto-Neg.

Response *Response Status* **C**

REJECT.

The link segment for 10BASE-T1S is defined to frequencies compatible with Clause 98 HSM. Clause 98 HSM is DME with a nominal clock period of 60nsec, LSM is 1600nsec. Clause 147 (10BASE-T1S) is DME with a nominal clock period of 80 nsec. Clause 98 HSM is slightly faster than Clause 147, but compatible with the link segment and close to clause 147's rate, a better fit than Clause 98 LSM. Clause 98 LSM is substantially slower and out-of-band used for clause 147, due to the DME high-pass spectrum.

Cl **98** *SC* **98.5.5** *P* **81** *L* **1** # 46
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

In state diagram 98-9 at 4 positions a Ü instead of a "<=" is being used.

SuggestedRemedy

Correct state diagram by replacing the Ü by a <= symbol.

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.5.5** *P* **82** *L* **1** # 47
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

In state diagram 98-10 at 3 positions a Ü instead of a "<=" is being used.

SuggestedRemedy

Correct state diagram by replacing the Ü by a <= symbol.

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.5.6** *P* **84** *L* **26** # 323
McClellan, Brett Marvell

Comment Type **E** *Comment Status* **A** *EZ*

"timer done" should be "timer_done"

SuggestedRemedy

change "failure_timer done" to "failure_timer_done" in 2 locations
change "detection_timer done" to "detection_timer_done"

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.5.6.3** *P* **83** *L* **45** # 77
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

Timers:

SuggestedRemedy

Timers (remove double dot after Timers)

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.5.6.3** *P* **84** *L* **6** # 34

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *Editorial*

Within the state diagram 98-11 different styles (without and with true ore false compares) are used.

SuggestedRemedy

Unitfy the used style within the state diagram. As most of the conditions have already the true/false statements removed, it is suggested, to write "an_link_good" instead of "an_link_good = true" at two positions and also "!an_link_good" instead of "an_link_good = FALSE" at one position within the state diagram. Alternatively add to all state transition conditions the true/false statements, if the intention is to be aligned with the rest of Clause 98.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace, "an_link_good = TRUE" with, "an_link_good" in two locations

Replace, "an_link_good = FALSE" with, "!an_link_good" in one location

(Editor's note: Project Chair may file a sponsor ballot to change the structure here and have a single function to get the speed mode, which will make all of this look like clause 98 and simplify the diagram so its obvious the two branches are mutually exclusive.)

Cl **98** *SC* **98.6.4** *P* **86** *L* **10** # 21

Anslow, Pete — Ciena

Comment Type **E** *Comment Status* **A** *EZ*

Comment #139 against D2.1 was ACCEPT with part of the suggested remedy being:
In item DME8, show "shall be 30.0 ns ± 0.01%." as changing to "shall be 30 ns ± 0.01%."
Since DME8 is in the base standard, this should be done by showing ".0" in strikethrough font

SuggestedRemedy

In item DME8 add ".0" in strikethrough font after "30"

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98B.3** *P* **235** *L* **28** # 260

Kim, Yong — NIO

Comment Type **TR** *Comment Status* **A** *PLCA*

Autonegotiation of PLCA coordinator ability does not have ANY stated function (Or, it's somewhere and I missed it). PLCA's claimed benefit is for "multidrop" performance, and AN is for link segment.

SuggestedRemedy

Delete PLCA coordinator ability from AN (or point to a reference that states how this ability from AN is used).

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Resolved by comment #148. The resolution to comment #148 is:

1) remove A20 and A21 entries from table 98B-1
2) delete "7.526.5 and 7.526.4" entries from table 45-330a
3) delete subclause 45.2.7.25.7 and 45.2.7.25.8
4) remove entries AM102 and AM103 from table 45.5.3.9 on page 71
5) delete "7.527.5 and 7.527.4" entries from table 45-330b

Cl **98** *SC* **98B.3** *P* **235** *L* **28** # 253

Kim, Yong — NIO

Comment Type **TR** *Comment Status* **A** *PLCA*

PLCA ability and PLCA coordinator ability are associated ONLY with 10BASE-T1S half duplex. Please make it user friendly by associating the set of abilities appropriately.

SuggestedRemedy

Change PLCA ability to PLCA + 10BASE-T1S half duplex ability. And PLCA coordinator ability to PLCA coordinator + PLCA + 10BASE-T1S half duplex ability. The same three bits.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Resolved by comment #148. The resolution to comment #148 is:

1) remove A20 and A21 entries from table 98B-1
2) delete "7.526.5 and 7.526.4" entries from table 45-330a
3) delete subclause 45.2.7.25.7 and 45.2.7.25.8
4) remove entries AM102 and AM103 from table 45.5.3.9 on page 71
5) delete "7.527.5 and 7.527.4" entries from table 45-330b

Cl **98** *SC* **98B.3** *P* **235** *L* **36** # 90

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *EEE*

10BASE-T1S EEE ability bit seems to be not used anymore (at least in Clause 45 there is no bit in the AN control and status registers).

SuggestedRemedy

Please set Bit A26 back to "Reserved".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Confirm resolution:

Resolved by comment #148. The resolution to comment #148 is:

1) remove A20 and A21 entries from table 98B-1
2) delete "7.526.5 and 7.526.4" entries from table 45-330a
3) delete subclause 45.2.7.25.7 and 45.2.7.25.8
4) remove entries AM102 and AM103 from table 45.5.3.9 on page 71
5) delete "7.527.5 and 7.527.4" entries from table 45-330b

Cl **98** *SC* **Table 98B-1** *P* **235** *L* **14** # 148

Griffiths, Scott — Rockwell Automation

Comment Type **T** *Comment Status* **A** *PLCA*

T1S EEE ability and PLCA abilities should be removed, the first because it doesn't exist, the second because PLCA is not intented to work with Pt-Pt links, which are the only ones that can use Auto-Neg.

SuggestedRemedy

T1S EEE (A26) and PLCA abilites (A20 and A21) should be removed.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

1) remove A20 and A21 entries from table 98B-1
2) delete "7.526.5 and 7.526.4" entries from table 45-330a
3) delete subclause 45.2.7.25.7 and 45.2.7.25.8
4) remove entries AM102 and AM103 from table 45.5.3.9 on page 71
5) delete "7.527.5 and 7.527.4" entries from table 45-330b

Cl **104** *SC* **104.1.3** *P* **88** *L* **10** # 100

Fritsche, Matthias — HARTING Technology

Comment Type **T** *Comment Status* **A** *PoDL*

So far I understand PoDL work only with point to point link segments. Should we add here a note that 10BASE-T1S multidrop link segments are not compatible to PoDL?

SuggestedRemedy

??

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert the following new sentence after "A PoDL system consists of a PSE, a link segment, and a PD.":

"Note that a link segment, as defined in 1.4.309, implies a point-to-point link. Multidrop mode for 10BASE-T1S (see Clause 147) is not supported by this clause."

Editor's Implementation note: Show new text in underline.

Cl **104** *SC* **104.1.3** *P* **88** *L* **12** # 312

Stewart, Heath — Analog Devices

Comment Type **TR** *Comment Status* **R** *PoDL*

References were proactively added to make 10BASE-T1S and 100BASE-T1 equivalent (as PoDL Types.) These Types have grown apart and indeed 10BASE-T1S is not a point-to-point protocol.
The electrical specifications for the 10BASE-T1S and 100BASE-T1 are no longer overlapping.

SuggestedRemedy

Change
A Type A or Type C PSE and Type A or Type C PD is compatible with 10BASE-T1S and 100BASE-T1 PHYs. A Type B or Type C PSE and Type B or Type C PD is compatible with 1000BASE-T1 PHYs. A Type C PSE and Type C PD is compatible with both10BASE-T1S, 100BASE-T1, and 1000BASE-T1 PHYs.
to
A Type A or Type C PSE and Type A or Type C PD is compatible with 100BASE-T1 PHYs. A Type B or Type C PSE and Type B or Type C PD is compatible with 1000BASE-T1 PHYs. A Type C PSE and Type C PD is compatible with both 100BASE-T1 and 1000BASE-T1 PHYs.

Response *Response Status* **C**

REJECT.

If the electrical specifications need to be adjusted to address incompatibility with the power coupling network, then they should be provided by the commenter.

Cl **104** *SC* **104.4.3.5** *P* **89** *L* **42** # 284
Stewart, Heath Analog Devices

Comment Type **TR** *Comment Status* **A** *PoDL*

PSE do_classification return variable list is incomplete based on new cable resistance measurement function.

SuggestedRemedy

Adopt stewart_0119_r001.pdf slide 7

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement changes in stewart_0119_r001.pdf slide 7 with editorial license to conform to style.

Cl **104** *SC* **104.4.3.5** *P* **92** *L* **24** # 285
Stewart, Heath Analog Devices

Comment Type **TR** *Comment Status* **A** *PoDL*

PSE do_sccp return variable list is incomplete based on new cable resistance measurement function.

SuggestedRemedy

Adopt stewart_0119_r001.pdf slide 8

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement changes in stewart_0119_r001.pdf slide 8 with editorial license to conform to style.

Cl **104** *SC* **104.6** *P* **99** *L* **38** # 282
Stewart, Heath Analog Devices

Comment Type **E** *Comment Status* **A** *EZ*

field should not be subscript

SuggestedRemedy

Make field normal text

Response *Response Status* **C**

ACCEPT.

Cl **104** *SC* **104.6** *P* **99** *L* **44** # 283
Stewart, Heath Analog Devices

Comment Type **TR** *Comment Status* **A** *EZ*

Incorrect implementation of change from last cycle. Equation needs an "=" assignment operator.

SuggestedRemedy

Change
P_PD_assign >=
to
P_PD_assign =

Response *Response Status* **W**

ACCEPT.

Cl **104** *SC* **104.7** *P* **94** *L* **22** # 286
Stewart, Heath Analog Devices

Comment Type **TR** *Comment Status* **A** *PoDL*

Editing instructions for previously accepted comments implementing stewart_3cg_01e_1118.pdf were incomplete. Insufficient detail was given and is provided now.

SuggestedRemedy

Adopt stewart_0119_r001.pdf slides 3-6, 9-10

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement changes in stewart_0119_r001.pdf slide 3-6 and 9-10 with editorial license to conform to style.

Cl **104** *SC* **104.7.1.4** *P* **99** *L* **5** # 48

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *Editorial*

"Cable Resistance Measurement" is written with capital letters at the beginning of the words in some occurances, in other occurances it is written in all small letters.

SuggestedRemedy

Please align the text throughout the document (suggested is to replace all occurances by "Cable Resistance Measurement").

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change, "Cable Resistance Measurement" to "cable resistance measurement" in these five locations:

P99, L5
P99, L8
P99, L37
P99, L39
P100, L1

Change, "Cable Resistance Measurement" to "Cable resistance measurement" on page 101, line 18.

Cl **104** *SC* **104.7.1.4** *P* **99** *L* **11** # 49

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *Cable Diagnostics*

VReport_PD,max in equation 104-4 should be just VReport_PD or, if it needs to be taken care by the tolerances, then VReport_PD,min, to do a worst-case RCable_initial calculation.

SuggestedRemedy

Most likely VReport_PD,max needs to be replaced by VReport_PD (as mentioned in the variables explanation section below). Otherwise some information about possible tolerances will be needed and likely min instead of max has to be used.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace "VReport_PD,max" with "VReport_PD" in Equation 104-4.

Change the cross reference on page 99, line 16 for VReport_PD from "Table 104-1" to "Table 104-10".

Cl **104** *SC* **104.7.1.4** *P* **99** *L* **15** # 50

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *Editorial*

. during presence pulse .

SuggestedRemedy

. during the presence pulse . (align with text of the following variable descriptions).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace, "during presence pulse"

with, "during the presence pulse"

Cl **104** *SC* **104.7.1.4** *P* **99** *L* **22** # 22

Anslow, Pete — Ciena

Comment Type **E** *Comment Status* **A** *EZ*

"Equation(104-5)" should be a cross-reference

SuggestedRemedy

Make "Equation(104-5)" a cross-reference

Response *Response Status* **C**

ACCEPT.

Cl **104** *SC* **104.7.1.4** *P* **99** *L* **29** # 51

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

RCableInitial

SuggestedRemedy

RCable_inital (align with Equation 104-5)

Response *Response Status* **C**

ACCEPT.

Cl **104** *SC* **104.7.1.4** *P* **99** *L* **37** # 83
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*
0.1W

SuggestedRemedy
0.1 W (add space)

Response *Response Status* **C**
ACCEPT.

Cl **104** *SC* **104.7.1.4** *P* **99** *L* **38** # 84
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*
", field" may not be in subscript

SuggestedRemedy
Write ", field" as normal text.

Response *Response Status* **C**
ACCEPT.

Cl **104** *SC* **104.7.1.4** *P* **99** *L* **39** # 86
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*
Comma after P(subscript)PD_req may not be subscript.

SuggestedRemedy
Write comma as normal text.

Response *Response Status* **C**
ACCEPT.

Cl **104** *SC* **104.7.1.4** *P* **99** *L* **39** # 85
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*
P(subscript)PD_Assign

SuggestedRemedy
P(subscript)PD_assign (align with Equation 145-6)

Response *Response Status* **C**
ACCEPT.

Cl **104** *SC* **104.7.1.4** *P* **99** *L* **43** # 87
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*
A space after "P(subscript)PD_req," is missing and the bracket after I(subscript)PI(max)² is too much (I² * R results in power).

SuggestedRemedy
Please add space and remove wrong bracket.

Response *Response Status* **C**
ACCEPT.

Cl **104** *SC* **104.7.1.4** *P* **99** *L* **53** # 88
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*
Table 104-10

SuggestedRemedy
Table 104-11 (the POWER_ASSIGN register table needs to be referenced)

Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Replace, "Table 104-10"

with, "Table 104-11"

Cl **104** *SC* **104.7.2.6** *P* **102** *L* **8** # 23
Anslow, Pete Ciena

Comment Type **E** *Comment Status* **A** *EZ*
104.7.2.6 seems to be about the "VOLT_POWER_INFO" register

SuggestedRemedy
Change the title of Table 104-10 from "CLASS_POWER_INFO Register Table" to "VOLT_POWER_INFO Register Table"

Response *Response Status* **C**
ACCEPT.

Cl **104** *SC* **104.7.2.6** *P* **102** *L* **17** # 89

Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *Editorial*

Text in column "Name" should be left aligned.

SuggestedRemedy

Please left align text.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert "PPD_req" (with PD_req in subscript) before "Requested Power" on P102, L13.

Left justify "Voltage at PD PI during Presence Pulser" on P102, L17.

Insert "PPD_assign" (with PD_assign in subscript) before "PD Assigned Power" on P102, L42.

Cl **104** *SC* **104.7.2.7** *P* **102** *L* **25** # 78

Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

PD assigned power [POWER_ASSIGN].

SuggestedRemedy

PD assigned power [POWER_ASSIGN] (remove dot at the end of the head line)

Response *Response Status* **C**

ACCEPT.

Cl **104** *SC* **104.9.1** *P* **103** *L* **7** # 24

Anslow, Pete Ciena

Comment Type **E** *Comment Status* **A** *Editorial*

The name of the clause appears in several places in the PICS and while this amendment has changed some, others are unaltered.

SuggestedRemedy

Bring the heading and first paragraph of 104.9.1 in to the draft. Add an editing instruction: "Change the first paragraph of 104.9.1 as follows:"
in the first paragraph, show " Balanced Twisted" in strikethrough font

Bring the heading for 104.9.2 and 104.9.2.2 and the table in 104.9.2.2 in to the draft.
in the table, show " Balanced Twisted" in strikethrough font

In the heading for 104.9.4, show " Balanced Twisted" in strikethrough font

Response *Response Status* **C**

ACCEPT.

Cl **104** *SC* **104.9.4.2** *P* **103** *L* **43** # 25

Anslow, Pete — Ciena

Comment Type **E** *Comment Status* **A** *Editorial*

The editing instruction for the table in 104.9.4.2 does not include the row for "*CRM"
The reference to "CRM" in item "PSE37" points to an entry that is later in the PICS tables. This is not usual practice.
The Status entry of item "*CRM" is "SCC:O" but item "*SCC" does not exist. (Should this be "SCCP"?)

SuggestedRemedy

Move item "*CRM" to be before item "PSE37". Preferably put this with the other options in the table in 104.9.3.
Include the insertion of the row for "*CRM" in an editing instruction
If appropriate, change "SCC:O" to "SCCP:O"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete row for *CRM in table in 104.9.4.2.

Insert the following row before the row marked "." in the table in 104.9.3:

Item: *CRM
Feature: Implements cable resistance measurement functionality
Subclause: 104.7
Value/Comment: [blank]
Status: SCCP:O
Support: Yes [ ] No [ ] N/A [ ]

Change Editing Instruction for 104.9.3 from, "Insert a row for new Item *PSETE after Item *PSETC and insert a row for new Item *PDTE after Item *PDTC in the table in 104.9.3 as follows (unchanged rows not shown):"

to, Insert a row for new Item *CRM before Item *PSETA, insert a row for new Item *PSETE after Item *PSETC, and insert a row for new Item *PDTE after Item *PDTC in the table in 104.9.3 as follows (unchanged rows not shown):"

Cl **146** *SC* **146.1.3.1** *P* **107** *L* **8** # 224

Kim, Yong — NIO

Comment Type **E** *Comment Status* **A** *Editorial*

It would be good to say, "The conventions of 21.5 are adopted, with the folliowing extensions." and replace the existing first sentence with it. The value of doing this is that a reader is informed that all stated conventions are common, and additoinal IF-THEN-ELSE-END was added in this clause.

SuggestedRemedy

Please consider the suggestion.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "The notation used in the state diagrams follows the conventions of 21.5. Some..." to "The conventions of 21.5 are adopted with the extension that some"...

Cl **146** *SC* **146.2** *P* **108** *L* **37** # 161

Griffiths, Scott — Rockwell Automation

Comment Type **E** *Comment Status* **A** *Editorial*

It might be appropriate to note here that the Technology Dependent Interface is defined in Clause 98.4.

SuggestedRemedy

After "(GMII).", add "The optional Technology Dependent Interface is used for Auto-Negotiation and is described in 98.4." or something similar.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
After "(GMII).", add "The optional Technology Dependent Interface is used for Auto-Negotiation and is described in 98.4."

Cl **146** *SC* **146.3.2** *P* **116** *L* **16** # 91

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

tx_mode = SEND_N * TX_EN * !TX_ER

SuggestedRemedy

tx_mode = SEND_N * !TX_EN * !TX_ER (TX_EN needs to be negated as in Draft D2.1 the condition was TX_EN = FALSE)

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.3.3.1.4** *P* **120** *L* **1** # 35

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **D** *Editorial*

Within state diagram 146-5 different styles, when to use brackets, are used. Looking into other 802.3 Clauses, in most cases, where there is no explicit ordering of the logic equation required, the brackets are omitted.

SuggestedRemedy

To align with the rest of 802.3, please omit the backets within the conditions in line 33, 37, 49, and 51.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **146** *SC* **146.3.3.2.5** *P* **123** *L* **37** # 225

Kim, Yong — NIO

Comment Type **E** *Comment Status* **A** *Editorial*

"The same ternary symbol.". The word "same" is ambiguous as a part of the first sentence. Where it was before (last sentence in the same paragraph), it was not ambiguous. Please fix it.

SuggestedRemedy

Just deleting "same" may work, but you be the judge.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "The same ternary symbol encoding is used while in SEND_I and SEND_N." to "Both SEND_I and SEND_N use the following ternary symbol encoding."

Cl **146** *SC* **146.3.3.2.5** *P* **124** *L* **13** # 113

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

In table 146-1, column Sdn[3:0] bit patterns (0100, 1000, 1001, and 1100) contain spaces.

SuggestedRemedy

Please remove spaces.

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.3.4.1** *P* **125** *L* **27** # 114

Graber, Steffen — Pepperl+Fuchs GmbH

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

Decoding the idle data stream has to be done without checking the disparity (in principle the state diagram reflects this, as there is no disparity error checking during idle), but it can make sense to additionally provide this information in the explanatory text to make this clear.

SuggestedRemedy

During reception of the idle data stream no validation of the received symbol triplets Rx(subscript)n against the current rx_disparity is done.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **146** *SC* **146.3.4.1.1** *P* **126** *L* **48** # 112

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *PCS*

Definition Sr(subscript)n[3:0] for received scrambled data stream is missing (this was originally there but got lost changing Srn[3:0] to RXD[3:0] during first WG ballot phase). In 146.3.4.1.2 Srn is used in the valid_idle function definition, but never defined in the variables section.

SuggestedRemedy

Add the following definition to the variables section (146.3.4.1.1): Sr(subscript)n[3:0] - Output from 4B3T decoder to descrambler.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert new 2nd paragraph in Clause 146.3.4.1:
"The received symbol triplet, Rx_n, generated by PCS Receive at time n is decoded by using the inverse of the mapping shown in Table 146-1. The result of the decoding is Sr_n[3:0]."

Cl **146** *SC* **146.3.4.1.2** *P* **127** *L* **4** # 115

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **D** *State Diagram*

rem_rcvr_status function description is missing.

SuggestedRemedy

rem_rcvr_status - The rem_rcvr_status function provides reliable detection of the received loc_rcvr_status information from the remote PHY within the IDLE data stream. Values: TRUE or FALSE

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **146** *SC* **146.3.4.1.3** *P* **128** *L* **2** # 36

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **D** *Editorial*

Within state diagram 146-8 different styles, when to use brackets, are used. Looking into other 802.3 Clauses, in most cases, where there is no explicit ordering of the logic equation required, the brackets are omitted.

SuggestedRemedy

Apply the following changes to state diagram in Figure 146-8: remove all round ("( )") brackets of the transition conditions within Figure 146-8. Convert all squared brackets of the transition conditions within Figure 146-8 to round brackets.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **146** *SC* **146.3.4.1.3** *P* **129** *L* **12** # 37

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **D** *Editorial*

Within state diagram 146-9 different styles, when to use brackets, are used. Looking into other 802.3 Clauses, in most cases, where there is no explicit ordering of the logic equation required, the brackets are omitted.

SuggestedRemedy

Please remove all round ("( )") brackets of the transition conditions within Figure 146-9.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **146** *SC* **146.3.4.1.3** *P* **130** *L* **22** # 38

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **D** *Editorial*

Within state diagram 146-10 different styles, when to use brackets, are used. Looking into other 802.3 Clauses, in most cases, where there is no explicit ordering of the logic equation required, the brackets are omitted.

SuggestedRemedy

Please omit the brackets around (link_status = FAIL)

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **146** *SC* **146.3.4.2** *P* **130** *L* **37** # 290

Jones, Peter — Cisco Systems

Comment Type **E** *Comment Status* **A** *PCS*

The text says
"PCS Receive generates the sequence of symbols and indicates the reliable acquisition of the descrambler state by setting the parameter scr_status to OK. Descrambler state can be acquired during the PHY control SM training states.".
I don't think that states are "entered" not "acquired". The descrambler has "status" and "synchronization" (146.2.8 PMA_SCRSTATUS.request) , not a state

SuggestedRemedy

I think this is referring to synchronization of the descrambler. Change sentence to
"PCS Receive generates the sequence of symbols, and indicates synchronization of the descrambler by setting scr_status to OK. The descrambler can synchronize during PHY training."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "Descrambler state can be acquired during the PHY control SM training states." to "The descrambler can acquire synchronization during PHY training."

(the state refered to is the contents of the descrambler LFSR - a simple state machine. However, saying it acquires synchronization is more correct and avoids confusion with the PHY control state diagram states).

Cl **146** *SC* **146.3.4.2** *P* **130** *L* **38** # 226

Kim, Yong — NIO

Comment Type **ER** *Comment Status* **A** *EZ*

".control SM.training". I presume SM stands for state machine. Preferred phrase is "state diagram".

SuggestedRemedy

Please do careful global search and replace all appropirate SM with "state diagram"

Response *Response Status* **W**

ACCEPT.

Cl **146** *SC* **146.3.4.2** *P* **130** *L* **51** # 162

Griffiths, Scott — Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

[EZ] Missing punctuation

SuggestedRemedy

Add a period after FALSE.

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.3.5** *P* **131** *L* **37** # 227

Kim, Yong — NIO

Comment Type **T** *Comment Status* **A** *PCS*

"When PCS loopback mode is pre.. Polynomial should be matched.descrambled at the MII". Is very very implicit way of saying that either TX or RX should have both scramblers if loopback is supported AND implementations choose to do internal loopback after the ternary symbol coding -- which is NOT required. The previous text without this long sentence was more correct and friendly. If this text is added, THEN you should add more text that incates that"IF you choose to do loopback after ternary symbol coding... " and such. I don't see any benefits to these added text.

SuggestedRemedy

Please consider the suggestion.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Delete "When PCS loopback mode is present and enabled, the PCS transmit
scrambler polynomial and the receiver descrambler polynomial should be matched , e.g., the MASTER
scrambler polynomial and the SLAVE descrambler polynomial, in order for looped data to be properly
descrambled at the MII."

Cl **146** *SC* **146.3.5** *P* **131** *L* **37** # 163

Griffiths, Scott — Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

[EZ] Extra space before comma

SuggestedRemedy

Remove space in "matched ,"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accomplished by comment 92, resolution to comment 92 is:
PROPOSED ACCEPT.
. should be matched, e.g., the . (remove space before comma)

Cl **146** *SC* **146.3.5** *P* **131** *L* **37** # 92

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

. should be matched , e.g., the .

SuggestedRemedy

. should be matched, e.g., the . (remove space before comma)

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.4** *P* **132** *L* **28** # 39

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

"rx_lpi_active" text is a remaining part from before redrawing some lines within the diagram and needs to be removed.

SuggestedRemedy

Remove text "rx_lpi_active" in line 28 of Figure 146-11.

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.4.3** *P* **133** *L* **32** # 278

Kim, Yong — NIO

Comment Type **TR** *Comment Status* **R** *PMA*

Full-duplex operation over one pair should have echo-cancellation (cancel TX from RX) onto/from media. I cannot find any reference to this function. 100BASE-T1 std, in 96.4.3 has text of "PMA Receive has Signal Equalization and Echo Cancellation sub-functions. These sub-functions are used to determine the receiver performance and generate loc_rcvr_status..."

SuggestedRemedy

Please provide a reference to echo cancellation function. And it would be good to have a reference to that function in CL 146.4.3 introductory paragraph (not there now).

Response *Response Status* **W**

REJECT.
Comment is out of scope (on unchanged text) and does not change requirements or address a problem, only adds informative tutorial text on receiver design.

Additionally, while reference to echo cancellation occurs in other 802.3 clauses, calling out such a signal processing function in the standard opens the reader to specifying parameters of this function which are not needed for interoperability. Further, the additional text would be with regards to an implementation description rather than interoperability.

Cl **146** *SC* **146.4.4** *P* **134** *L* **41** # 291

Jones, Peter — Cisco Systems

Comment Type **E** *Comment Status* **A** *Editorial*

Text says "the link_fail_inhibit timer will be considered failed".
Timers don't fail but they do expire.

SuggestedRemedy

Change "the link_fail_inhibit timer will be considered failed" to "the link_fail_inhibit timer will be considered expired".

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.4.4** *P* **134** *L* **134** # 228

Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *Training*

"If the time to reach link_status = OK exceeds 3030 ms, and Auto-Negotiation is present and enabled, the
link_fail_inhibit timer will be considered failed by the Auto-Negotiation Arbitration state diagram" is a bit awkward and inconsistent with CL98.5.2 pg 78 line 40 that says 3030~3090 ms. The previous statement "The time to reach link_status=ok shall be less than 3030 ms" was clear but not an appropriate "shall"

SuggestedRemedy

Please fix 3030 ms vs 3030~3090 ms (98.5.2). Also consider rephrasing referenced text in 146.4.4 to be more clear.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Change P134 L38:
"If the time to reach link_status = OK exceeds 3030 ms, and Auto-Negotiation is present and enabled, the link_fail_inhibit timer will be considered failed by the Auto-Negotiation Arbitration state diagram (see Figure 98–7)."

to:
"If the time to reach link_status = OK exceeds the duration of the link_fail_inhibit timer used in the Auto-Negotiation Arbitration state diagram (see Figure 98-7), the training may be considered failed."

Cl **146** *SC* **146.4.4.2** *P* **136** *L* **15** # 166

Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

[EZ] Extra punctuation

SuggestedRemedy

Remove the second period after detected.

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.4.4.2** *P* **136** *L* **23** # 93

Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *EEE*

20 500 µs +/- 50 µs

SuggestedRemedy

6150 µs +/- 150 µs (if the previous comment related to EEE quiet timing is accepted, then also the timer value for the quiet time here needs to be changed).

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.4.4.2** *P* **136** *L* **43** # 229

Kim, Yong NIO

Comment Type **E** *Comment Status* **A** *PMA*

delete "..for some time..". Not needed. Also consider deleting the last sentence "This allows the PHYs to attempt to recover the link beofre a full retrain". This is not a necessary text, and adds lilttle.

SuggestedRemedy

Please consdier suggestions.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Delete "for some time".
Retain last sentence as this conveys the reason for delaying the dropped link, and is the main reason for the note.

Cl **146** *SC* **146.4.4.3** *P* **137** *L* **2** # 40

Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **R** *Editorial*

Within state diagram 146-14 different styles, when to use brackets, are used. Looking into other 802.3 Clauses, in most cases, where there is no explicit ordering of the logic equation required, the brackets are omitted.

SuggestedRemedy

Apply the following changes to state diagram in Figure 146-14: remove all round ("( )") brackets of the transition conditions within Figure 146-14. Convert squared brackets in lines 19 and 21 to round brackets. Convert the inner squared brackets in the equation in lines 40 and 41 to round brackets, keep the outer squared brackets.

Response *Response Status* **C**

REJECT.

Use of brackets in 802.3 is inconsistent and based on clarity. Square brackets are used to add clarity where brackets are nested. Round brackets add clarity here, and order of operations is not specified in 21.5.

Cl **146** *SC* **146.4.4.3** *P* **138** *L* **7** # 41

Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **R** *Editorial*

Within state diagram 146-15 different styles, when to use brackets, are used. Looking into other 802.3 Clauses, in most cases, where there is no explicit ordering of the logic equation required, the brackets are omitted.

SuggestedRemedy

Please remove all round ("( )") brackets of the transition conditions within Figure 146-15.

Response *Response Status* **C**

REJECT.

Use of brackets in 802.3 is inconsistent and based on clarity. Brackets add clarity here, and order of operations is not specified in 21.5.

Cl **146** *SC* **146.4.5.2** *P* **139** *L* **22** # 42

Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **R** *Editorial*

Within state diagram 146-16 different styles, when to use brackets, are used. Looking into other 802.3 Clauses, in most cases, where there is no explicit ordering of the logic equation required, the brackets are omitted.

SuggestedRemedy

Change (link_control = DISABLE) to link_control = DISABLE, change (tx_mode = SEND_Z) * (!loc_lpi_req) to tx_mode = SEND_Z * !loc_lpi_req

Response *Response Status* **C**

REJECT.

Use of brackets in 802.3 is inconsistent and based on clarity. Brackets add clarity here, and order of operations is not specified in 21.5.

Cl **146** *SC* **146.5.3** *P* **141** *L* **5** # 43

Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *Editorial*

Transmitter load: 100 O

SuggestedRemedy

Please align text horizontally with resistor and remove ":".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Delete "Transmitter load: " (leave 100 ohms)
Align label with center of resistor.
(these changes mirror the same figure in other PHY clauses)

Cl **146** *SC* **146.5.3** *P* **141** *L* **19** # 94

Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **R** *Editorial*

A new line between the figure 146-17 and the descriptive text of the figure is missing.

SuggestedRemedy

Please add a new line before the descriptive text of Figure 146-17.

Response *Response Status* **C**

REJECT.
Comment is out of scope of recirculation (no changes to this text)
Figure is clear. There is no new line.

Cl **146** *SC* **146.5.4.1** *P* **141** *L* **48** # 167

Griffiths, Scott — Rockwell Automation

Comment Type **T** *Comment Status* **A** *PMA Electrical*

On page 141, line 49, the transmitter output voltage is limited to 5% of the nominal peak-to-peak value. However, on line 2 of page 142, the signal limits appear to be 10% of the nominal peak-to-peak values.

SuggestedRemedy

Choose either a 5% or 10% tolerance in the peak-to-peak transmit level and harmonize the text.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
(this is a case of a duplicate shall - the requirements are the output voltage in test mode 1 (P141 L49) and test mode 2 (the droop test). This results in the worst-case extremes that are on P142 L2, which should be a note.)

Change "When measured with a 100 Ohm ± 0.1% termination, the transmit differential signal at the MDI shall be less than 2.64 Vpp for the 2.4 Vpp operating mode and 1.10 Vpp for the 1.0 Vpp operating mode including the signal droop. This limit applies to all transmit modes, including SEND_I and SEND_N modes."
TO: "NOTE - In all transmit modes, including SEND_I and SEND_N, when measured with a 100 Ohm ± 0.1% termination, the transmit differential signal at the MDI is less than 2.64 Vpp for the 2.4 Vpp operating mode and 1.10 Vpp for the 1.0 Vpp operating mode including the signal droop."

Cl **146** *SC* **146.5.4.1** *P* **142** *L* **7** # 230

Kim, Yong — NIO

Comment Type **T** *Comment Status* **R** *Management*

This comment is against non-changed text from D2.1-> D2.2. The shall in "If MDIO is not implemented, a similar functionality shall be.". Is not testable.

SuggestedRemedy

If you agree this cannot be tested, change shall to some other word and change PICS as approriate.

Response *Response Status* **C**

REJECT.
The PICS may be satisfied by observing the implementation, and is set locally to the PHY, not necessarily through the MDIO interface. While it is often not stated, it is assumed in many 802.3 clauses that if the optional MDIO is not implemented, the control functionality (e.g., resets, default settings, etc.) are present. Clause 115 (at 115.11) has similar language which adds clarity by removing the assumption on what functionality must be provided for dynamic variables or is there simply a static default for management variables if the optional MDIO is not implemented.

Cl **146** *SC* **146.5.4.3** *P* **142** *L* **21** # 52

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

transmiter

SuggestedRemedy

transmitter (add a "t")

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.5.4.5** *P* **144** *L* **29** # 44

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *EEE*

The short term transmit clock tolerance for EEE is missing.

SuggestedRemedy

For a MASTER PHY, when the transmitter is in the LPI transmit mode, the transmitter clock short-term rate of frequency variation shall be less than 0.1 ppm/second. The short-term frequency variation limit shall also apply when switching to and from the LPI mode.

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.5.4.5** *P* **144** *L* **29** # 168

Griffiths, Scott — Rockwell Automation

Comment Type **E** *Comment Status* **A** *Editorial*

Symbol rates should use Baud.

SuggestedRemedy

Either change from discussing symbol rate to clock rate, or change MHz to MBd. This should be harmonized with PICS entry PMAE17.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change all instances where the text says "symbol rate" to units of Baud
per 1.4.468
(note, 802.3 is all over the place on this, but it seems to be the more recent trend)

Cl **146** *SC* **146.5.5.2** *P* **144** *L* **44** # 169

Griffiths, Scott — Rockwell Automation

Comment Type **E** *Comment Status* **A** *Editorial*

Symbol rates should use Baud.

SuggestedRemedy

Either change from discussing symbol rate to clock rate, or change MHz to MBd. This should be harmonized with PICS entry PMAE20.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accomodated by comment 168. Resolution to comment 168 is:
PROPOSED ACCEPT IN PRINCIPLE.
Change all instances where the text says "symbol rate" to units of Baud
per 1.4.468
(note, 802.3 is all over the place on this, but it seems to be the more recent trend)

Cl **146** *SC* **146.5.6** *P* **145** *L* **28** # 53

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

. should be matched , e.g., the .

SuggestedRemedy

. should be matched, e.g., the . (remove space before comma).

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.5.6** *P* **145** *L* **29** # 171

Griffiths, Scott — Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

[EZ] Extra space before comma

SuggestedRemedy

Remove space in "matched ,"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implemented by comment 63, Resolution to comment 63 is:
PROPOSED ACCEPT.
. should be matched, e.g., the . (remove space before comma).

Cl **146** *SC* **146.7.2.2** *P* **152** *L* **15** # 103

Shariff, Masood — CommScope

Comment Type **ER** *Comment Status* **A** *Link Segment*

PSANEXT loss should include multiple disturber link segments

SuggestedRemedy

Change "and the disturbing
10BASE-T1L link segment" to " and the disturbing10BASE-T1L link segments"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Replace:The power sum ANEXT loss between a disturbed 10BASE-T1L link segment and the disturbing
10BASE-T1L link segment shall meet the values determined using Equation (146-14).

With:The power sum ANEXT loss between a disturbed 10BASE-T1L link segment and other disturbing
10BASE-T1L link segments shall meet the values determined using Equation (146-14).

Cl **146** *SC* **146.7.2.3** *P* **152** *L* **30** # 105

Shariff, Masood — CommScope

Comment Type **ER** *Comment Status* **D** *Link Segment*

Redundant and confusing Note. Definition of PSAFEXT is already clear from previous sentence starting on line 28 "To ensure the total alien FEXT coupled into a 10BASE-T1L link segment, multiple disturber AFEXT is specified as the power sum of the individual alien FEXT disturbers." ACRF and PSAACR-F are not defined or used anywhere else in this standard

SuggestedRemedy

Delete"Note that the MDAFEXT is specified as the power sum of the individual
alien FEXT disturbers (PSAFEXT) and not individual alien ACRF disturbers (PSAACR-F)."

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

The sentence alerts the users that unlike other BASE-T standards 802.3cg specifies the power sum of the individual
alien FEXT disturbers (PSAFEXT) and not individual alien ACRF disturbers (PSAACR-F).

Cl **146** *SC* **146.7.2.3** *P* **152** *L* **43** # 104

Shariff, Masood — CommScope

Comment Type **ER** *Comment Status* **A** *Link Segment*

PSAFEXT loss should include multiple disturber link segments

SuggestedRemedy

Change "and the disturbing
10BASE-T1L link segment" to " and the disturbing10BASE-T1L link segments"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Replace: The power sum AFEXT between a disturbed 10BASE-T1L link segment and the disturbing 10BASE-T1L
link segment shall meet the values determined using Equation (146-16).

With:The power sum AFEXT between a disturbed 10BASE-T1L link segment and other disturbing 10BASE-T1L
link segments shall meet the values determined using Equation (146-16).

Cl **146** *SC* **146.8** *P* **154** *L* **26** # 97

Fritsche, Matthias — HARTING Technology

Comment Type **T** *Comment Status* **A** *MDI*

Figure 146-30 and figure 146-31 show the pin numbering for the MDI connectors but we don't specify the function of the pins.

SuggestedRemedy

We should add a table to define the signals at pin 1 and pin 2 of the MDI connectors as follows:
pin 1 --> BI_DA+
pin 2 --> BI_DA-
For more details take a look at the Word file with the relevant pages from CDV IEC 61076-3-12.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add Table xx (see comment 280) with PMA to MDI pin assignments as follows:
pin 1 --> BI_DA+
pin 2 --> BI_DA-

Cl **146** *SC* **146.8.1** *P* **153** *L* **3** # 231

Kim, Yong — NIO

Comment Type **TR** *Comment Status* **A** *MDI*

This says "this section defines the MDI for 10BASE-T1L", but it does NOT. MDI is a *mandatory* "shall"-stated Medium Dependant Interface for 10BASE-T1L. Tjhis section does NOT specify MDI. It provides (abeit useful) suggestions and diagrams but no specification. Please decide whether this project has an MDI (or set of MDIs). And if MDI is indeeed specified, please change the CL title to include MDI (currently just ....PMA)

SuggestedRemedy

Either specify "the MDI for 10BASE-T1L" or not, and make downstream consequential changes. If not specified, then perhaps use "MDI considerations" not "MDI specifications"

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Change from "This section defines the MDI for 10BASE-T1L."

to,

"This subclause describes connectors which may be used at the MDI. It also specifies electrical requirements, including fault tolerance, at the MDI.

Cl **146** *SC* **146.8.1** *P* **153** *L* **7** # 320

Horrmeyer, Bernd — Phoenix Contact

Comment Type **T** *Comment Status* **A** *Late*

A connector is: "device providing connection and disconnection to a suitable mating component". See IEV 581-26-01. A lot of devices will not have a MDI-connector. They will use another kind of interface.

SuggestedRemedy

The mechanical interface to the balanced cabling is a 3-pin connector (BI_DA+, BI_DA-, and optional SHIELD) or alternatively a 2-pin connector with an optional additional mechanical shield connection or any other interface which conforms to the link segment specification defined in 146.7.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

On page 153, line 10, change from,

"Specific systems or applications can use connectors, in addition to those listed below, that support the link segment specification defined in 146.7."

to,

"Specific systems or applications can use connectors or terminals, in addition to those listed below, that support the link segment specification defined in 146.7."

Cl **146** *SC* **146.8.1** *P* **153** *L* **14** # 118

Maguire, Valerie — The Siemon Company

Comment Type **E** *Comment Status* **A** *MDI*

Light industrial, industrial, and other channel environments may be classified by using any combination of the MICE scheme, e.g. M1I2C3E1, which does not fall under M2I2C2E2 (i.e. "MICE 2") or M3I3C3E3 (i.e., "MICE 3").

SuggestedRemedy

Replace "MICE2/MICE3", "MICE2/3", and "MICE 2/3" with "non-M1I1C1E1" ("1" in subscript) in the following eight locations: page 153 - line 15, page 153 - line 18 (2 occurrences), page 153 - line 19, page 198 - line 52, page 199 - line 1 (2 occurrences), and page 199 - line 2

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by text removed in comment 280

Cl **146** *SC* **146.8.1** *P* **153** *L* **14** # 295

Jones, Peter — Cisco Systems

Comment Type **TR** *Comment Status* **A** *MDI*

Connecting a MICE 1 system to a MICE 2 system requires a specialized cable or adaptor.
This is a barrier to broad SPE adoption.

SuggestedRemedy

Enable MICE 2 support in IEC 63171-1 connector.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accommodated by comment#280.

Cl **146** *SC* **146.8.1** *P* **153** *L* **14** # 292

Jones, Peter — Cisco Systems

Comment Type **TR** *Comment Status* **A** *MDI*

IEC 63171-1 connector does not support 18AWG. 18AWG is required for both the building and industrial use cases.

SuggestedRemedy

Add editor's note re IEC 63171-1 lack of 18AWG support.
Send liaison to ISO/IEC and TIA TR-42 requesting support for 18AWG in current drafts of the single pair ethernet cabling recommendations and in the IEC 63171-1 connector.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accomodated by comment 279.

Cl **146** *SC* **146.8.1** *P* **153** *L* **14** # 116

Maguire, Valerie — The Siemon Company

Comment Type **E** *Comment Status* **A** *MDI*

The criteria for the MICE classification are based on the nomenclature MxIxCxEx., where "x" in subscript can equal 1, 2 or 3, based on the severity of the environment.

SuggestedRemedy

Replace "MICE 1" and "MICE 1" with "M1I1C1E1" ("1" in subscript) in the following eight locations: page 153 - line 14, page 153 - line 17 (2 occurrences), page 153 - line 19, page 198 - line 51, page 198 - line 54 (2 occurrences), and page 199 - line 2

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by text removed in comment 280.

Cl **146** *SC* **146.8.1** *P* **153** *L* **14** # 293

Jones, Peter — Cisco Systems

Comment Type **TR** *Comment Status* **A** *MDI*

Many systems currently being shipped use the same mechanical interface for both MICE 1 and MICE 2.
IEC 63171-1 connector does not support MICE 2.
Without this support, 10SPE adoption with be significantly hindered.

SuggestedRemedy

Add editor's note re IEC 63171-1 lack of MICE 2 support.
Send liaisons to ISO/IEC and TIA TR-42 requesting support for MICE 2 in the IEC 63171-1 connector.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accomodated by comment #280.

Cl **146** *SC* **146.8.1** *P* **153** *L* **14** # 294

Jones, Peter — Cisco Systems

Comment Type **TR** *Comment Status* **R** *MDI*

Many MICE 2 systems currently being shipped make use of the ability to "stack" the faceplate connectors (e.g., 2x4 for 8 ports). The current MICE2/3 connector (IEC 61076-3-125) connector does not support this.
This is a barrier to broad SPE adoption.

SuggestedRemedy

Enable MICE 2 support in IEC 63171-1 connector.

Response *Response Status* **W**

REJECT.
Insufficient information for a remedy.

Cl **146** *SC* **146.8.1** *P* **153** *L* **18** # 54

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *MDI*

The assignment of PMA signals to connector contacts for PHYs is shown in Figure 146-30 (MICE1) and Figure 146-31 (MICE2/3). This is not really true, as just pin numer "1" or pin numbers 1 and 2 are given in the drawings and not the PMA signals.

SuggestedRemedy

Add the PMA signals to the drawings (e.g. Pin 1 - BI_DA+ and Pin 2 - BI_DA-) or add an additional table showing, which pin is which PMA signal. Add also Pin 2 marking to Figure 146-30. If this comment is accepted, then the same changes should also be applied to 147.9.1.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accomodated by comment 97. Resolution to comment 97 is:
ACCEPT IN PRINCIPLE.
Add Table xx (see comment 280) with PMA to MDI pin assignments as follows:
pin 1 --> BI_DA+
pin 2 --> BI_DA-

Cl **146** *SC* **146.8.1** *P* **154** *L* **1** # 96

Fritsche, Matthias — HARTING Technology

Comment Type **E** *Comment Status* **R** *MDI*

The figures 146-28 and 146-29 show the IP20 version of the "Industrial style" MDI connector according to IEC 61076-3-125. The information about the waterproof IP65/67 "Industrial style" SPE MDI connector versions are missing and have to be added.

SuggestedRemedy

Please insert the other M2I2C2E2 and M3I3C3E3 connector versions and add the table "Connector styles" from IEC 61076-3-125. For more details take a look at the Word file with the relevant pages from CDV IEC 61076-3-12.

Response *Response Status* **C**

REJECT.
The purpose of the figures in IEEE Std 802.3 is informational on the configuration of the electrical mating interfaces and pinout, not as a substitute for the IEC specification or a definitive description of the environmental housings. Showing all the connector styles would be inappropriate and potentially cause confusion with the IEC specification, which is supposed to be definitive.

Cl **146** *SC* **146.8.1** *P* **154** *L* **13** # 321

Horrmeyer, Bernd — Phoenix Contact

Comment Type **T** *Comment Status* **A** *Late*

Figure 146-28 does not comply to any variant described in IEC 61076-3-125 and does not fulfill MICE2/3 requirements

SuggestedRemedy

Change figure to one of the existing variants described in IEC 61076-3-125

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accomodated by comment 280.

Cl **146** *SC* **146.8.1** *P* **154** *L* **14** # 317

Horrmeyer, Bernd — Phoenix Contact

Comment Type **T** *Comment Status* **A** *Late*

Accordingt to 104.1.3, T1L is compatible with PODL Type E. Therefore, table 104.1 has to be fulfilled

SuggestedRemedy

Make shure, that 1360mA@60C is covered by the MDI-connector/interface. Only 1A is mentioned in IEC 63171-1, so update it or delete it.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change 146.8.4: "60 V dc with the source current limited to 1200 mA," to "60 V dc with the source current limited to 1400 mA," to align with CDV draft of IEC connector specifications and with Clause 104.

Change 147.9.3: "60 V dc with the source current limited to 1360 mA," to "60 V dc with the source current limited to 1400 mA," to align with CDV draft of IEC connector specifications and with Clause 104.

Cl **146** *SC* **146.8.1** *P* **154** *L* **23** # 314

Horrmeyer, Bernd — Phoenix Contact

Comment Type **T** *Comment Status* **A** *Late*

Figure 146-29 does not comply to any variant described in IEC 61076-3-125 and does not fulfill MICE2/3 requirements

SuggestedRemedy

Change figure to one of the existing variants described in IEC 61076-3-125

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accomodated by comment 280.

Cl **146** *SC* **146.8.1** *P* **154** *L* **30** # 55

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **R** *Editorial*

Depending on the screen resolution and magnifying value the left line of Figure 146-30 is not visible in the PDF.

SuggestedRemedy

Please use thicker lines in Figure 146-30.

Response *Response Status* **C**

REJECT.
Lines appear at many resolutions and zooms. Commenter's reader may be the issue.
Figures are still in flux, commenter is welcome to resubmit during sponsor ballot if there is still an issue.

Cl **146** *SC* **146.8.1** *P* **154** *L* **37** # 106

Shariff, Masood — CommScope

Comment Type **ER** *Comment Status* **A** *MDI*

Missing PIN 2 label

SuggestedRemedy

Label PIN 2 in Figure 146-30 for completeness and consitency with Figure 146-31

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.8.1** *P* **154** *L* **37** # 107

Shariff, Masood — CommScope

Comment Type **ER** *Comment Status* **A** *MDI*

Add polarity information to figure Figure 146-30

SuggestedRemedy

PIN	SIGNAL	POWER
1	BI_DA+	+
2	BI_DA-	-

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by comment#96
Resolution to comment #96 is:
ACCEPT IN PRINCIPLE.
Add Table xx (see comment 280) with PMA to MDI pin assignments as follows:
pin 1 --> BI_DA+
pin 2 --> BI_DA-

Cl **146** *SC* **146.8.1** *P* **154** *L* **53** # 108

Shariff, Masood — CommScope

Comment Type **ER** *Comment Status* **A** *MDI*

Add polarity information to figure Figure 146-31

SuggestedRemedy

PIN	SIGNAL	POWER
1	BI_DA+	+
2	BI_DA-	-

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by comment#96
Resolution to comment #96 is:
ACCEPT IN PRINCIPLE.
Add Table xx (see comment 280) with PMA to MDI pin assignments as follows:
pin 1 --> BI_DA+
pin 2 --> BI_DA-

Cl **146** *SC* **146.8.3** *P* **155** *L* **23** # 172

Griffiths, Scott — Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

[EZ] Font is too small

SuggestedRemedy

Increase size of the font for "where f is the frequency in MHz." to match the font size for normal tex in the document.

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.8.4** *P* **155** *L* **26** # 318
Horrmeyer, Bernd Phoenix Contact

Comment Type **T** *Comment Status* **D** *Late*

Damage criteria for witstanding 60 V DC 1200mA is missing

SuggestedRemedy

Define the damage criteria for withstanding

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Text is out of scope and unchanged.
Commenter provides insufficient information for remedy.
Text is identical to similar text (e.g., short circuits) in nearly every other BASE-T PHY clause.

Cl **146** *SC* **146.9.1** *P* **156** *L* **23** # 101
Fritsche, Matthias HARTING Technology

Comment Type **E** *Comment Status* **R** *Safety*

IEC 60950-1 is replaced by IEC 62368-1

SuggestedRemedy

Change "IEC 60950-1" to "IEC 62368-1 (former IEC 60950-1)"

Response *Response Status* **C**

REJECT.
Text says "IEC 60950-1, IEC 62368-1 or IEC 61010-1". IEC 62368-1 is not "former IEC 60950-1" as the commenter suggests, and 60950-1 may still be used for some time.
Addtionally, a new project, IEEE P802.3cr has been formed to address the transition from 60950-1 to 62368-1.

Cl **146** *SC* **146.11.3** *P* **159** *L* **18** # 56
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

Fast Startup Feature is no more present in 146.4.4.

SuggestedRemedy

Remove Fast Startup from PICS table.

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.11.4.1.1** *P* **159** *L* **51** # 173
Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

[EZ] PCST8 refers to a subclause that is scheduled for removal.

SuggestedRemedy

Change "146.3.3.2.3" to "146.3.3.2.4"

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.11.4.2** *P* **162** *L* **47** # 60
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

Fast startup has been removed from 146.4.4.

SuggestedRemedy

Please remove PICS entry PMA6 and do a renumbering.

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.11.4.2.1** *P* **162** *L* **45** # 59
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

See Figure 146-14

SuggestedRemedy

See Figure 146-14 and 146-15 (the PHY control state diagram has been split into two Figures).

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.11.4.2.2** *P* **163** *L* **31** # 61
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *PMA Electrical*

PMAE6 specifies for test mode 3 that the idle data are transmitted using MASTER data mode (using the side-stream scrambler polynomial of transmitter side of the MASTER PHY). Test Mode 3 in 146.5.2 does not specify, which polynomial to use.

SuggestedRemedy

It needs to be discussed with the group, what to do (not specifying the polynomial to use in 146.5.2 and the PICS like it is done in 146.5.2, or specifying to use e.g. the polynomial for the MASTER PHY transmit side in both places, like it is done in the PICS). For the PSD mask measurement itself it is not really relevant, which polynomial is being used.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add at page 140 line 37 (146.5.2, after "When test mode 2 is enabled..."):
"When test mode 3 is enabled, the 10BASE-T1L PHY shall transmit as in non-test operation and in the MASTER data mode with data set to normal Inter-Frame idle signals."

(same text as 1000BASE-T1)

Cl **146** *SC* **146.11.4.2.2** *P* **163** *L* **35** # 174
Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **A** *PMA Electrical*

[EZ] Inconsistent symbol for Ohms. Also, resister tolerance in the main text was removed; it should probably be removed here also.

SuggestedRemedy

Change 100 W to 100 \Omega; consider removing 0.1% tolerance or re-adding it to main text.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accomodated by 62. Resolution to comment 62 was:
Replace "W" with omega symbol.
Retain the tolerance.
This reference is the one place where the tolerance was to be retained.

Cl **146** *SC* **146.11.4.2.2** *P* **163** *L* **35** # 62
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *PMA Electrical*

100 W +/- 0.1%

SuggestedRemedy

100 O (the rest of the text uses the omega symbol instead of the W symbol. The tolerance has been omitted in 146.5.3, Figure 146-17)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Replace "W" with omega symbol.
Retain the tolerance.
This reference is the one place where the tolerance was to be retained.

Cl **146** *SC* **146.11.4.2.2** *P* **163** *L* **43** # 63
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

0.1 %

SuggestedRemedy

0.1% (remove space before "%" symbol).

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.11.4.2.2** *P* **164** *L* **9** # 175
Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

[EZ] Droop specification does not match text.

SuggestedRemedy

Change to 10% to match text.

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.11.4.2.2** *P* **164** *L* **9** # 64
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

Less than 20%

SuggestedRemedy

Less than 10% (due to a different measurement position in the middle of the droop test pulse, the droop has been reduced from 20% to 10% in 146.5.4.2, therefore the PICS also needs to be changed to 10%)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accomodated by 175. Resolution to 175 was:
PROPOSED ACCEPT
Change to 10% to match text.

Cl **146** *SC* **146.11.4.2.2** *P* **164** *L* **11** # 176
Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

[EZ] Plus/minus symbol was removed from text.

SuggestedRemedy

Remove plus/minus symbol.

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.11.4.2.2** *P* **164** *L* **11** # 65
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

Less than +/- 10 ns symbol-to-symbol jitter when measured on test mode 1

SuggestedRemedy

Less than 10 ns symbol-to-symbol jitter when measured on test mode 1 (remove +/- as this has also been removed in 146.5.4.3).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accomodated by 176. Resolution to 176 was:
PROPOSED ACCEPT.
Remove plus/minus symbol.

Cl **146** *SC* **146.11.4.2.2** *P* **164** *L* **14** # 177
Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

[EZ] Transmit amplitudes do not match text.

SuggestedRemedy

Change "8.8 +/- 1.0 dBm" to "8.6 +/- 1.2 dBm" and change "1.2 +/- 1.0 dBm" to "1.0 +/- 1.2 dBm"

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.11.4.2.2** *P* **164** *L* **14** # 66
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

8.8 ± 1.0 dBm for the 2.4 Vpp transmit amplitude, and 1.2 ± 1.0 dBm for the 1.0 Vpp transmit amplitude, when measured into a 100 O load using the test fixture shown in Figure 146-18

SuggestedRemedy

8.6 ± 1.2 dBm for the 2.4 Vpp transmit amplitude, and 1.0 ± 1.2 dBm for the 1.0 Vpp transmit amplitude, when measured into a 100 O load using the test fixture shown in Figure 146-18 (adapt the values in the PICS to the value in 146.5.4.4)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accomodated by 177:
Change "8.8 +/- 1.0 dBm" to "8.6 +/- 1.2 dBm" and change "1.2 +/- 1.0 dBm" to "1.0 +/- 1.2 dBm"

Cl **146** *SC* **146.11.4.2.2** *P* **164** *L* **47** # 67
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

., or in MDIO register 1.2294.13, defined in is set to one

SuggestedRemedy

., or in MDIO register 1.2294.0, defined in 45.2.1.186a.6 is set to one (change register bit from 13 to 0 and add reference to Clause 45)

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.11.4.4** *P* **165** *L* **30** # 58

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *PICS*

A new PICS entry LMF1a (and subsequent renumbering) is required for the 1.0 Vpp operating mode. The current LFM1 requirement needs to be modified to reflect the 2.4 Vpp operating mode.

SuggestedRemedy

Modify LMF1 Feature to: Insertion Loss (2.4 Vpp operating mode). As the 2.4 Vpp operating mode is optional, likely the status for LFM1 has to be set to O (optional) and there has to be a No and N/A option to be able to be ticked. Add new LMF1a: Insertion Loss (1.0 Vpp operating mode), 146.7.1.1, See Equation (146-11), M, Yes [ ]

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Modify LMF1 to:
Change Feature to: Insertion Loss (2.4 Vpp operating mode).
Change Status to RTDL:O
Change Support to: Yes[], No[], N/A[]

Add new PICS item preceding LMF1 (and renumber)
LMFa:
Feature: Insertion Loss (1.0 Vpp operating mode)
Subclause: 146.7.1.1,
Value: See Equation (146-11)
Status: M
Support: Yes [ ]

Cl **146** *SC* **146.11.4.4** *P* **165** *L* **31** # 178

Griffiths, Scott — Rockwell Automation

Comment Type **E** *Comment Status* **A** *PICS*

[EZ] LMF1 should also refer to Equation 146-11, and should indicate different equations for the two different transmit levels.

SuggestedRemedy

Change text to "See Equation (146-10) for 2.4 Vpp transmit level or Equation (147-11) for 1.0 Vpp transmit level."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accomodated by 58. Resolution to 58 was:
ACCEPT IN PRINCIPLE.
Modify LMF1 to:
Change Feature to: Insertion Loss (2.4 Vpp operating mode).
Change Status to RTDL:O
Change Support to: Yes[], No[], N/A[]

Add new PICS item preceding LMF1 (and renumber)
LMFa:
Feature: Insertion Loss (1.0 Vpp operating mode)
Subclause: 146.7.1.1,
Value: See Equation (146-11)
Status: M
Support: Yes [ ]

Cl **146** *SC* **146.11.4.5** *P* **166** *L* **6** # 57

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

ES2 is no more optional. Should be removed and integrated in ES1.

SuggestedRemedy

Delete ES2 entry and modify ES1 entry Feature column to: Conform to IEC 60950-1, IEC 62368-1, or IEC 61010-1. Remove Value/Comment Column Entry.

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.20** *P* **239** *L* **17** # 197
Kim, Yong NIO

Comment Type **ER** *Comment Status* **A** *Editorial*

DCR used the 1st time. Customary to expand the acronym even if it is stated in acronym section in CL1

SuggestedRemedy

pls do so. "Direct Current Resistance". Also consider deleting DCR in CL1 if this term is purely local use in this informative annex.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Replace "DCR" with "direct current resistance (DCR) "

Cl **146** *SC* **Figure 146-11** *P* **132** *L* **2** # 164
Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

Link_control and link_status should go to the Technology Dependent Interface, not Management. This matches what is done in Clause 97.4.

SuggestedRemedy

Modify the figure to add the Technology Dependent Interface.

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **Figure 146-11** *P* **132** *L* **28** # 165
Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

The rx_lpi_active label on line 28 is floating out in space. It can probably be removed because another lable exists on line 13.

SuggestedRemedy

Remove floating rx_lpi_active label on line 28.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accomodated by 39.
Resolution to 39 was:
PROPOSED ACCEPT.
Remove text "rx_lpi_active" in line 28 of Figure 146-11.

Cl **146** *SC* **Figure 146-21** *P* **145** *L* **1** # 170
Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **A** *PMA Electrical*

The text is very clear that the noise should be injected at the MDI, but the figure is a little misleading because it appears that the injection point is not at the MDI.

SuggestedRemedy

Change the figure so that the noise source attaches at the MDI.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The figure indicates that the noise may be injected within 0.5m of the MDI. In practice, some length of cabling is needed, and the noise is calibrated to the noise level at the MDI. The text is being modified to reflect actual tests. Commenters may consider maintenance on similar text in other 802.3 clauses.

Change: "The test is performed with a noise source consisting of a signal generator with Gaussian distribution, bandwidth of 10 MHz, and magnitude of –106 dBm/Hz."
to: "The test is performed with a noise source such that noise with a Gaussian distribution, bandwidth of 10 MHz, and magnitude of –106 dBm/Hz is present at the MDI."

Delete: "The noise is added at the MDI of the DUT."

Cl **147** *SC* **147** *P* **167** *L* **2** # 179
Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **A** *Editorial*

[EZ] Add comma after "sublayer" to match T1L title.

SuggestedRemedy

Add comma after "sublayer".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Title is consistent with 802.3, it is the title to clause 146 which was incorrectly changed to add a comma on draft 2.2. Delete comma after "Sublayer" at:
- page 104/1-3 (clause title for 146)
- page 158/1-3 (sub-clause title for 146.11)
- page 158/7-9
- page 158/36-38
- page 159/25-26 (sub-clause title for 146.11.4)

Cl **147** *SC* **147.1** *P* **167** *L* **12** # 210

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *Big Ticket Item - CSD*

Really a CSD issue: Among the10BASE-T1S three mode of operation -- mandatory - half-duplex P2P, optional - half-duplex P2MP, optional - full-duplex P2P, one could argue the mandatory mode of operation, thus only one required to claim conformance, has the least broad market potential. Just as a reminder -- half duplex P2P broad market, typically associated with star-wired multi-port repeater has been rejected by rejecting operation with CL9 repeaters.

SuggestedRemedy

Consider deleting the P2P half-duplex mandatory and upgrade one of the other modes to mandatory, OR justify why P2P half-duplex still has broad market potential claied in CSD. OR, the intent is for P2P half-duplex to be mandatory, and at least one of the two remaining modes mandatorily implemented, then correct the text and objectivies as appropirate (and CSD if appropriate). [Remember each of these "mode" is a new PHY.]. By doing mandatory to be 1 + 2 or 1 + 3 but not 1 alone, you may also avoid broad market potential challenge on 1 only

Response *Response Status* **W**

REJECT.
Commenter is incorrect, a number of individuals with a broad spectrum of affiliations agreed on an objective for this. The Criteria for Standards Development (e.g., broad market potential) apply to the entire standard:
====
Each proposed IEEE 802 LMSC standard shall have broad market potential. At a minimum, address the following areas:
a) Broad sets of applicability.
B) Multiple vendors and numerous users.
====
As written (and commonly) they do not mention objective by objective, or else they would have to be modified every time an objective is changed. The objectives are chosen to fit within the broader CSDs, by the applicability and the multiple interest groups. The existing 802.3cg broad market potential speaks to 10 Mb/s single-pair Ethernet in industrial, automotive, and intra-system applications, and the number and breadth of individuals and companies which have expressed interest in the standard. These have voted to approve adding the objective for P2P.

Cl **147** *SC* **147.1** *P* **167** *L* **12** # 297

Jones, Peter Cisco Systems

Comment Type **E** *Comment Status* **R** *Editorial*

Text says "All 10BASE-T1S PHYs can operate a half-duplex PHY with a single link partner over a point-to-point link segment
defined in 147.7, and, additionally, there are two mutually exclusive optional operating modes: ...".
Saying these are "mutually exclusive" gives the wrong impression. These are just different modes.

SuggestedRemedy

Change "" and, additionally, there are two mutually exclusive optional operating modes: " to
"and, there are two additional optional operating modes: ..."."

Response *Response Status* **C**

REJECT.
Text clearly states that mutual exclusivity refers to operating mode.
Commenter did not elaborate on what the wrong impression is believed to be.

Cl **147** *SC* **147.1** *P* **167** *L* **13** # 68

Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

. can operate a half-duplex PHY .

SuggestedRemedy

. can operate as a half-duplex PHY . (add "as")

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.1** *P* **167** *L* **17** # 207

Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *Mixing Segment*

". multiple link partners connected to a mixing segment." makes little sense -- I believe this is technically incorrect. Link parter refers to P2P link partner (the statement is duplex agnostic)

SuggestedRemedy

suggesting use of "..multiple nodes connected." or if "partner" idea has some other meaning that has has to be conveyed, do so explicitly,

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Change "multiple link partners connected to a mixing segment" at page 167/16-17 to "multiple stations connected to a mixing segment"

Cl **147** *SC* **147.1** *P* **167** *L* **17** # 206

Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *Big Ticket Item - Multidrop*

Only place the "multidrop mode" is defined is in 147.1 and says "a half duplex shared-medium mode, referred to as multidrop mode, capable of operating with multiple link partners connected to a mixing segment" I know this term has been in use for a long time in the .3cg draft development. But I don't see any benefit to introducing a new term. Traditionally we had mixing and link segments, and we have half-duplex point to multi-point (P2MP), and full duplex point to point (P2P) operations. I do not see any reason to introduce a new term that does not seem to have sufficent difference from traditional terms in function. Even in CL147 spec -- see 147.3.3.2, duplex_mode was sufficient.

SuggestedRemedy

Please consider careful search and replacement of "multidrop" "and multidrop over mixing segment" with point to multipoint (P2MP), or in many cases just "half-duplex", or "half-duplex over mixing segment". I don't see how it is reader-friendly to have so many terms to refer to the same thing. Painful now, but we have to live with the specified text [almost] forever.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
P167 L24: Delete "multidrop"
P167 L46: Delete "multidrop"
P213 L39: Change "multidrop network" to "mixing segment"
P218 L26: Change "multidrop network" to "mixing segment"
P224 L16: Change "multidrop network" to "mixing segment"
P49 L45 & L47: Change "multidrop operation over a mixing segment network" to "multidrop mode"
P49 L48: Change "multidrop operation" to "multidrop mode"

Add editor's note at top of 147.1:
Editor's note (to be removed following draft 2.3) - Commenters are encouraged to consider possible alternate names for "multidrop mode" using existing 802.3 terminology which are descriptive and compact.

Cl **147** *SC* **147.1** *P* **167** *L* **26** # 180

Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **D** *Editorial*

[EZ] Move "10BASE-T1S does not define an AUI" to the end of line 10. This placement seems to make more sense, and matches T1L.

SuggestedRemedy

Move "10BASE-T1S does not define an AUI" to the end of line 10.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **147** *SC* **147.1.2** *P* **167** *L* **39** # 233

Kim, Yong NIO

Comment Type **E** *Comment Status* **R** *Editorial*

Wordy. ""All 10BASE-T1S.. In reach." paragraph. D2.1 was better but was not technically correct.

SuggestedRemedy

Please reword. How about, " All 10BASE-T1S PHYs operate in half-duplex, and may operate in full-duplex, on point-to-point communications on a link segment using a single balanced pair of conductors, supporting up to four in-line connectors and up to at least 15 meters in reach.

Response *Response Status* **C**

REJECT.
Current text was introduced during last comment resolution cycle (d2.1->d2.2) and it does reflect the will of the group under consensus.
Moreover text is not technically incorrect (no problem is being fixed).

Cl **147** *SC* **147.1.2** *P* **167** *L* **39** # 232

Kim, Yong NIO

Comment Type **T** *Comment Status* **R** *Editorial*

"..can operate.. Should just be "..operate.." by definition. So this is just a statement of fact, not capability

SuggestedRemedy

Please make the change.

Response *Response Status* **C**

REJECT.
The word "can" here expresses that all 10BASE-T1S PHYs have this capability, but when optional modes are activated, they may operate otherwise.

Cl **147** *SC* **147.1.2** *P* **167** *L* **53** # 234

Kim, Yong NIO

Comment Type **T** *Comment Status* **A** *PCS*

"4B/5B encoding is used to further improve EMC performance and to signal among the connected PHYs". Yopu don't need 4B/5B [in order] to signal among the connected PHYs" Changed the meaning from D2.1 and made it less correct.

SuggestedRemedy

Please go back to D2.1 wording, which is awkward but more correct. Or consider changing to something like this: <PCS transmit data> is encoded in 4B/5B, then scrambled using 17 bit self-synchronizing scramber, and then encoded with Differential Manchester Encodeing (DME). And drop all the rationale for chosing DME and scrambler.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "4B/5B encoding is used to further improve EMC performance and to signal among the connected PHYs."
to "4B/5B encoding is used."

Cl **147** *SC* **147.1.3.1** *P* **168** *L* **40** # 235

Kim, Yong NIO

Comment Type **E** *Comment Status* **A** *Editorial*

It would be good to say, "The conventions of 21.5 are adopted, with the folliowing extensions." and replace the existing first sentence with it. The value of doing this is that a reader is informed that all stated conventions are common, and additoinal IF-THEN-ELSE-END was added in this clause.

SuggestedRemedy

Please consider the suggestion.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "The notation used in the state diagrams follows the conventions of 21.5. Some ."
to "The conventions of 21.5 are adopted with the extension that some ."

Cl **147** *SC* **147.2** *P* **169** *L* **42** # 181

Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **D** *Editorial*

It might be appropriate to note here that the Technology Dependent Interface is defined in Clause 98.4.

SuggestedRemedy

After "Clause 22.", add "The optional Technology Dependent Interface is used for Auto-Negotiation and is described in 98.4." or something similar.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **147** *SC* **147.2** *P* **170** *L* **1** # 127

Beruto, Piergiorgio — Canova Tech Srl

Comment Type **E** *Comment Status* **A** *PMA*

Description for the PMA_UNITDATA.indication and PMA_UNITDATA.request primitives are missing.

SuggestedRemedy

Insert the following subclauses at indicated location:

"147.2.1 PMA_UNITDATA.indication
This primitive defines the transfer of one 5B symbol in the form of the rx_sym parameter from the PMA to the PCS.

147.2.1.1 Semantics of the primitive
PMA_UNITDATA.indication (rx_sym)
During reception, the PMA_UNITDATA.indication conveys to the PCS, via the parameter rx_sym,
the value of the 5B symbol detected on the MDI during each cycle of the recovered clock.

147.2.1.2 When generated
The PMA generates PMA_UNITDATA.indication (rx_sym) messages synchronously for every 5B
symbol received at the MDI. The nominal rate of the PMA_UNITDATA.indication primitive is 2.5 MHz, as governed by the recovered clock.

147.2.1.3 Effect of receipt
The effect of receipt of this primitive is unspecified.

147.2.2 PMA_UNITDATA.request
This primitive defines the transfer of one symbol in the form of the tx_sym parameter from the PCS to the PMA.
The symbol is obtained in the PCS Transmit function using the encoding rules defined in 147.3.2 to represent 4B/5B encoded MII data or special out of band signaling.

147.2.2.1 Semantics of the primitive
PMA_UNITDATA.request (tx_sym)
During transmission, the PMA_UNITDATA.request simultaneously conveys to the PMA, via the parameter tx_sym, the value of the symbol to be sent over the MDI.
The tx_sym parameter is one of the allowed 5B codes specified in table 147-1.

147.2.2.2 When generated
The PCS generates PMA_UNITDATA.request (tx_sym) synchronously with every PCS transmit clock cycle.

147.2.2.3 Effect of receipt
Upon receipt of this primitive the PMA transmits on the MDI the signals corresponding to the indicated 5B symbol after processing it with DME following the rules in 147.4."

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.2.2** *P* **170** *L* **25** # 182

Griffiths, Scott — Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

[EZ] Change "the Auto-Negotiation" to "Auto-Negotiation" or "the Auto-Negotiation function"

SuggestedRemedy

Change "the Auto-Negotiation" to "Auto-Negotiation" or "the Auto-Negotiation function"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "the Auto-Negotiation" to "Auto-Negotiation"

Cl **147** *SC* **147.2.2.2** *P* **170** *L* **36** # 69

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

When generation

SuggestedRemedy

When generated

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change the title of sub-clause 147.2.2. from "When generation" to "When generated"
Note: also resolves #183

Cl **147** *SC* **147.2.2.2** *P* **170** *L* **36** # 183

Griffiths, Scott — Rockwell Automation

Comment Type **E** *Comment Status* **A** *Editorial*

[EZ] Change "When generation" to "When generated"

SuggestedRemedy

Change "When generation" to "When generated"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Already dealt with by #69, which is as follows:
====
PROPOSED ACCEPT IN PRINCIPLE.
Change the title of sub-clause 147.2.2. from "When generation" to "When generated"
Note: also resolves #183
====

Cl **147** *SC* **147.2.4** *P* **171** *L* **12** # 298

Jones, Peter — Cisco Systems

Comment Type **E** *Comment Status* **A** *PCS*

The text for PCS_STATUS.indication says "This primitive is generated by the PMA to retrieve the status of the PCS."
Indications indicate, they don't retrieve from another layer.

SuggestedRemedy

Change "This primitive is generated by the PMA to retrieve the status of the PCS." to "This primitive is generated by the PCS to convey PCS status."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace,

"This primitive is generated by the PMA to retrieve the status of the PCS."

with,

"This primitive is generated by the PCS to indicate PCS status to the PMA."

Cl **147** *SC* **147.2.4.1** *P* **171** *L* **19** # 236

Kim, Yong — NIO

Comment Type **ER** *Comment Status* **A** *PCS*

FALSE and TRUE values are not friendly. FAIL and OK would be better. WAITING and CONNECTED, perhaps.

SuggestedRemedy

Pick better value names than FALSE and TRUE.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
1. Change "TRUE" to "OK" at page 171/19
2. Change "FALSE" to "NOT_OK" at page 171/20
3. Change "The pcs_status is reported as TRUE when" at page 186/47 to "The pcs_status is reported as OK when"
4. Change "The pcs_status is reported as FALSE" at page 187/1 to "The pcs_status is reported as NOT_OK"
5. Change "Values: TRUE or FALSE" at page 187/40 to "Values: OK or NOT_OK"
6. Change "Counter of HB when pcs_status is TRUE." at page 187/52 to "Counter of HB when pcs_status is OK."
7. Change "pcs_status <= FALSE" at page 187/8-9 to "pcs_status <= NOT_OK"
8. Change "pcs_status <= TRUE" at page 187/25-26 to "pcs_status <= OK"
9. Change "Counter of HB when pcs_status is FALSE" at page 188/2 to "Counter of HB when pcs_status is NOT_OK"
10. Change "Number of HB required to signal pcs_status = TRUE" at page 188/18 to "Number of HB required to signal pcs_status = OK"
11. Change "Number of HB required to signal pcs_status = FALSE" at page 188/22 to "Number of HB required to signal pcs_status = NOT_OK"
12. Change "pcs_status *" at page 191/18 to "pcs_status = OK *"
13. Change "!pcs_status +" at page 191/24 to "pcs_status = NOT_OK +"
14. Change "PCS_STATUS.indication primitive shall convey FALSE" at page 184/11-12 to "PCS_STATUS.indication primitive shall convey NOT_OK"
Editorial license to find and fix any additional occurrences as necessary

Cl **147** *SC* **147.3** *P* **171** *L* **1** # 120

Beruto, Piergiorgio — Canova Tech Srl

Comment Type **TR** *Comment Status* **A** *PCS*

[BURSTESD] As explained in beruto_3cg_burst_mode_fixes_revB, when a COMMIT request is not followed by data, it shall be closed by an ESD ESDOK sequence to avoid a bogus false carrier indication from PCS

SuggestedRemedy

Carry on the changes in beruto_3cg_burst_mode_fixes_revB from slide 5 to slide 7

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Carry out the changes in beruto_3cg_burst_mode_fixes_revC.pdf slides 5 to 7.

Cl **147** *SC* **147.3..8.3** *P* **188** *L* **33** # 247

Kim, Yong — NIO

Comment Type **E** *Comment Status* **A** *PCS*

"In compliance" does not read well - at least to me. .3 stated it in a different way. "In comploamce to 148.4.4.2.1, when PLCA RS operations are supported and enabled, the PHY shall notify
the RS of a received BEACON indication by the means of MII interface as specified in 22.2.2.8."

SuggestedRemedy

Suggest rewording to "When PLCA RS operations are supported and enabled, the PHY shall notify the RS of a received BEACON indication (148.4.4.2.1) by the means of MII interface as specified in 22.2.2.8." and do that to 147.3.8.4 also.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

On page 188, line 33, replace,
"In compliance to 148.4.4.2.1, when"

with,
"When"

On page 188, line 42, replace,
"In compliance to 148.4.4.2.2, when"

with,
"When"

Cl **147** *SC* **147.3.1** *P* **171** *L* **41** # 184

Griffiths, Scott — Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

[EZ] Change "PCS reset" to "PCS Reset"

SuggestedRemedy

Change "PCS reset" to "PCS Reset"

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.3.1** *P* **171** *L* **43** # 185

Griffiths, Scott — Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

[EZ] Change "pcs_reset =OFF" to "pcs_reset = OFF"

SuggestedRemedy

Change "pcs_reset =OFF" to "pcs_reset = OFF"

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.3.1** *P* **171** *L* **43** # 70

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

pcs_reset =OFF

SuggestedRemedy

pcs_reset = OFF (add space before OFF)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
There are 2 places to carry out this change:
- 171/43 (EOL)
- 171/48-49 (over line-break)

Cl **147** *SC* **147.3.2.1** *P* **174** *L* **1** # 26

Huszak, Gergely — Kone

Comment Type **E** *Comment Status* **A** *Editorial*

Calling our 5B symbols by their name, plus by their literal value/content is not only redundant, but also creates space for error. These mappings are already there, unambiguously, in "Table 147-1-4B/5B Encoding"

SuggestedRemedy

Remove " (binary vector of 1,1,1,1,1)"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Replace "(binary vector of 1,1,1,1,1)" with "(see Table 147-1)"

Cl **147** *SC* **147.3.2.1** *P* **174** *L* **2** # 129

Beruto, Piergiorgio — Canova Tech Srl

Comment Type **T** *Comment Status* **A** *PCS*

The following text does not cover the full-duplex case: "SILENCE represents an indication for the PMA to change the output to a high impedance state, according to 147.4.2."

However the references subclause 147.4.2 properly distinguish the HD and FD cases

SuggestedRemedy

Replace the quoted sentence with: "SILENCE represents an indication for the PMA to change the output according to 147.4.2."

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.3.2.1** *P* **174** *L* **11** # 125

Beruto, Piergiorgio — Canova Tech Srl

Comment Type **E** *Comment Status* **A** *PCS*

tx_sym variable is not initialized on reset

SuggestedRemedy

if comment marked as [BURSTESD] is accepted, no action is needed. Otherwise add "tx_sym <= SILENCE" in SILENT state.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accommodated by comment #120.
Resolution of #120 is:

ACCEPT IN PRINCIPLE.
Carry on the changes in beruto_3cg_burst_mode_fixes_revC.pdf slides 5 to 7

Cl **147** *SC* **147.3.2.2** *P* **176** *L* **22** # 237

Kim, Yong — NIO

Comment Type **TR** *Comment Status* **R** *PCS*

Based on my reading, tx_cmd encoding has been changed to be implemented regardless of PLCA RS layer option. Unnessary specifications.

SuggestedRemedy

Reverse the change and make any corrections WRT to T and I.

Response *Response Status* **W**

REJECT.
tx_cmd is implemented regardless of the PLCA RS layer option, and T & I are necessary to implement heartbeat (147.3.8)

Cl **147** *SC* **147.3.2.2** *P* **176** *L* **25** # 238

Kim, Yong — NIO

Comment Type **E** *Comment Status* **A** *PCS*

Following the reference 147.3.8.1.1 sends me back to 147.3.2.2

SuggestedRemedy

Would you break the reference loop and state how hb_cmd variable is used with this?

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "hb_cmd variable, defined in 147.3.8.1.1." at page 176/24-25 to "hb_cmd variable generated by the state diagram in Figure 147-10."

Cl **147** *SC* **147.3.2.2** *P* **176** *L* **47** # 194

Griffiths, Scott — Rockwell Automation

Comment Type **T** *Comment Status* **D** *AutoNeg*

[T1S PMA SERVICE PRIMATIVES] Rename link_control to link_status. Also, this variable is generated by the PMA, not management.

SuggestedRemedy

Modify the variable name to link_status and change the first sentence of the descripion to "This variable is generated by the PMA."

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **147** *SC* **147.3.2.4** *P* **178** *L* **23** # 239

Kim, Yong NIO

Comment Type **ER** *Comment Status* **A** *EZ*

txcnt is not used anywhere. At least Acrobat search function could not find it. Forward or backward. If not used, delete.

SuggestedRemedy

Delete or find the error and fix it.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Delete the content of "147.3.2.4 Counters" and replace it with the editor's note found under "147.5.4.5 Transmit clock frequency" that states the following:
====
Editor's Note (to be removed prior to publication):
This clause has been deleted, and will be removed with renumbering at draft 3.0.
====

Cl **147** *SC* **147.3.3.1** *P* **179** *L* **38** # 126

Beruto, Piergiorgio Canova Tech Srl

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

As explained in 22.2.2.10 the false carrier indication should be optional

SuggestedRemedy

Add the following paragraph after "preamble transmitted by the MAC.":

"Signaling of a false carrier indication on the MII, as depicted in the FALSE_CARRIER state in Figure 147-7, is optional"

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **147** *SC* **147.3.3.2** *P* **179** *L* **50** # 241

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *PCS*

"If Multidrop mode MDIO register bit 1.2297.10 is set to one and multidrop mode is supported according to bit 1.2298.10 then duplex_mode is set to DUPLEX_HALF" does not cover the case of half-duplex and P2P -- the mandatory operation.

SuggestedRemedy

Please add text to include P2P half, or exclude. 2 out of three modes are covered at present.

Response *Response Status* **W**

REJECT.
Commenter is incorrect, as all cases are covered in the full paragraph. "If Multidrop mode MDIO register bit 1.2297.10 is set to one and multidrop mode is supported according to bit 1.2298.10 then duplex_mode is set to DUPLEX_HALF." (commenter's quoted text - says multidrop mode supported and enabled sets duplex mode to DUPLEX_HALF). Text then continues, "Else, if Auto-Negotiation is enabled then duplex_mode is set by the priority resolution defined in 98B.4." - this covers point to point and half-duplex when Auto-Negotiation is active. Then it continues and covers all other cases - "Otherwise, this variable is set by MDIO register bit 3.2291.8. If MDIO is not implemented, duplex_mode is set by the means of an equivalent interface."

Cl **147** *SC* **147.3.3.2** *P* **180** *L* **2** # 130

Beruto, Piergiorgio Canova Tech Srl

Comment Type **E** *Comment Status* **A** *Editorial*

"by the means of an equivalent interface" sounds too constrained and it's not in line with similar text across the clause.

SuggestedRemedy

Replace "by the means of an equivalent interface" with "by equivalent means".

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.3.3.2** *P* **180** *L* **18** # 240

Kim, Yong NIO

Comment Type **E** *Comment Status* **A** *Editorial*

SILENCE is not a variable. Either constant or value.

SuggestedRemedy

Please correct.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
1. Introduce a new sub-clause 147.3.2.3 Constants" and move the definitions of SYNC, SSD, ESD, ESDERR, ESDOK, SILENCE and ESDJAB at pages pages 176/52-177/15 to it.
2. Introduce a new sub-clause 147.3.3.3 Constants" and move the definition of SILENCE at page 180/17-18 to it.
Editorial license to similarly create Constants sections on other state diagrams and move defined symbols there in ALL clauses: editors are to scrub all clauses.

Cl **147** *SC* **147.3.3.5** *P* **182** *L* **11** # 128

Beruto, Piergiorgio Canova Tech Srl

Comment Type **T** *Comment Status* **A** *PCS*

The ELSE statement in the recirculating arc of the DATA state is not precise because it is supposed to wait for RSCD before updating pcs_rxd

SuggestedRemedy

Change "ELSE" with "
RSCD *
!(RXn-3 = ESD * RXn-2 = ESDOK) *
!(RXn-2 = ESD * RXn-1 != ESDOK) *
RXn-3 != SILENCE
"

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.3.5** *P* **183** *L* **21** # 187

Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **D** *PCS*

A requirement indicates "shall" shall be used.

SuggestedRemedy

Change "have to" to "shall"

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **147** *SC* **147.3.5** *P* **183** *L* **21** # 242

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *PCS*

"The method for detecting a collision is implementation dependent but the following requirements have to be
fulfilled:" is grossly insufficient. Collision detection method must be specified and reliability of collision detection must be validated.

SuggestedRemedy

Without collision detection specification, this draft is grossly incomplete. I expect technically complete draft to include specifications on collision detect.

Response *Response Status* **W**

REJECT.
Commenter provides insufficient information for remedy. The standard specifies behavior, not implementation, and behavioral requirements for the collision detection are provided. Similarly, the standard does not specify how to equalize the received signal or how to cancel echoes, but states the transmitter electrical parameters, link segment transmission parameters, and receiver behavior (e.g., frame loss ratio and noise level tests) necessary for the implementation to meet.

Cl **147** *SC* **147.3.5** *P* **183** *L* **25** # 188

Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

[EZ] Change "in presence of" to "in the presence of"

SuggestedRemedy

Change "in presence of" to "in the presence of"

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.3.5** *P* **183** *L* **26** # 243

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *PCS*

"The PHY shall assert CRS in presence of a signal resulting from a collision between two or more stations." combined with a) WRT col, mandates a behavior that cannot be conformance tested. Assert CRS before COL, after COL, how long after collision condition on the medium, and when to deassert, by when? Could it deassert 256 bit time later?

SuggestedRemedy

this specifciation is grossly incomplete. Please complete it. I expect technically complete draft to include specifications on carrier sense from collision.

Response *Response Status* **W**

REJECT.
CRS is already specified in Clause 22.2.2.11 - It is asserted before or coincidently with COL and de-asserted after or coincidently with COL. See figure 22-11.
COL is defined in 22.2.2.12 to be asserted for the duration of the collision on the line. Its assertion shall occur within one slotTime as specified in Clause 4 to avoid a late collision error. See e.g. Figure 4-5.

Cl **147** *SC* **147.3.6** *P* **183** *L* **30** # 244

Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *PCS*

"When operating in half-duplex mode, the 10BASE-T1S PHY shall sense when the media is busy and convey
this information to the MAC asserting the signal CRS on the MII as specified in 22.2.2.11." is grossly insufficent for CSMA/CD to work. How, when, and condition, signal assert and deassert time, etc should all be specified.

SuggestedRemedy

this specifciation is grossly incomplete. Please complete it. I expect technically complete draft to include specifications on carrier sense beahvior.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
On page 183, lines 30-32, replace,
"the 10BASE-T1S PHY shall sense when the media is busy and convey this information to the MAC asserting the signal CRS on the MII"

with,
"the 10BASE-T1S PHY senses when the media is busy and conveys this information to the MAC by asserting the signal CRS on the MII"

Cl **147** *SC* **147.3.6** *P* **183** *L* **31** # 189

Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

[EZ] Change "MAC asserting" to "MAC by asserting"

SuggestedRemedy

Change "MAC asserting" to "MAC by asserting"

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.3.7** *P* **184** *L* **1** # 190

Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **A** *Editorial*

I find the current organization of sections 147.3.7 and 147.3.8 to be misleading. The single line in 147.3.7 indicates that the entire contents of 147.3.8 only applies to PLCA. However, the heartbeat functionality does not apply to PLCA and mixing segments because they are prohibited from using Auto-Negotiation (see 147.1.1). But 147.3.8 says: "If Clause 98 Auto-Negotiation functions are implemented... Otherwise all of the HB functions shall be disabled."

SuggestedRemedy

Move the Heartbeat content (147.3.8, 147.3.8.1, 147.3.8.2) earlier, to section 147.3.7, and rename this section so that it indicates it is for heartbeat. Rename 147.3.8 "Optional support for PLCA Reconciliation Sublayer PCS status generation" or something similar. Keep the BEACON and COMMIT subsections here.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Move all text at page 188/31-48 (effectively the headers and content of sub-clauses "147.3.8.3 Generation of BEACON indication" and "147.3.8.4 Generation of COMMIT indication") before sub-clause "147.3.8 Optional support for PCS status generation", turning those into "147.3.7.1 Generation of BEACON indication" and "147.3.7.2 Generation of COMMIT indication"

Cl **147** *SC* **147.3.7** *P* **184** *L* **3** # 327

Brandt, David — Rockwell Automation

Comment Type **E** *Comment Status* **A** *PCS*

Sub-clause states that it enumerates Clause 147 option for PLCA, but nothing is defined.

PICS tells what applies.

SuggestedRemedy

Change from: "the following applies"

To: "147.3.8.3 and 147.3.8.4 apply"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accommodated by comment #190. Resolution of comment #190 is:

ACCEPT IN PRINCIPLE.
Move all text at page 188/31-48 (effectively the headers and content of sub-clauses "147.3.8.3 Generation of BEACON indication" and "147.3.8.4 Generation of COMMIT indication") before sub-clause "147.3.8 Optional support for PCS status generation", turning those into "147.3.7.1 Generation of BEACON indication" and "147.3.7.2 Generation of COMMIT indication"

Cl **147** *SC* **147.3.7** *P* **184** *L* **5** # 209

Kim, Yong — NIO

Comment Type **TR** *Comment Status* **A** *Editorial*

Optional support for RS layer, separatated from the PHY via xMII and PCS does not seem to have any existing interface to convery message primitives referred to here. Please describe HOW it is conveyed from PHY to RS.

SuggestedRemedy

Please point out the message passing interface that conveys these additional and optional messages between PHY and RS -- in which case, this comment will be withdrawn. Or describe how these messages are converyed.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
(commenter appears confused by an editorial error which left optional support of PLCA RS separated from the text it applied to)
Accomodated by comment #190.
Resolution of comment #190 is:
ACCEPT IN PRINCIPLE.
Move all text at page 188/31-48 (effectively the headers and content of sub-clauses "147.3.8.3 Generation of BEACON indication" and "147.3.8.4 Generation of COMMIT indication") before sub-clause "147.3.8 Optional support for PCS status generation", turning those into "147.3.7.1 Generation of BEACON indication" and "147.3.7.2 Generation of COMMIT indication"

Cl **147** *SC* **147.3.8** *P* **184** *L* **5** # 208

Kim, Yong — NIO

Comment Type **E** *Comment Status* **A** *Editorial*

Clause level for this shouild be 4, such that it is sub-section of current 147.3.7

SuggestedRemedy

do so.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accommodated by comments #190.
Proposed resolution of #190 is:
>>>>
PROPOSED ACCEPT IN PRINCIPLE.
Move all text at page 188/31-48 (effectively the headers and content of sub-clauses "147.3.8.3 Generation of BEACON indication" and "147.3.8.4 Generation of COMMIT indication") before sub-clause "147.3.8 Optional support for PCS status generation", turning those into "147.3.7.1 Generation of BEACON indication" and "147.3.7.2 Generation of COMMIT indication"
<<<<

Cl **147** *SC* **147.3.8** *P* **184** *L* **7** # 245

Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *PCS*

Reading into "Heart-beat (HB)" -- the funciton REQUIRES support of BEACON, etc, in PLCA option in RS, to work properly. This means PLCA option is NOT an option if Augo-neg is implemented and enabled.

SuggestedRemedy

Please clarify whether PLCA RS layer is an option or mandatory. The current draft says optional in most places.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

On page 184, lines 17-18, replace,
"The HB generation is disabled when the PHY is configured for operation over a mixing-segment network or a PLCA BEACON indication is detected on the line."

with,
"The HB generation is disabled when the PHY is configured for operation over a mixing segment or a BEACON is detected."

Cl **147** *SC* **147.3.8** *P* **184** *L* **7** # 246

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *PCS*

Related to my other comment WRT half-duplex P2P mode WITHOUT repeater support makes little sense WRT broadmarket potential and suggest deleting that mode, and if that is considered positively, then consider replacing H-B with active idle for full-duplex P2P mode and have it align with 10BASE-T1L. H-B is being added in D2.2 in support of a mode that makes little market sense.

SuggestedRemedy

Please conditionally (delete P2P HD) consider this suggestion (replacement of HB)

Response *Response Status* **W**

REJECT.

Comment #210 was rejected. The resolution to comment #210 is:

Commenter is incorrect, a number of individuals with a broad spectrum of affiliations agreed on an objective for this. The Criteria for Standards Development (e.g., broad market potential) apply to the entire standard:
====
Each proposed IEEE 802 LMSC standard shall have broad market potential. At a minimum, address the following areas:
a) Broad sets of applicability.
B) Multiple vendors and numerous users.
====
As written (and commonly) they do not mention objective by objective, or else they would have to be modified every time an objective is changed. The objectives are chosen to fit within the broader CSDs, by the applicability and the multiple interest groups. The existing 802.3cg broad market potential speaks to 10 Mb/s single-pair Ethernet in industrial, automotive, and intra-system applications, and the number and breadth of individuals and companies which have expressed interest in the standard. These have voted to approve adding the objective for P2P.

Cl **147** *SC* **147.3.8.1** *P* **186** *L* **1** # 299

Jones, Peter Cisco Systems

Comment Type **E** *Comment Status* **A** *EZ*

missing clause header for state machines

SuggestedRemedy

Add clause "147.3.8.1.2 State diagrams"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add sub-clause header "147.3.8.1.3 State diagrams", after end of sub-clause "147.3.8.1.2 Timer" to page 185/24, and anchor Figure 147-10 there.

Cl **147** *SC* **147.3.8.1** *P* **186** *L* **2** # 300

Jones, Peter — Cisco Systems

Comment Type **TR** *Comment Status* **A** *PCS*

Entry conditions to INIT state should be AN enabled and link is bad or multidrop disabled (see 147.3.9 Optional support for PCS status generation)
Also - sense seems to be wrong, HB only used when AN enabled, link not good and not multidrop (not really required since AN not supported on multidrop)

SuggestedRemedy

Change INIT entry condition to "pcs_reset * mr_autoneg_enable * !an_link_good"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Insert two paragraphs at the end of sub-clause 147.3.8.1 (page 184/24) as follows:

"A heartbeat is only sent when the PHY is not in the multidrop mode and Auto-Negotiation has achieved a good link. The state diagram in Figure 147-10 is held in the INIT state when in the multidrop mode, Auto-Negotiation is not enabled, or Auto-Negotiation has not achieved a good link.

When the PHY is not in multidrop mode and a BEACON is received either over the MII or from the line, the state diagram in Figure 147-10 enters the DISABLE_HB state and stays there until PCS Reset is asserted, multidrop mode is enabled, Auto-Negotiation is disabled, or Auto-Negotiation stops reporting a good link."

Cl **147** *SC* **147.3.8.1** *P* **186** *L* **4** # 329

Brandt, David — Rockwell Automation

Comment Type **T** *Comment Status* **A** *PCS*

147.3.8 indicates: "If Clause 98 Auto-Negotiation functions are implemented and enabled ... Otherwise all of the HB functions shall be disabled."

SuggestedRemedy

Add "+ !mr_autoneg_enable" to equation for entering state DISABLE_HB, and remove it from equation to enter state INIT.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved by comment #300. The resolution to comment #300 is:

ACCEPT IN PRINCIPLE.
Insert two paragraphs at the end of sub-clause 147.3.8.1 (page 184/24) as follows:

"A heartbeat is only sent when the PHY is not in the multidrop mode and Auto-Negotiation has achieved a good link. The state diagram in Figure 147-10 is held in the INIT state when in the multidrop mode, Auto-Negotiation is not enabled, or Auto-Negotiation has not achieved a good link.

When the PHY is not in multidrop mode and a BEACON is received either over the MII or from the line, the state diagram in Figure 147-10 enters the DISABLE_HB state and stays there until PCS Reset is asserted, multidrop mode is enabled, Auto-Negotiation is disabled, or Auto-Negotiation stops reporting a good link."

Cl **147** *SC* **147.3.8.1** *P* **186** *L* **5** # 301

Jones, Peter — Cisco Systems

Comment Type **TR** *Comment Status* **A** *PCS*

Entry condition to DISABLE_HP state should be AN disable or an_link_good or multidrop enabled (see 147.3.9 Optional support for PCS status generation))
Also - sense seems to be wrong, HB only used when AN enabled, link not good and not multidrop (not really required since AN not supported on multidrop)

SuggestedRemedy

Change DISABLE_HP entry condition to "!pcs_reset + !mr_autoneg_enable + an_link_good + multidrop * (rx_cmd = BEACON + tx_cmd = BEACON)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved by comment #300. The resolution to comment #300 is:

ACCEPT IN PRINCIPLE.
Insert two paragraphs at the end of sub-clause 147.3.8.1 (page 184/24) as follows:

"A heartbeat is only sent when the PHY is not in the multidrop mode and Auto-Negotiation has achieved a good link. The state diagram in Figure 147-10 is held in the INIT state when in the multidrop mode, Auto-Negotiation is not enabled, or Auto-Negotiation has not achieved a good link.

When the PHY is not in multidrop mode and a BEACON is received either over the MII or from the line, the state diagram in Figure 147-10 enters the DISABLE_HB state and stays there until PCS Reset is asserted, multidrop mode is enabled, Auto-Negotiation is disabled, or Auto-Negotiation stops reporting a good link."

Cl **147** *SC* **147.3.8.1** *P* **186** *L* **10** # 328

Brandt, David — Rockwell Automation

Comment Type **T** *Comment Status* **A** *PCS*

147.3.8 indicates: "The HB generation is disabled when the PHY is configured for operation over a mixing-segment network or
a PLCA BEACON indication is detected on the line."

Figure 147-10, DISABLE_HB is only entered on BEACON detection, and not on detection of mixing-segment.

SuggestedRemedy

Add "+ multidrop" to equation for entering state DISABLE_HB.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved by comment #300. The resolution to comment #300 is:

ACCEPT IN PRINCIPLE.
Insert two paragraphs at the end of sub-clause 147.3.8.1 (page 184/24) as follows:

"A heartbeat is only sent when the PHY is not in the multidrop mode and Auto-Negotiation has achieved a good link. The state diagram in Figure 147-10 is held in the INIT state when in the multidrop mode, Auto-Negotiation is not enabled, or Auto-Negotiation has not achieved a good link.

When the PHY is not in multidrop mode and a BEACON is received either over the MII or from the line, the state diagram in Figure 147-10 enters the DISABLE_HB state and stays there until PCS Reset is asserted, multidrop mode is enabled, Auto-Negotiation is disabled, or Auto-Negotiation stops reporting a good link."

Cl **147** *SC* **147.3.8.1** *P* **186** *L* **30** # 331

Brandt, David — Rockwell Automation

Comment Type **T** *Comment Status* **A** *Editorial*

Variable hb_cmd is set to HEARTBEAT in the rightmost TWAIT_TX, and it is never set to NONE again, resulting in continuous slave HEARTBEATs once the first master HEARTBEAT is heard.

SuggestedRemedy

Set exit condition from rightmost TWAIT_TX to go to WAIT_HB.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change the arrow going from "TWAIT_TX" on the right-side to "WAIT_RX" to go to "WAIT_HB" instead.
Note: this is an editorial mistake (implementation of d2.1 comments) that is being fixed (see http://www.ieee802.org/3/cg/public/Nov2018/Clause%20147%20-%20Link%20Status%20for%20AN_changesonly.pdf for more details)

Cl **147** *SC* **147.3.8.1** *P* **186** *L* **36** # 330

Brandt, David — Rockwell Automation

Comment Type **T** *Comment Status* **A** *Editorial*

Two states have the same name TWAIT_TX.

SuggestedRemedy

Rename the left state as TWAIT_TX1 and the right state as TWAIT_TX2.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
- Rename the left state from "TWAIT_TX" to "WAIT_TX"
- Rename the right state from "TWAIT_TX" to "REPLY_HB"
Note: these are editorial mistakes (implementation of d2.1 comments) that are being fixed (see http://www.ieee802.org/3/cg/public/Nov2018/Clause%20147%20-%20Link%20Status%20for%20AN_changesonly.pdf for more details)

Cl **147** *SC* **147.3.8.1** *P* **186** *L* **37** # 332

Brandt, David — Rockwell Automation

Comment Type **T** *Comment Status* **D** *Big Ticket Item - Multidrop*

Slave spaces HEARTBEATs too close together.

SuggestedRemedy

Change rightmost state TWAIT_TX to use hb_timer, both inside the state and for the exit condition.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **147** *SC* **147.3.8.1.1** *P* **184** *L* **28** # 71

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

See 147.3.2.2

SuggestedRemedy

See 147.3.2.2. (add a dot to be aligned with the following definitions in the same Clause), see also page 187, line 36.

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.3.8.1.1** *P* **184** *L* **35** # 72

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*

1.2279.10

SuggestedRemedy

1.2297.10 (this is the 10BASE-T1S PMA control register)

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.3.8.2.1** *P* **187** *L* **52** # 335

Brandt, David — Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

Variable cnt_l does not count HB, but counts number of times that link_hold_timer expires without HB or received packet.

SuggestedRemedy

Change from: "Counter of HB"
To: "Count of link_hold_timer expiration periods without HB or receive packet"

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.3.8.2.1** *P* **187** *L* **53** # 339

Brandt, David — Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

Variables cnt_l and cnt_h are constrained in value by ACTIVE_CNT and INACTIVE_CNT.

SuggestedRemedy

Change cnt_l from: "Values: integer number between 0 and ACTIVE_CNT".

Change cnt_h from: "Values: integer number between 0 and INACTIVE_CNT".

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.3.8.2.1** *P* **188** *L* **2** # 333

Brandt, David — Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

Variable cnt_h increments with both HB and receive packets.

SuggestedRemedy

Change from: "Counter of HB"
To: "Counter of HBs and receive packets"

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.3.8.2.2** *P* **187** *L* **8** # 340

Brandt, David — Rockwell Automation

Comment Type **T** *Comment Status* **A** *EZ*

Variable cnt_l can never exceed INACTIVE_CNT. Variable cnt_h can never exceed ACTIVE_CNT.

SuggestedRemedy

Change exit condition of COUNT_UP and COUNT_DOWN to be equal and not greater than or equal.

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.3.8.2.2** *P* **188** *L* **17** # 334

Brandt, David — Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

Variable ACTIVE_CNT sets threshold for both HB and receive packets.

SuggestedRemedy

Change from: "Number of HB"
To: "Number of combined HBs and receive packets"

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.3.8.2.2** *P* **188** *L* **20** # 338

Brandt, David — Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

Both ACTIVE_CNT and INACTIVE_CNT show a value that should have both a limit and a default.

SuggestedRemedy

Change both ACTIVE_CNT and INACTIVE_CNT show: "Value: integer number between 0 and 7." and add "Default value: 2" for ACTIVE_CNT and "Default value: 5" for INACTIVE_CNT".

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.3.8.2.2** *P* **188** *L* **22** # 336

Brandt, David — Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

Variable INACTIVE_CNT does set threshold for count of HBs, but sets threshold for number of times that link_hold_timer expires without HB or received packet.

SuggestedRemedy

Change from: "Number of HB"
To: "Number of link_hold_timer expirations without HB or receive packets"

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.3.8.2.3** *P* **188** *L* **28** # 337

Brandt, David — Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

Description of Link_hold_timer is inaccurate compared to state diagram.

SuggestedRemedy

Change from: "Time after which the count of HB is updated."
To: "Timer used to check inactivity."

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.3.8.3** *P* **188** *L* **33** # 248

Kim, Yong — NIO

Comment Type **TR** *Comment Status* **A** *EZ*

"In compliance to 148.4.4.2.1, when PLCA RS operations are supported and enabled, the PHY shall notify the RS of a received BEACON indication by the means of MII interface as specified in 22.2.2.8." This could be read that 10BASE-T1S PHY support of PLCA related signals are NOT optional. If this is the intent, PLEASE explicitly state it (probably somewhere near 147.1) If not, then adjust the text to reflect optional nature of PLCA RS support.

SuggestedRemedy

Please consider and do one of the two choices.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Replace,
"when PLCA RS operations"

with,
"when optional PLCA RS operations"

Cl **147** *SC* **147.3.8.4** *P* **188** *L* **42** # 249

Kim, Yong — NIO

Comment Type **TR** *Comment Status* **A** *EZ*

"In compliance to 148.4.4.2.2, when PLCA RS operations are supported and enabled, the PHY shall notify the RS of a received COMMIT indication by the means of MII interface as specified in 22.2.2.8." This could be read that 10BASE-T1S PHY support of PLCA related signals are NOT optinoal. If this is the intent, PLEASE explicltluy state it (probably somewhere near 147.1) If not, then adjust the text to reflect optional nature of PLCA RS support.

SuggestedRemedy

Please consider and do one of the two choices. Could be considered together with my comment to 147.3.8.3

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Replace,
"when PLCA RS operations"

with,
"when optional PLCA RS operations"

Cl **147** *SC* **147.3.9.1** *P* **187** *L* **2** # 302

Jones, Peter — Cisco Systems

Comment Type **TR** *Comment Status* **A** *PCS*

Entry conditions to INACTIVE state should be AN enabled and link not good, multidrop disabled is covered by AN enabled (see 147.3.9 Optional support for PCS status generation).

SuggestedRemedy

Change INACTIVE entry condition to "pcs_reset + (mr_autoneg_enable * !an_link_good")

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved by comment #300. The resolution to comment #300 is:

ACCEPT IN PRINCIPLE.
Insert two paragraphs at the end of sub-clause 147.3.8.1 (page 184/24) as follows:

"A heartbeat is only sent when the PHY is not in the multidrop mode and Auto-Negotiation has achieved a good link. The state diagram in Figure 147-10 is held in the INIT state when in the multidrop mode, Auto-Negotiation is not enabled, or Auto-Negotiation has not achieved a good link.

When the PHY is not in multidrop mode and a BEACON is received either over the MII or from the line, the state diagram in Figure 147-10 enters the DISABLE_HB state and stays there until PCS Reset is asserted, multidrop mode is enabled, Auto-Negotiation is disabled, or Auto-Negotiation stops reporting a good link."

Cl **147** *SC* **147.4** *P* **189** *L* **1** # 191

Griffiths, Scott — Rockwell Automation

Comment Type **E** *Comment Status* **A** *Editorial*

This section needs minor reorganization.

SuggestedRemedy

Move the paragraph that starts with "The PMA couples" to the beginning of the section. After "onto the 10BASE-T1S physical medium" add ", as shown in Figure 147-12." Move the sentence about the PMA Reset not being shown to someplace more sensible, pehaps after the textual refence to Figure 147-12.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accommodated by comments #190.
Proposed resolution of #190 is:
>>>>
PROPOSED ACCEPT IN PRINCIPLE.
Move all text at page 188/31-48 (effectively the headers and content of sub-clauses "147.3.8.3 Generation of BEACON indication" and "147.3.8.4 Generation of COMMIT indication") before sub-clause "147.3.8 Optional support for PCS status generation", turning those into "147.3.7.1 Generation of BEACON indication" and "147.3.7.2 Generation of COMMIT indication"
<<<<

Cl **147** *SC* **147.4** *P* **189** *L* **29** # 138

Griffiths, Scott — Rockwell Automation

Comment Type **E** *Comment Status* **D** *Editorial*

[EZ] The text "from medium employing DME. The interface between PMA" needs some smoothing.

SuggestedRemedy

Change "from medium employing DME. The interface between PMA" to "from a physical [or baseband] medium using DME signaling. The interface between the PMA" or something similar.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **147** *SC* **147.4.3** *P* **190** *L* **44** # 277

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *PMA*

Full-duplex operation over one pair should have echo-cancellation (cancel TX from RX) onto/from media. I cannot find any reference to this function. 100BASE-T1 std, in 96.4.3 has text of "PMA Receive has Signal Equalization and Echo Cancellation sub-functions. These sub-functions are used to determine the receiver performance and generate loc_rcvr_status..."

SuggestedRemedy

Please provide a reference to echo cancellation function. And it would be good to have a reference to that function in CL 147.4.3 introductory paragraph (not there now).

Response *Response Status* **W**

REJECT.

Comment is out of scope (on unchanged text) and does not change requirements or address a problem, only adds informative tutorial text on receiver design.

Additionally, while reference to echo cancellation occurs in other 802.3 clauses, calling out such a signal processing function in the standard opens the reader to specifying parameters of this function which are not needed for interoperability. Further, the additional text would be with regards to an implementation description rather than interoperability.

Cl **147** *SC* **147.4.4.1** *P* **191** *L* **13** # 303

Jones, Peter Cisco Systems

Comment Type **TR** *Comment Status* **A** *EZ*

Entry conditions to LINK_UP should have link_control TRUE, otherwise "all PCS functions are switched off and no data can be sent or received".

SuggestedRemedy

Change entry conditions to pma_reset + link_control

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Accommodated by comments #139.
Proposed resolution of #139 is:
>>>>
PROPOSED ACCEPT.
Swap the labels of the two states.
<<<<

Cl **147** *SC* **147.4.4.1** *P* **191** *L* **18** # 304

Jones, Peter Cisco Systems

Comment Type **TR** *Comment Status* **A** *EZ*

Entry conditions to LINK_DOWN should have pcs_status FALSE or loc_rev_status FALSE

SuggestedRemedy

Change entry conditions to !pcs_status + !loc_rev_status

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Accommodated by comments #139.
Proposed resolution of #139 is:
>>>>
PROPOSED ACCEPT.
Swap the labels of the two states.
<<<<

Cl **147** *SC* **147.4.4.2** *P* **191** *L* **42** # 136

Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **A** *PMA*

[T1S SERVICE PRIMATIVES] The PMA_LINK.indication primitive goes to the Technology Dependent Interface. It is just called link_status across the PMA service interface.

SuggestedRemedy

Remove "via the PMA_LINK.indication primitive"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "The link_status parameter set by PMA Link Monitor and passed to the PCS via the PMA_LINK.indication primitive." at 191/42-43 to "The link_status parameter set by PMA Link Monitor and communicated to the Technology Dependent Interface through the PMA_LINK.indication primitive."

Cl **147** *SC* **147.5.3** *P* **193** *L* **3** # 140

Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

[EZ] Extra unnecessary comma

SuggestedRemedy

Remove comma after "Figure 147-15"

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.5.3** *P* **193** *L* **34** # 124

Beruto, Piergiorgio — Canova Tech Srl

Comment Type **E** *Comment Status* **A** *PMA Electrical*

The following sentence doesn't make sense for T1S PHY:
"For a MASTER PHY this is the output of
the (divided) clock oscillator, for the SLAVE PHY this is the recovered clock."

In 10BASE-T1S There's no concept of master/slave clock as it's not a clock looped system.

SuggestedRemedy

Remove the following sentence:
"For a MASTER PHY this is the output of the (divided) clock oscillator, for the SLAVE PHY this is the recovered clock."

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.5.4.1** *P* **193** *L* **52** # 350

Brandt, David — Rockwell Automation

Comment Type **T** *Comment Status* **D** *PMA Electrical*

Market potential would benefit by 10BASE-T1S having an option increased voltage. Applications in elevators, lighting, and industrial automation have use for increased reach, higher node count, and improved immunity.

Efforts were made to determine a consensus position in the Bangkok meeting. The request for 2.4 Vpp was problematic, most likely leading to either multiple PHY chips or higher cost due to increased power supply voltage. It is believed the lower voltage can bring advantage without the same drawbacks. If adequate consensus cannot be established by the time of the meeting, the comment will be withdrawn.

SuggestedRemedy

Add an optional 1.5 Vpp differential transmit level as an engineered option for both multidrop. Proposed changes are described within: brandt_cg_01_0119.pdf.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **147** *SC* **147.5.4.3** *P* **194** *L* **28** # 123

Beruto, Piergiorgio — Canova Tech Srl

Comment Type **E** *Comment Status* **A** *EZ*

"maximum jitter at the transmitter side shall be less than 5 ns symbol-to-symbol jitter", the last "jitter" seems to be a needless repetition.

SuggestedRemedy

Remove the last "jitter" word in the sentence before the full stop.

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.5.4.6** *P* **195** *L* **35** # 141

Griffiths, Scott — Rockwell Automation

Comment Type **E** *Comment Status* **A** *Editorial*

Alien crosstalk noise rejection relates to the receiver. This subcluase should be moved to the end of 147.5.5. This is where it is located for T1L, 100BASE-T1, and 1000BASE-T1.

SuggestedRemedy

Move 147.5.4.6 to the end of 147.5.5.

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.5.4.8** *P* **196** *L* **6** # 143

Griffiths, Scott — Rockwell Automation

Comment Type **E** *Comment Status* **A** *Editorial*

The PMA Local Loopback subclause should be under the PMA electrical specifications, not just the transmitter electrical specifications.

SuggestedRemedy

Move 147.5.4.8 to 147.6.

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.5.5.1** *P* **196** *L* **26** # 250
Kim, Yong NIO

Comment Type **ER** *Comment Status* **R** *Editorial*

sub clause title does not match the content.

SuggestedRemedy

Receiver characteristics, or receive bit error, or something equivalent that convey the sense of this text content

Response *Response Status* **W**

REJECT.

This is the title that IEEE Std 802.3-2018 uses for this content on BASE-T and BASE-T1 PHY clauses (e.g., clauses 14.3.1.3.2, 23.5.1.3.2, 32.6.1.3.4, 40.6.1.3.2, 55.5.4.1, 96.5.5.1, 97.5.4.1, 113.5.4.1, and 126.5.4.1).

Cl **147** *SC* **147.5.5.1** *P* **196** *L* **30** # 276
Kim, Yong NIO

Comment Type **T** *Comment Status* **A** *PMA Electrical*

"and have passed through a link segment specified in 147.6.1 shall be received with a Bit Error Ratio (BER) of less than 10-10, and sent to the MII" does not have collision-free (for HD) condition.

SuggestedRemedy

Add "collision free" context, if appropriate.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace, "and sent to the MII."

with, "and sent to the MII during normal data transmission."

On page 196, line 29, replace, "and have passed through a link segment specified in 147.6.1"

with "and have passed through a link segment specified in 147.7 or a mixing segment specified in 148.8"

Cl **147** *SC* **147.5.5.1** *P* **196** *L* **31** # 251
Kim, Yong NIO

Comment Type **ER** *Comment Status* **A** *PMA Electrical*

Text makes little sense "This specification can be verified by a frame error ratio less than 7.8 10-7 for 800 octet frames with minimum IPG or greater than 220 octet IPG."

SuggestedRemedy

Change to "..the minimum IPG or greater, up to 220 octet IPG". Or if the suggestion is not technically correct, correct it before implementing.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Delete "with minimum IPG or greater than 220 octet IPG"

Cl **147** *SC* **147.6.1** *P* **196** *L* **41** # 252
Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *AutoNeg*

"Auto-Negotiation may be performed as part of the initial set-up of the link and allows negotiation of the duplex mode of operation." and AN for half-duplex P2P related text should be deleted, IFF, sucn mode is deemed to not meet broad market potential (per my other comment)

SuggestedRemedy

Please conditionally (delete P2P HD) consider deleting the referenced sentence.

Response *Response Status* **W**

REJECT.

Comment #210 was rejected. The resolution to comment #210 is:

Commenter is incorrect, a number of individuals with a broad spectrum of affiliations agreed on an objective for this. The Criteria for Standards Development (e.g., broad market potential) apply to the entire standard:
====
Each proposed IEEE 802 LMSC standard shall have broad market potential. At a minimum, address the following areas:
a) Broad sets of applicability.
B) Multiple vendors and numerous users.
====
As written (and commonly) they do not mention objective by objective, or else they would have to be modified every time an objective is changed. The objectives are chosen to fit within the broader CSDs, by the applicability and the multiple interest groups. The existing 802.3cg broad market potential speaks to 10 Mb/s single-pair Ethernet in industrial, automotive, and intra-system applications, and the number and breadth of individuals and companies which have expressed interest in the standard. These have voted to approve adding the objective for P2P.

Cl **147** *SC* **147.6.1** *P* **196** *L* **45** # 254
Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *AutoNeg*

"If both PHYs advertise the
ability to support 10BASE-T1S half duplex communication during Auto-Negotiation, then 10BASE-T1S
half duplex communication shall be enabled for both PHYs by the management entity, otherwise it shall be
disabled for both PHYs." This statement contradicts 98B.4 priority resolution.

SuggestedRemedy

Please correct whichever is incorrect. And also, the referenced text contain untestable shall -- acting on disabled.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

In 147.6.1,
Replace, "If both PHYs advertise the ability to support 10BASE-T1S half duplex communication during Auto-Negotiation, then 10BASE-T1S half duplex communication shall be enabled for both PHYs by the management entity, otherwise it shall be disabled for both PHYs."

with, "When Auto-Negotiation is used, Technology Ability Field bit A1 shall contain a one if the PHY is supporting and advertising 10BASE-T1S full duplex ability and it shall contain a zero if 10BASE-T1S full duplex communication is not supported or not advertised. See 98B.4 for priority resolution."

Cl **147** *SC* **147.6.1** *P* **196** *L* **48** # 144
Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **A** *EEE*

[EZ] T1S does not support EEE; it is inherently energy efficient.

SuggestedRemedy

Remove the text starting with "Bit A26".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Accomodated by response to comment 73.

Cl **147** *SC* **147.6.1** *P* **196** *L* **48** # 73
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EEE*

For 10BASE-T1S there is no need for EEE, as this is inherently given.

SuggestedRemedy

Please remove last sentence in Clause 147.6.1.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
remove last sentence in Clause 147.6.1. and
change A26 to "reserved" in Table 96B-1.

Cl **147** *SC* **147.8** *P* **197** *L* **52** # 145
Griffiths, Scott Rockwell Automation

Comment Type **E** *Comment Status* **D** *Editorial*

[EZ] Presumably, (1.4.332) is a reference to the mixing segment definition, but the reference is incorrect.

SuggestedRemedy

Change the reference to 1.4.277 and highlight it as a cross-reference.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **147** *SC* **147.8** *P* **198** *L* **2** # 255
Kim, Yong NIO

Comment Type **E** *Comment Status* **A** *Mixing Segment*

".in this sub-clause are met" is ambiguous. Just say "in 147.8 are met".

SuggestedRemedy

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace, "this subclause"

with, "147.8"

Cl **147** *SC* **147.8** *P* **198** *L* **3** # 74

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *Mixing Segment*

"When the mixing segment is line powered, terminations should include in-series DC blocking capacitors." Likely these DC blocking capacitors are also required, if there is no power on a mixing segment or a link segment. Depending on a PHY IC implementation there could be different absolute DC levels on the line driver outputs (only the differential voltage is defined, not the common mode driver output voltage). Not having series capacitors can lead to unintended DC currents between the PHYs.

SuggestedRemedy

Change to: Terminations should include in-series DC blocking capacitors.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Delete "When the mixing segment is line powered, terminations should include in-series DC blocking capacitors."

at page 198 lines 3-4

Cl **147** *SC* **147.9.1** *P* **198** *L* **43** # 315

Horrmeyer, Bernd — Phoenix Contact

Comment Type **T** *Comment Status* **A** *Late*

A connector is: "device providing connection and disconnection to a suitable mating component". See IEV 581-26-01. A lot of devices will not have a MDI-connector. They will use another kind of interface.

SuggestedRemedy

The mechanical interface to the balanced cabling is a 3-pin connector (BI_DA+, BI_DA-, and optional SHIELD) or alternatively a 2-pin connector with an optional additional mechanical shield connection or any other interface which conforms to the link segment specification defined in 146.7.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

On page 198, line 48, change from,

"Specific systems or applications can use connectors, in addition to those listed below, that support the link segment specification defined in 147.7 or the mixing segment specification defined in 147.8."

to,

"Specific systems or applications can use connectors or terminals, in addition to those listed below, that support the link segment specification defined in 147.7 or the mixing segment specification defined in 147.8."

Cl **147** *SC* **147.9.1** *P* **198** *L* **48** # 257

Kim, Yong — NIO

Comment Type **TR** *Comment Status* **A** *MDI*

This says "this section defines the MDI for 10BASE-T1S", but it does NOT. MDI is a *mandatory* "shall"-stated Medium Dependant Interface for 10BASE-TSL. Tjhis section does NOT specify MDI. It provides (abeit useful) suggestions and diagrams but no specification. Please decide whether this project has an MDI (or set of MDIs). And if MDI is indeeed specified, please change the CL title to include MDI (currently just ....PMA)

SuggestedRemedy

Either specify "the MDI for 10BASE-T1S" or not, and make downstream consequential changes. If not specified, then perhaps use "MDI considerations" not "MDI specifications"

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Text commenter refers to does not exist.

Insert new paragraph in 147.9 to align with 146.8 per comment 231:

"This subclause describes connectors which may be used at the MDI. It also specifies electrical requirements, including fault tolerance, at the MDI."

Cl **147** *SC* **147.9.1** *P* **198** *L* **48** # 256

Kim, Yong — NIO

Comment Type **E** *Comment Status* **R** *MDI*

".can." -- shouldn't it be ".could."?

SuggestedRemedy

Response *Response Status* **C**

REJECT.
The word "can" is the correct one to indicate that the possible use of other connectors subject to specification. Moreover "can be used" shows up 193 times in IEEE Std 802.3-2018, while "could be used" shows up only once, in connection with a test pattern.

Cl **147** *SC* **147.9.1** *P* **198** *L* **51** # 279

Bains, Amrik Cisco Systems

Comment Type **TR** *Comment Status* **A** *MDI*

IEC 63171-1 connector do not support 18AWG wire as specified. Without 18AWG support installed single pair cabling can not be used and require different switch/end devices compared to 23 AWG to 26 AWG
This comment applies to 146.8.1, page 153, line 14

SuggestedRemedy

Change the connector spec to include 18AWG 26 AWG support.

This may require liason letter IEC 63171-1 requesting for support 18 AWG to 26 AWG support

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add 146.8.1 MDI connectors: Under paragraph starting Connectors…. “These connectors should support link segment DCR characteristics for 18AWG to 26AWG in Table 146B-1.”
Add 147.9.1 MDI connectors: These connectors should support link segment DCR characteristics for 18AWG to 26AWG in Table 146B-1.
NOTE: Add 26 AWG to table 146B-1.

Cl **147** *SC* **147.9.1** *P* **198** *L* **51** # 281

Bains, Amrik Cisco Systems

Comment Type **TR** *Comment Status* **R** *MDI*

MICE1/2 type switches/devices use "stacked/ganged" connectors, e.g. 2x1, 2x2, 2x4, 2x6 etc. Current specs don't address these configurations

SuggestedRemedy

For high port density switches, it is critical to provide stacked connector options as well surface mount connectrs

This may require liason letter requesting IEC 63171-1 to support stacked and surface mountable connectors

Response *Response Status* **C**

REJECT.
Insufficient information for a remedy.

Cl **147** *SC* **147.9.1** *P* **198** *L* **51** # 280

Bains, Amrik Cisco Systems

Comment Type **TR** *Comment Status* **A** *MDI*

IEC 63171-1 does not support MICE 2 - This leaves many applications unsupported in light Industrial segment (IOT) and Enterprise use cases. There is no interoperability between IEC 63171-1 and IEC 61076-2 for MICE 1 and MICE2

This comment applies to 146.8.1, page 153, line 14

SuggestedRemedy

Change the connector spec to include MICE 1 and MICE2 with Intermateability interface

This may require liason letter requesting IEC 63171-1 to support Intermateability interface for MICE1/2

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Replace text for Clause 146.8.1 paragraph starting connectors……:

Connectors meeting the requirements of IEC 63171-1 or IEC 61076-3-125 may be used as the mechanical interface to the balanced cabling. The plug connector is used on the balanced cabling and the MDI jack connector on the PHY. The IEC 63171-1 plug and jack are depicted (for informational use only) in Figure 146-26 and Figure 146-27 respectively and the mating interface is depicted in Figure 146-30. The IEC 61076-3-125 plug and jack are depicted (for informational use only) in Figure 146-28 and Figure 146-29 respectively and the mating interface is depicted in Figure 146-31. The assignment of PMA signals to connector contacts for PHYs are given in Table xx. These two connectors may be used, with adaptations if needed, for electromagnetic classifications for the link segment given in Table 146–7.

Replace text Clause 147.9.1 paragraph starting connectors....

Connectors meeting the requirements of IEC 63171-1 or IEC 61076-3-125 may be used as the mechanical interface to the balanced cabling. The plug connector is used on the balanced cabling and the MDI jack connector on the PHY. The IEC 63171-1 plug and jack are depicted (for informational use only) in Figure 147-21 and Figure 147-22 respectively and the mating interface is depicted in Figure 147-25. The IEC 61076-3-125 plug and jack are depicted (for informational use only) in Figure 147-23 and Figure 147-24 respectively and the mating interface is depicted in Figure 147-26. The assignment of PMA signals to connector contacts for PHYs are given in Table xx.

See rationale in bains_3cg_01e_0119.pdf

Cl **147** *SC* **147.9.1** *P* **198** *L* **51** # 316

Horrmeyer, Bernd — Phoenix Contact

Comment Type **T** *Comment Status* **R** *Late*

Redundant information shall be avoided

SuggestedRemedy

Delete figures 147-21 to 26 and refer in the text to the figures in 146.8.1

Response *Response Status* **C**

REJECT.
Clauses of the two PHYs should be independent and separately reference their own figures to be complete.

Cl **147** *SC* **147.9.1** *P* **198** *L* **51** # 313

Jones, Chad — Cisco

Comment Type **TR** *Comment Status* **A** *MDI*

IEC 63171-1 does not support MICE2. Objective 8 states: Support 10 Mb/s single-pair Ethernet operation in industrial environments. Lack of support for MICE2 is at odds with this objective.

SuggestedRemedy

the connector must support MICE1 and MICE2. make it so.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Accomodated by comment 280.

Cl **147** *SC* **147.9.1** *P* **199** *L* **37** # 98

Fritsche, Matthias — HARTING Technology

Comment Type **E** *Comment Status* **R** *MDI*

The figures 147-23 and 146-24 show the IP20 version of the "Industrial style" MDI connector according to IEC 61076-3-125. The information about the waterproof IP65/67 "Industrial style" SPE MDI connector versions are missing and have to be added.

SuggestedRemedy

Please insert the other M2I2C2E2 and M3I3C3E3 connector versions and add the table "Connector styles" from IEC 61076-3-125. For more details take a look at the Word file with the relevant pages from CDV IEC 61076-3-12.

Response *Response Status* **C**

REJECT.
The purpose of the figures in IEEE Std 802.3 is informational on the configuration of the electrical mating interfaces and pinout, not as a substitute for the IEC specification or a definitive description of the environmental housings. Showing all the connector styles would be inappropriate and potentially cause confusion with the IEC specification, which is supposed to be definitive.

Cl **147** *SC* **147.9.1** *P* **199** *L* **51** # 307

Jones, Peter — Cisco Systems

Comment Type **TR** *Comment Status* **R** *MDI*

Many MICE 2 systems currently being shipped make use of the ability to "stack" the faceplate connectors (e.g., 2x4 for 8 ports). The current MICE2/3 connector (IEC 61076-3-125) connector does not support this.
This is a barrier to broad SPE adoption.

SuggestedRemedy

Enable MICE 2 support in IEC 63171-1 connector.

Response *Response Status* **C**

REJECT.
Commenter provides insufficient information for a remedy.

Cl **147** *SC* **147.9.1** *P* **199** *L* **51** # 305

Jones, Peter — Cisco Systems

Comment Type **TR** *Comment Status* **A** *MDI*

IEC 63171-1 connector does not support 18AWG. 18AWG is required for both the building and industrial use cases.

SuggestedRemedy

Add editor's note re IEC 63171-1 lack of 18AWG support.
Send liaison to ISO/IEC and TIA TR-42 requesting support for 18AWG in current drafts of the single pair ethernet cabling recommendations and in the IEC 63171-1 connector.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accomodated by Comment 279. Resolution to comment 279 is:
ACCEPT IN PRINCIPLE.
Add 146.8.1 MDI connectors: Under paragraph starting Connectors…. “These connectors should support link segment DCR characteristics for 18AWG to 26AWG in Table 146B-1.”
Add 147.9.1 MDI connectors: These connectors should support link segment DCR characteristics for 18AWG to 26AWG in Table 146B-1.
NOTE: Add 26 AWG to table 146B-1.

Cl **147** *SC* **147.9.1** *P* **199** *L* **51** # 308

Jones, Peter — Cisco Systems

Comment Type **TR** *Comment Status* **A** *MDI*

Connecting a MICE 1 system to a MICE 2 system requires a specialized cable or adaptor. This is a barrier to broad SPE adoption.

SuggestedRemedy

Enable MICE 2 support in IEC 63171-1 connector.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accomodated by comment #280.

Cl **147** *SC* **147.9.1** *P* **199** *L* **51** # 306

Jones, Peter — Cisco Systems

Comment Type **TR** *Comment Status* **A** *MDI*

Many systems currently being shipped use the same mechanical interface for both MICE 1 and MICE 2.
IEC 63171-1 connector does not support MICE 2.
Without this support, 10SPE adoption with be significantly hindered.

SuggestedRemedy

Add editor's note re IEC 63171-1 lack of MICE 2 support.
Send liaisons to ISO/IEC and TIA TR-42 requesting support for MICE 2 in the IEC 63171-1 connector.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accomodated by comment 280.

Cl **147** *SC* **147.9.1** *P* **200** *L* **16** # 99

Fritsche, Matthias — HARTING Technology

Comment Type **T** *Comment Status* **A** *MDI*

Figure 147-25 and figure 146-26 show the pin numbering for the MDI connectors but we don't specify the function of the pins.

SuggestedRemedy

We should add a table to define the signals at pin 1 and pin 2 of the MDI connectors as follows:
pin 1 --> BI_DA+
pin 2 --> BI_DA-
For more details take a look at the Word file with the relevant pages from CDV IEC 61076-3-12.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add Table xx (see comment 280) with PMA to MDI pin assignments as follows:
pin 1 --> BI_DA+
pin 2 --> BI_DA-

Cl **147** *SC* **147.9.1** *P* **200** *L* **26** # 109

Shariff, Masood — CommScope

Comment Type **ER** *Comment Status* **A** *MDI*

Missing PIN 2 label

SuggestedRemedy

Label PIN 2 in Figure 147-25 for completeness and consitency with Figure 147-26. Also, the pdf does not show the full outline of the connector

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.9.1** *P* **200** *L* **26** # 110

Shariff, Masood CommScope

Comment Type **ER** *Comment Status* **A** *MDI*

Add polarity information to figure Figure 147-25

SuggestedRemedy

PIN	SIGNAL	POWER
1	BI_DA+	+
2	BI_DA-	-

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by comment#99
Resolution to comment #99 is:
ACCEPT IN PRINCIPLE.
Add Table xx (see comment 280) with PMA to MDI pin assignments as follows:
pin 1 --> BI_DA+
pin 2 --> BI_DA-

Cl **147** *SC* **147.9.1** *P* **200** *L* **43** # 111

Shariff, Masood CommScope

Comment Type **ER** *Comment Status* **A** *MDI*

Add polarity information to figure Figure 147-26

SuggestedRemedy

PIN	SIGNAL	POWER
1	BI_DA+	+
2	BI_DA-	-

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by comment#99
Resolution to comment #99 is:
ACCEPT IN PRINCIPLE.
Add Table xx (see comment 280) with PMA to MDI pin assignments as follows:
pin 1 --> BI_DA+
pin 2 --> BI_DA-

Cl **147** *SC* **147.9.2** *P* **156** *L* **39** # 296

Jones, Peter Cisco Systems

Comment Type **T** *Comment Status* **A** *Safety*

Include other applications

SuggestedRemedy

change "In industrial applications, all 10BASE-T1L cabling is expected to be routed" to "All 10BASE-T1S cabling is expected to be routed"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In clause 146.9.2, Change, "In industrial applications, all 10BASE-T1L cabling is expected to be routed.."

to "All 10BASE-T1L cabling is expected to be routed..."

In clause 147.10.2, delete, "In industrial applications, all 10BASE-T1S cabling is expected to be routed according to any applicable local, state or national standards considering all relevant safety requirements."

Insert, "All 10BASE-T1S cabling is expected to be routed according to any applicable local, state or national standards considering all relevant safety requirements." before the sentence that starts with, "In automotive applications,"

Cl **147** *SC* **147.9.3** *P* **201** *L* **38** # 319

Horrmeyer, Bernd Phoenix Contact

Comment Type **T** *Comment Status* **D** *Late*

Damage criteria for witstanding 60 V DC 1360mA is missing

SuggestedRemedy

Define the damage criteria for withstanding

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **147** *SC* **147.10** *P* **202** *L* **20** # 27

Huszak, Gergely — Kone

Comment Type **T** *Comment Status* **R** *Safety*

Single node failure on a multidrop segment may interfere with, or even prevent all communication there (between working stations)

SuggestedRemedy

Add an informative sentence to draw the implementer's attention to this fact.
Add: "If operation to specified limits cannot be maintained due to a fault, the faulty PHY should not drive the line, but should fail in such a way that it does not interfere with communication on the line by other PHYs."

Response *Response Status* **C**

REJECT.
Proposed text specifies implementation details which are not part of an interoperability standard.

Additionally, comment out of scope, on unchanged text and does not directly fix a specification requirement.

Cl **147** *SC* **147.10.1** *P* **202** *L* **24** # 102

Fritsche, Matthias — HARTING Technology

Comment Type **E** *Comment Status* **R** *Safety*

IEC 60950-1 is replaced by IEC 62368-1

SuggestedRemedy

Change "IEC 60950-1" to "IEC 62368-1 (former IEC 60950-1)"

Response *Response Status* **C**

REJECT.
Text says "IEC 60950-1, IEC 62368-1 or IEC 61010-1". IEC 62368-1 is not "former IEC 60950-1" as the commenter suggests, and 60950-1 may still be used for some time.

Cl **147** *SC* **147.10.2** *P* **250** *L* **39** # 311

Jones, Peter — Cisco Systems

Comment Type **T** *Comment Status* **A** *EZ*

Add other applications

SuggestedRemedy

change "In industrial applications, all 10BASE-T1S cabling is expected to be routed" to "in other applications, all 10BASE-T1S cabling is expected to be routed"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Note: The sentence in question is wrongly attributed to page 250, while it is in page 202.
Change "In industrial applications, all 10BASE-T1S cabling is expected" at 202/37-38 to "In other applications, all 10BASE-T1S cabling is expected"

Cl **147** *SC* **147.12.3** *P* **205** *L* **1** # 146

Griffiths, Scott — Rockwell Automation

Comment Type **T** *Comment Status* **A** *PICS*

Several major capabilities/options are missing.

SuggestedRemedy

Add the following major capabilities/options:
MII -- PHY associated with MII -- 147.1.1 -- O
PCS -- 10BASE-T1S PCS -- 147.3 -- M
PMA -- 10BASE-T1S PMA -- 147.4 -- M
*AN -- Auto-Negotiation -- 93 -- O
*FULL -- Full-duplex mode -- O
*AUTO -- Automotive environment installation -- O

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add the following major capabilities/options:
MII -- PHY associated with MII -- 147.1.1 -- O
PCS -- 10BASE-T1S PCS -- 147.3 -- M
PMA -- 10BASE-T1S PMA -- 147.4 -- M
AN -- Auto-Negotiation -- 98 -- O
FULL -- Full-duplex mode - O
Change *HALF Status from "O" to "M"

Cl **147** *SC* **147.12.4.6.2** *P* **210** *L* **15** # 147

Griffiths, Scott — Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

[EZ] Remove +/- symbol in the 5 ns jitter specification to match text.

SuggestedRemedy

Remove +/- symbol to match text.

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **Figure 147-12** *P* **189** *L* **2** # 195

Griffiths, Scott — Rockwell Automation

Comment Type **T** *Comment Status* **A** *AutoNeg*

[T1S PMA SERVICE PRIMATIVES] PMA_LINK.request and PMA_LINK.indication should go to the Technology Dependent Interface (this should be added to the figure). According to 97.4.1, link_status can also go to the PCS via the PMA service interface, but then it is not listed as PMA_LINK.indication; it just apperas as link_status. Also, the PMA should be sending PMA_CARRIER.indication (pma_crs) to the PCS, but this is not shown in the figure.

SuggestedRemedy

The figure should be modified according to the comment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Make the following changes to figure "Figure 147-12-PMA functional block diagram":
Add the new entity/interface "Technology Dependent Interface (optional)", similar to "Figure 147-2-10BASE-T1S PHY interfaces" with regards to looks (layout)
Route arrow with "PMA_LINK.request (link_control)" from TDI to "LINK MONITOR"
Route arrow with "PMA_LINK.indication (link_status)" from "LINK MONITOR" to TDI

Do the following changes to figure "Figure 147-2-10BASE-T1S PHY interfaces":
Change "PMA_LINK.request" to "PMA_LINK.request (link_control)"
Change "PMA_LINK.indication" to "PMA_LINK.indication (link_status)"

Editorial license to align treatment of primitive parameters in figures.

Editor's implementation note: Compare results to the content/looks of "Figure 40-14-PMA Reference diagram"

Cl **147** *SC* **Figure 147-12** *P* **189** *L* **2** # 137

Griffiths, Scott — Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

[EZ] The arrow out of PMA Transmit is going the wrong direction.

SuggestedRemedy

Fix the arrow to the right of PMA TRANSMIT so that is points towards BI_DA.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Remove arrow from the line that enters PMA TRANSMIT block from the right, but keep the bidirectional arrow on final segment (near BI_DA).

Cl **147** *SC* **Figure 147-14** *P* **191** *L* **12** # 139

Griffiths, Scott — Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

The labels "LINK_UP" and "LINK_DOWN" appear to be reversed.

SuggestedRemedy

Swap the labels of the two states.

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **Figure 147-19** *P* **195** *L* **43** # 142

Griffiths, Scott — Rockwell Automation

Comment Type **E** *Comment Status* **A** *PMA Electrical*

The text is clear that the noise should be injected at the MDI, but the figure is a little misleading because it appears that the injection point is not at the MDI.

SuggestedRemedy

Change the figure so that the noise source attaches at the MDI.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The figure indicates that the noise may be injected within 0.5m of the MDI. In practice, some length of cabling is needed, and the noise is calibrated to the noise level at the MDI. The text is being modified to reflect actual tests. Commenters may consider maintenance on similar text in other 802.3 clauses.

Change: "The test is performed with a noise source consisting of a signal generator with Gaussian distribution, bandwidth of 40 MHz, and magnitude of –101 dBm/Hz."
to: "The test is performed with a noise source such that noise with a Gaussian distribution, bandwidth of 40 MHz, and magnitude of –101 dBm/Hz is present at the MDI."

Delete: "The noise is added at the MDI of the DUT."

Cl **147** *SC* **Figure 147-2** *P* **169** *L* **9** # 192

Griffiths, Scott — Rockwell Automation

Comment Type **T** *Comment Status* **A** *AutoNeg*

[T1S PMA SERVICE PRIMATIVES] Add a link_status signal from the PMA to the PCS.

SuggestedRemedy

Add missing PMA service interface link_status signal.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "The link_status parameter set by PMA Link Monitor and passed to the PCS via the PMA_LINK.indication primitive." at page 191/42-44 to "The link_status parameter set by PMA Link Monitor and passed to the optional Technology Dependent Interface via the PMA_LINK.indication primitive."

Cl **147** *SC* **Figure 147-3** *P* **172** *L* **2** # 186

Griffiths, Scott — Rockwell Automation

Comment Type **T** *Comment Status* **A** *AutoNeg*

link_control should be generated by the PMA.

SuggestedRemedy

Remove link_control from the PCS reference diagram.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
1. Change Figure 147-3 to show link_control coming from the Technology Dependent Interface.
2. Change "is generated by management." at page 176/48 to "is generated by the Auto-Negotiation function. When Auto-Negotiation is not present or enabled, link_control has a default value of TRUE, and may be provided by implementation-dependent functionality."

Rationale: The link_control is not generated by the PMA, link_status is. The link_control comes from the Technology Dependent Interface.

Cl **147** *SC* **Figure 147-3** *P* **172** *L* **2** # 193

Griffiths, Scott — Rockwell Automation

Comment Type **T** *Comment Status* **D** *AutoNeg*

[T1S PMA SERVICE PRIMATIVES] The link_control signal should not come from the management interface, but from the PMA. Also, probably link_status is meant instead of link_control?

SuggestedRemedy

Rename link_control to link_status, and reroute the signal from MANAGEMENT to the PMA service interface. Indicate where the MII and PMA service interfaces are, as in Figure 146-3.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **148** *SC* **148** *P* **213** *L* **1** # 322

Thompson, Geoff GraCaSI S.A.

Comment Type **TR** *Comment Status* **R** *PLCA*

10 Mb/s half duplex Ethernet offers the lowest level of performance in the market success Ethernet family (ignoring 1BASE5 which was not a market success). 802.3 and the networking market have developed successful improved performance variations of Ethernet over the years. Each of these improvements was judged before the project was authorized to meet the CSD or its predecessor, the Five Criteria. There has never been a project approved in 802.3 for the performance space between 10M CSMA/CD and either 10M Full Duplex or 100M CSMA/CD. The addition of a new access method to "improve" our worst performer was done for this project with no mention of this major addition to the scope and features of this project with no mention of it whatsoever in the project paperwork (PAR, CSD original Project Objectives). Further, the addition of PLCA to the draft clearly constitutes a new medium access control (MAC) protocol which overrides the shared media access method and the basic peer nature of Ethernet thus, the mechanism for it belongs in the Media Access Control (MAC) sublayer according to 802 tradition and to IEEE 802 Overview and Architecture. Further, the non-peer nature of PLCA is specifically contrary to the 802 Overview and Architecture (Ref: Std 802 4.1 para. 6) and thus violates the Compatibility criteria of the CSD. It is clear that when the project was started there either was no anticipated requirement for a new access method or the addition of a new access method was sandbagged, presumably because it could then be added to the project without being subjected to the rigors of the CSD examination. Standardized 10 Mb/s CSMA/CD has proved itself adequate for hundreds of millions of installations. Where it is not adequate the legitimate 802 process and the market have chosen full duplex and/or higher speed is the appropriate path within the standard for higher performance.

SuggestedRemedy

Bring the project back into the bounds of the PAR scope and into compliance with 802 and the layer model by removing clause 148 and all other changes in the draft supporting PLCA elsewhere in the draft. I believe that this includes removing all reconciliation sub-layer functionality from the draft as no reconciliation should be required between a 10 Mb/s PHY and the legacy CSMA/CD MAC.

Response *Response Status* **U**

REJECT.

Commenter incorrectly posits that the Clause 148 PLCA RS is a new MAC. It does not meet the requirements for a MAC, and, leaves the MAC functionality with Clause 4, which, in fact, it could not work without. Commenter incompletely quotes IEEE Std 802-2014 4.1, paragraph 6 leading to incorrect conclusions regarding peer-to-peer networking. Additionally, commenter's suggested remedy appears to assert that the Clause 148 reconciliation sublayer is required. It is not; use of the Clause 148 PLCA RS is optional.

See www.ieee802.org/3/cg/public/Jan2019/Tutorial_cg_0119_final.pdf.

Strawpoll #4: I support rejecting this comment with the rationale: "Commenter incorrectly posits that the Clause 148 PLCA RS is a new MAC. It does not meet the requirements for a MAC, and, leaves the MAC functionality with Clause 4, which, in fact, it could not work without. Commenter incompletely quotes IEEE Std 802-2014 4.1, paragraph 6 leading to incorrect conclusions regarding peer-to-peer networking. Additionally, commenter's suggested remedy appears to assert that the Clause 148 reconciliation sublayer is required. It is not; use of the Clause 148 PLCA RS is optional.

See www.ieee802.org/3/cg/public/Jan2019/Tutorial_cg_0119_final.pdf."

Task Force: Y:30 N:2 A:6
802.3 Voters: Y:18 N:2 A:1

Cl **148** *SC* **148.1** *P* **213** *L* **12** # 258

Kim, Yong NIO

Comment Type **ER** *Comment Status* **A** *PLCA*

"When disabled, the system operates as specified in Clause 22 RS." is meaningless, since CL22 contains proposed modifications for PLCA support, including existing systems to take no action new beahvior.

SuggestedRemedy

Did you mean to say CL22 in 802.3-2018 and prior? The statement would be relevant if all proposed changes to CL22 is deleted.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Delete,

"When disabled, the system operates as specified in Clause 22 RS."

Cl **148** *SC* **148.1.1.1** *P* **213** *L* **21** # 263

Kim, Yong NIO

Comment Type **E** *Comment Status* **A** *Editorial*

It would be good to say, "The conventions of 21.5 are adopted, with the folliowing extensions." and replace the existing first sentence with it. The value of doing this is that a reader is informed that all stated conventions are common, and additoinal IF-THEN-ELSE-END was added in this clause.

SuggestedRemedy

Please consider the suggestion.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "The notiation used in the state diagrams follows the conventions of 21.5. Some..." to "The conventions of 21.5 are adopted with the extension that some."

Cl **148** *SC* **148.2** *P* **213** *L* **39** # 264

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *PLCA*

"The working principle of PLCA is that transmit opportunities on a multidrop network are granted in sequence based on a node ID unique to the local collision domain (set by the management entity)." I agree with sense of this sentence WRT to PLCA, and PLCA looks to be an alternate medium access control.

SuggestedRemedy

CSD concern. Also see slide 7~10 of
http://www.ieee802.org/3/cg/public/Nov2018/Kim_3cg_01a_1118.pdf

Response *Response Status* **W**

REJECT.

Commenter provides insufficient information for a remedy. PLCA is not a MAC.

Refer to http://www.ieee802.org/3/cg/public/Jan2019/Tutorial_cg_0119_final.pdf

Strawpoll #6: I support rejecting this comment with the rationale: "Commenter provides insufficient information for a remedy. PLCA is not a MAC.

Refer to http://www.ieee802.org/3/cg/public/Jan2019/Tutorial_cg_0119_final.pdf"

Task Force: Y:19 N:1 A:6
802.3 Voters: Y:15 N:1 A:1

Cl **148** *SC* **148.2** *P* **213** *L* **45** # 261

Kim, Yong NIO

Comment Type **ER** *Comment Status* **A** *Editorial*

"avoiding physical collisions" should just be "avoiding collisions". Collisions on the medium. There is no other kind. The other collision "local collision" referred to in CL148 is more of access control and asserting COL signal in order to do access control. Readers of 802.3 understand collision, and introducing two new terms would be confusing without any derived benefit.

SuggestedRemedy

Consider and do so (accepting this comment means careful global search and repace of "physical collision")

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Resolve with #223.

Resolution of comment #223 is:
There are 3 parts to this comment, so all 3 will be addressed.
A. "local collision" - There is no such thing as a local collision in the draft. There is only the 'local collision domain', where local refers to the domain, not the collision. The term collision domain is used as defined in 1.4.203.
B. "logical collision" - In this case, the term collision will suffice. Delete use of "logical collision" in the only two places it occurs:
148.4.6.1, P224 L6: Delete "This is called a logical collision."
148.4.6.1, P225, L10: Change "and a logical collision is triggered" to "and a collision is triggered"

Cl **148** *SC* **148.2** *P* **213** *L* **48** # 259

Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *PLCA*

the node with ID = 0 (PLCA Coordinator) specification is absent. Searching for coordinator finds this reference and AN section, and no where any specification WRT to the coordinator function.

SuggestedRemedy

Without the coorinator function, how it is assigned, the draft is incomplete. CSD concern. Also see slide 11~13 of
http://www.ieee802.org/3/cg/public/Nov2018/Kim_3cg_01a_1118.pdf

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Resolved by comment #262. The resolution to comment #262 is:

ACCEPT IN PRINCIPLE.

Replace, "Transmit opportunities are generated in a round-robin fashion every time the node with ID = 0 (PLCA coordinator) signals a BEACON on the medium, indicating the start of a new cycle."

with, "Transmit opportunities are generated in a round-robin fashion. The node with ID = 0 signals a BEACON on the medium. Reception of a BEACON indicates the start of a new cycle of transmit opportunities."

Replace, "cycle" with, "cycle of transmit opportunities" at P219 L26, and P219 L29.

Replace, "PLCA cycle" with, "cycle of transmit opportunities" on P218 L41.

Cl **148** *SC* **148.2** *P* **213** *L* **48** # 262

Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *Editorial*

What is "new cycle" and later "PLCA cycle"? The term is used without definition or clear reference. Also this text indicates BEACON indicates start of new cycle, but RESYNC also starts new cycle from node ID <> 0, in presumablly exception handling case. Shouldn't we know how node ID =0 function (coordinator) behaves to implementj a system?

SuggestedRemedy

Define or specifiy [PLCA] cycle somewhere and provide a reference to it.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Replace, "Transmit opportunities are generated in a round-robin fashion every time the node with ID = 0 (PLCA coordinator) signals a BEACON on the medium, indicating the start of a new cycle."

with, "Transmit opportunities are generated in a round-robin fashion. The node with ID = 0 signals a BEACON on the medium. Reception of a BEACON indicates the start of a new cycle of transmit opportunities."

Replace, "cycle" with, "cycle of transmit opportunities" at P219 L26, and P219 L29.

Replace, "PLCA cycle" with, "cycle of transmit opportunities" on P218 L41.

Cl **148** *SC* **148.2** *P* **213** *L* **52** # 265

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *PLCA*

CSMA/CD -- Carrier Sense, Multiple Access, Collision Detect. Multiple Access has to do with fairness to access the network. How does invidually and optionally enabling multiple transmit opportunities preserve fairness? I did not see any presenations in the .3cg project area nor in this draft

SuggestedRemedy

CSD concern, WRT to compatibility (at the network system level, on fairness part of Ethernet).

Response *Response Status* **W**

REJECT.
Commenter provides insufficient information to identify comment with the text, and insufficient information for a remedy. The referenced text cannot be a CSD violation impacting compatibility because it is informative.

Cl **148** *SC* **148.4.1** *P* **214** *L* **47** # 266

Kim, Yong NIO

Comment Type **ER** *Comment Status* **A** *Editorial*

"Within the scope of Clause 148, the term Reconciliation sublayer (RS) is used to denote any
IEEE 802.3 Reconciliation sublayer (RS) used to interface a MAC with any Physical Layer Entity supporting
the PLCA capability through the MII". The use of word "any" in two places are problematic. Delete the both instances of "any" in this sentence. Otherwise, it looks to have an intention is to use PLCA with other speeds and other medium -- and if that is the case, do that in a separate CFI.

SuggestedRemedy

Please Delete the both instances of "any" in this sentence.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Accomodated by #132.

Comment #132 resolution is:
"
Replace the quoted text with "This subclause specifies services provided by the PLCA RS as an extension to the MII RS specified in Clause 22.
"

Cl **148** *SC* **148.4.1** *P* **214** *L* **47** # 132

Beruto, Piergiorgio Canova Tech Srl

Comment Type **E** *Comment Status* **A** *Editorial*

After removal of the "Generic RS" concept from C148 the following text does not make sense anymore: "This subclause specifies services provided by an extension to the Reconciliation sublayers specified in
Clause 22. Within the scope of Clause 148, the term Reconciliation sublayer (RS) is used to denote any
IEEE 802.3 Reconciliation sublayer (RS) used to interface a MAC with any Physical Layer Entity supporting
the PLCA capability through the MII."

SuggestedRemedy

Replace the quoted text with "This subclause specifies services provided by the PLCA RS as an extension to the MII RS specified in Clause 22.

Response *Response Status* **C**

ACCEPT.

Cl **148** *SC* **148.4.4** *P* **217** *L* **24** # 268

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *PLCA*

148.1 states "PLCA is defined for half-duplex mode of operation only. The PLCA RS is specified for operation with the PHY defined in Clause 147 (10BASE-T1S).". So perhaps 148.4.4. should reference relevant clauses in 147 -- it would be specific and reader friendly, and avoid making non-normative statements such as "PHYs are free to map the BEACON request to any suitable line coding as long as the requirements defined
herein are met." in line 41. And similar comment to COMMIT, etc.

SuggestedRemedy

I do not see the [incomplete] generic PHY mapping, when PLCA is tightly coupled with 10BASE-T1S half-duplex PHY.

Response *Response Status* **W**

REJECT.
Commenter fails to provide sufficient information to implement a remedy.

The text commented on is out of scope for recirculation as text was unchanged.

Cl **148** *SC* **148.4.4.1.1** *P* **217** *L* **32** # 267

Kim, Yong NIO

Comment Type **ER** *Comment Status* **R** *Editorial*

148.4.4 says "Requirements for the PHY". The text in 148.4.4.1.1 says "The BEACON function is specified in 148.4.5.1.", And 148.4.5.1 specifies Beacon control function overall. It does NOT clearly contain requiremetns for support of BEACON in PHY.

SuggestedRemedy

Provide a better referece to only the PHY requirement that supports the PLCA function.

Response *Response Status* **W**

REJECT.

Commenter is incorrect. The remainder of 148.4.4.1.1 contains 2 "shall" requirements on the PHY (see comment #270). The reference to 148.4.5.1 mentioned in 148.4.4.1.1 is an informative reference tying the reader to how the BEACON works in the Figure 148-3 state diagram.

Cl **148** *SC* **148.4.4.1.1** *P* **217** *L* **36** # 270

Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *Editorial*

"Upon the reception of this request, the PHY shall send a message over the media for other PHYs to decode and report to their respective RS via MII interface as specified in 22.2.2.8." -- I am probably confused. This text read by itself sounds like 22.2.2.8 compliance means getting RS state of remote node via remote PHY through PHY sending a message.

SuggestedRemedy

I hope you did not mean how I read it. If you agree, please correct the text -- if this sub clause is kept (I have a separate comment to consider deleting all and do tight coupling to CL147 PHY)

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Replace "send a message over the media for other PHYs to decode and report to their respective RS via MII interface as specified in 22.2.2.8." with "encode and transmit a signal communicating the BEACON to other PHYs on the segment so that they generate a BEACON indication."

Cl **148** *SC* **148.4.5.1** *P* **218** *L* **1** # 309

Jones, Peter Cisco Systems

Comment Type **E** *Comment Status* **A** *Editorial*

In D2.2, we changed from "PHY" to "node" in text, looks like we missed Equation (148-1).

SuggestedRemedy

changes Equation (148-1) from "Skew across PHYs" to "Skew across nodes"

Response *Response Status* **C**

ACCEPT.

Cl **148** *SC* **148.4.5.1** *P* **218** *L* **23** # 271

Kim, Yong NIO

Comment Type **T** *Comment Status* **R** *PLCA*

Pile on: PLCA RS as described in 148.4.5.1 behaves as an alternate Medium Access Control.

SuggestedRemedy

CSD concern. Also see slide 7~10 of http://www.ieee802.org/3/cg/public/Nov2018/Kim_3cg_01a_1118.pdf for MAC compatibiltiy, and Slides 11~13 for PnP compatibility

Response *Response Status* **C**

REJECT.

Commenter incorrectly posits that the Clause 148 PLCA RS is a new MAC. It does not meet the requirements for a MAC, and, leaves the MAC functionality with Clause 4, which, in fact, it could not work without.

See www.ieee802.org/3/cg/public/Jan2019/Tutorial_cg_0119_final.pdf.

Strawpoll #5: I support rejecting this comment with the rationale: "Commenter incorrectly posits that the Clause 148 PLCA RS is a new MAC It does not meet the requirements for a MAC, and, leaves the MAC functionality with Clause 4, which, in fact, it could not work without.

See www.ieee802.org/3/cg/public/Jan2019/Tutorial_cg_0119_final.pdf."

Task Force: Y:17 N:1 A:5
802.3 Voters: Y:15 N:0 A:2

Cl **148** *SC* **148.4.5.1** *P* **218** *L* **32** # 269

Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *PLCA*

"To achieve error free operation the PLCA node should be configured appropriately before transmit functions
are enabled." -- While this is good thought, it is not useful unless the spec completes the thought on how we achieve that. Please delete the unnessary text or add text to make this statement more useful

SuggestedRemedy

Please delete, or add text on how.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Insert the following after the referenced sentence,
"Appropriate configuration includes:
a) each local_nodeID is unique to the local collision domain,
b) there is one and only one node with local_nodeID = 0 on the local collision domain,
c) the transmit opportunity timer (to_timer) is set equal across all the nodes on the local collision domain,
d) plca_node_count is set on the node with local_nodeID = 0 to the number of nodes on the local collision domain"

Cl **148** *SC* **148.4.5.1** *P* **220** *L* **7** # 349

Brandt, David Rockwell Automation

Comment Type **T** *Comment Status* **A** *Burst Mode*

It is not clear how the other nodes are kept in synchronization with a node that is using burst mode. Nodes do not know about each other's burst configuration, and can only track burst operation by transmit and receive information. A non-burst node is in WAIT_TO and starts it's to_timer. Once the burst nodes sends it's first transmission, CRS becomes true and the other nodes go to EARLY_RECEIVE and then to RECEIVE. Now CRS becomes false and the other nodes go to NEXT_TX_OPPORTUNITY, where curID is incremented. Essentially, the other nodes think the current transmit opportunity has ended when the to_timer expires, or something is received.

SuggestedRemedy

Maybe there could be another symbol indicating BURST? The burst node would send the symbol and the other nodes would return to the WAIT_TO state without incrementing curID.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert the following sentence after the first sentence in the first paragraph of 148.4.4.2.2 (page 218, line 16),

"The PHY asserts CRS when a COMMIT indication is detected.".

Cl **148** *SC* **148.4.5.1** *P* **220** *L* **36** # 121

Beruto, Piergiorgio Canova Tech Srl

Comment Type **TR** *Comment Status* **A** *State Diagram*

When RECOVER state is reached through the EARLY_RECEIVE state, the curID variable need to be reset as in all the other cases.

SuggestedRemedy

Move "curID <= 0" statement from "RESYNC" state to "SYNCING" state

Response *Response Status* **C**

ACCEPT.

Cl **148** *SC* **148.4.5.1** *P* **221** *L* **24** # 348

Brandt, David Rockwell Automation

Comment Type **E** *Comment Status* **A** *EZ*

Equations for the two exit conditions from state COMMIT are not separated and not clearly matched to exit arrows.

SuggestedRemedy

Separate "TX_EN" (left arrow) and "!TX_EN * !packetPending" (right arrow).

Response *Response Status* **C**

ACCEPT.

Cl **148** *SC* **148.4.5.1** *P* **221** *L* **38** # 119

Beruto, Piergiorgio Canova Tech Srl

Comment Type **TR** *Comment Status* **A** *Burst Mode*

Exit condition from BURST state when burst_timer is done is not correct for two reasons:
1. CRS is asserted when COMMIT is transmitted, so exit condition is always FALSE.
2. tx_cmd is not reset to None in this case

SuggestedRemedy

Do the following:
1. remove transition from BURST state to NEXT_TX_OPPORTUNITY
2. Add a new state box below BURST state named ABORT
3. In the ABORT state box add the following statement: "tx_cmd <= NONE"
4. Add a transition arrow from BURST state to ABORT state with the following condition: "!TX_EN * burst_timer_done"
5. Add transition arrow from ABORT state to NEXT_TX_OPPORTUNITY with the following condition: "!CRS"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement change as proposed with editorial license provided to Jon Lewis to split or resize figure as needed.

Cl **148** *SC* **148.4.5.1** *P* **221** *L* **50** # 122

Beruto, Piergiorgio — Canova Tech Srl

Comment Type **T** *Comment Status* **A** *PLCA*

plca_node_count is driven by management interface, therefore it may change in the middle of a PLCA cycle. If this happens the control state machine could end up in a loop until the curID counter wraps around.

SuggestedRemedy

In transition from NEXT_TX_OPPORTUNITY to "B" connector replace "curID = plca_node_count" with "curID >= plca_node_count". In other words replace the equality operator with "greater or equal" sign.

Response *Response Status* **C**

ACCEPT.

Cl **148** *SC* **148.4.5.2** *P* **222** *L* **33** # 272

Kim, Yong — NIO

Comment Type **ER** *Comment Status* **A** *Editorial*

"helper variable, defined as.". Unncessary text. I thought I commented this on D2.1.

SuggestedRemedy

Change to "Defined as.."

Response *Response Status* **W**

ACCEPT.

Cl **148** *SC* **148.4.5.2** *P* **223** *L* **3234** # 273

Kim, Yong — NIO

Comment Type **TR** *Comment Status* **R** *Burst Mode*

CSMA/CD -- Carrier Sense, Multiple Access, Collision Detect. Multiple Access has to do with fairness to access the network. How does invidually and optionally enabling multiple transmit opportunities preserve fairness? The range of 0..255 includes potential transport protocol timeouts by starving other nodes.

SuggestedRemedy

CSD concern, WRT to compatibility (at the network system level, on fairness part of Ethernet, and timeout concerns in upper layer transport protocols in use. Define number narrowly to practical lower bound, if this # is kept in the draft.

Response *Response Status* **W**

REJECT.
While comment mentions fairness, CSD, and compatibility, commenter provides insufficient information to connect this to the referenced text and remedy which is related to the bounds for the variable max_bc.

In many ways, PLCA Burst mode operation is similar to half-duplex Burst mode present in 1000BASE-T.

The range of 0..255 is a reasonable number. This can be explained because the max_bc is related to the product of the ratio between the maximum allowed packet size and the minimum allowed packet size on the network, which is ~24, and the number of nodes. Therefore for an 8 node network, max_bc could reasonably be as big as 192.

Burst mode is designed to intentionally unbalance the fairness in favor of specific nodes to achieve better performance in specific cases. PLCA Burst mode cannot starve nodes in the network. In conclusion this is a desired (optional) feature, not a side-effect of PLCA.
Burst mode is described here "http://www.ieee802.org/3/cg/public/Nov2018/beruto_3cg_PLCA_burst_mode_revB%20.pdf " and one of its possible use cases is described here "http://www.ieee802.org/3/cg/public/Nov2018/xu_3cg_01b_1118.pdf"

Cl **148** *SC* **148.4.6.4** *P* **228** *L* **51** # 274

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *PLCA*

Use of commit_timer is not merited. All packets are atomically transferred above the RS. This type of counter woud only be relevant if this function is implemented in PHY. If the intent is support the function in the PHY sideof PCS, then make it explicit. BTW, the name is a bit misleading too. The burst_wait_timer or such would be more descriptive (if this comment is rejected).

SuggestedRemedy

Delete this timer and adjust the statemachnies with the traditional model of atomic transfer of whole packet.

Response *Response Status* **W**

REJECT.

The RS is below the MAC where packets are not atomically transferred.

Cl **148** *SC* **148.4.6.4** *P* **228** *L* **53** # 310

Jones, Peter Cisco Systems

Comment Type **E** *Comment Status* **A** *EZ*

Incorrect state name

SuggestedRemedy

change "WAIT_MAC_STATE" to "WAIT_MAC"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "WAIT_MAC_STATE" to "WAIT_MAC state"

That was a typo.

Cl **148** *SC* **148.4.7.4** *P* **230** *L* **15** # 275

Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *PLCA*

It seems this timer is very much relevant to interoperability and overall system operation. So I do not believe it should be left to the implmenntation without an upper bound. "the duration of this timer is implementation dependent and should be at least 2 × (to_timer × plca_node_count + beacon_timer).

SuggestedRemedy

If you agree WRT to relevancy, spec the upper bound.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Replace,

"Duration: the duration of this timer is implementation dependent and should be at least 2 × (to_timer × plca_node_count + beacon_timer)."

with,

"Duration: the duration of this timer is 130 090 bit times, which is 2 × (max to_timer × max plca_node_count + beacon_timer)."

Editor's implementation note: Have "2 × (max to_timer × max plca_node_count + beacon_timer)" all on one line (use non-breaking spaces to make this happen).

Rationale:
Since the maximum allowed value for to_timer is 255, the maximum allowed value for plca_node_count is 255 and the beacon_timer is defined as 20 bit times, it looks reasonable to have plca_status_timer be defined as 130 090 bit times.