Cl **98** *SC* **98C.5** *P* *L* # 289

Graber, Steffen Pepperl+Fuchs GmbH

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

Next Page Information for 10BASE-T1L need to be added to Annex 98.C

SuggestedRemedy

Please add text shown in presentation "10BASE-T1L Auto-Negotiation.pdf", page 13.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Refer to section 7 of 802.3cj Annex 98C (page 946) to identify where to add this text (check with Steffen).

Cl **00** *SC* **0** *P* *L* # 312

Huszák, Gergely Kone

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

There are unnecessary and inconsistent repetitions of references to table 147-1 (e.g. "5B symbol as defined in Table 147-1")

SuggestedRemedy

Remove all but the first reference (in C147) to table 147-1

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Delete "(See Table 147-1)" at:
page 134 line 36;
page 135 lines 9, 11, 14, 16, 19, 21;
page 143 lines 10 and 19

*keep references to Table 147-1 in first reference, ENCODE and DECODE function definitions

Cl **98** *SC* **98C.6** *P* *L* # 290

Graber, Steffen Pepperl+Fuchs GmbH

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

Next Page Information for 10BASE-T1S need to be added to Annex 98.C

SuggestedRemedy

Please add text shown in presentation "10BASE-T1L Auto-Negotiation.pdf", page 14.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Refer to section 7 of 802.3cj Annex 98C (page 946) to identify where to add this text (check with Steffen).

Cl **98** *SC* **98C.1** *P* *L* # 288

Graber, Steffen Pepperl+Fuchs GmbH

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

Next Page information for 10BASE-T1S need to be added to table 98C-1.

SuggestedRemedy

Add Message Code ID 8 (00000001000) with message code description for 10BASE-T1S Information (see presentation "10BASE-T1L Auto-Negotiation.pdf")

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Revise clause 98 in accordance with old revision of "10BASE-T1L Auto-Negotiation_Rev0p1.pdf" with the addition of 2 bits for PLCA and give editorial license to move the text and references for Message Codes 7 and 8 to the appropriate locations.

Cl **98** *SC* **98C.1** *P* *L* # 287

Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **D** *AutoNeg*

Next Page information for 10BASE-T1L need to be added to table 98C-1.

SuggestedRemedy

Add Message Code ID 7 (00000000111) with message code description for 10BASE-T1L Information (see presentation "10BASE-T1L Auto-Negotiation.pdf")

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **00** *SC* **0** *P* *L* # 311
Huszák, Gergely Kone

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

Usage of the term 10BASE-T1S is inconsistent ("10BASE-T1S" vs. "10BASE-T1S PHY" vs. "10BASE-T1S Ethernet PHY")

SuggestedRemedy

- "10BASE-T1S" should be used as an adjective
- "10BASE-T1S PHY" should be used as an noun
- "10BASE-T1S Ethernet PHY" should not be used

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "10BASE-T1S Ethernet PHY" to "10BASE-T1S PHY" on page 145 line 50

Change "the 10BASE-T1S PHY" on page 129 line 33 to "10BASE-T1S"

(Note "10BASE-T1S" may be a noun or an adjective - sometimes it is the name of the protocol. Do not globally modify other instances of "10BASE-T1S" (these may be subject to later, detailed editorial comments on a case by case basis))

Cl **98** *SC* **98B.4** *P* *L* # 286
Graber, Steffen Pepperl+Fuchs GmbH

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

Priority resolution for 10BASE-T1S and 10BASE-T1L need no be added to IEEE802.3 standard.

SuggestedRemedy

Add 10BASE-T1S in the priority resolution list after 100BASE-T1 and then add 10BASE-T1L in the priority resolution list after 10BASE-T1S.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Steffen Graber to provide editing instructions.

Cl **98** *SC* **98B.3** *P* *L* # 285
Graber, Steffen Pepperl+Fuchs GmbH

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

10BASE-T1S and 10BASE-T1L PHYs need to be added to table 98B-1 of IEEE802.3 standard.

SuggestedRemedy

Change bit A1 in table 98B-1 from RESERVED to 10BASE-T1S

Response *Response Status* **C**

ACCEPT.

Cl **00** *SC* **0** *P* *L* # 313
Huszák, Gergely Kone

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

There are unnecessary and inconsistent repetitions the two names of the 5B symbols (e.g. "SYNC, SYNC, SYNC, SSD sequence (that is a J/J/J/K 5B sequence)" and "SYNC, SSD symbol sequence (that is a J/K sequence)").
At the same time also fix the inconsistent use of the term "symbol"

SuggestedRemedy

Use only the names listed in column "Special function" of table 147-1
Remove unnecessary use of "symbol"
Example changes:
"SYNC, SYNC, SYNC, SSD sequence (that is a J/J/J/K 5B sequence)" -> "SYNC, SYNC, SYNC, SSD sequence"
"SYNC, SSD symbol sequence (that is a J/K sequence)" -> "SYNC, SSD sequence"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Delete "(that is a ... sequence)" at:
Page 139 line 3 and Page 142 line 17)

Cl **00** *SC* **0** *P* **1** *L* **6** # 301
Maguire, Valerie The Siemon Company

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

"Draft Standard for Ethernet-Amendment:" appears twice on the title page.

SuggestedRemedy

Delete "Draft Standard for Ethernet Amendment:" on lines 12-15.

Response *Response Status* **C**

ACCEPT.
Delete "Draft Standard for Ethernet Amendment:" on lines 12-15.

Cl **00** *SC* **0** *P* **1** *L* **21** # 494

Jones, Peter — Cisco

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

Task Force title and standard title need to be updated to reflect PAR modifications

SuggestedRemedy

Change "Operation over Single Balanced Twisted-pair Cabling and Associated Power Delivery" to "Operation and Associated Power Delivery over a Single Balanced Pair of Conductors"

Response *Response Status* **C**

ACCEPT.

Cl **00** *SC* **0** *P* **1** *L* **22** # 300

Maguire, Valerie — The Siemon Company

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

Align media references with revised objectives.

SuggestedRemedy

Globally search and replace, "single balanced twisted-pair" with "single balanced pair" when the text appears before a media term (e.g. "cabling", "connector", "cable", "cord", etc.). The first occurance of this change is in the title of the draft.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Updated proposed resolution: Globally search and verify that all occurrences of, "single balanced twisted-pair" have been resolved by comments #494, #495, #496, #497, #498, #499, #500, and #501. Resolve any remaining occurrences according to comment instructions.

Cl **00** *SC* **0** *P* **4** *L* **0** # 495

Jones, Peter — Cisco

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

Task Force title and standard title need to be updated to reflect PAR modifications

SuggestedRemedy

Change "IEEE P802.3cg 10 Mb/s Single Twisted Pair Ethernet Task Force" to "IEEE P802.3cg 10 Mb/s Single Pair Ethernet Task Force"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "Single Twisted Pair Ethernet" to "Single-Pair Ethernet"

Cl **30** *SC* **30.3** *P* **29** *L* **20** # 461

Brandt, David — Rockwell Automation

Comment Type **T** *Comment Status* **A** *Management*

10BASE-T1S RS lacks PLCA management

SuggestedRemedy

Bring in new Figure 30-3 to draft, insert an additional object (box) between oMACEntity and oPHYEntity with one-to-one relationships. Box contains "oPLCA" and link to 30.3.9.

Add new clause to draft:

30.3.9 PLCA managed object class
This subclause formally defines the behaviours for the oPLCA managed object class attributes.

30.3.9.1 PLCA Attributes

30.3.9.1.1 aPLCAAdminState

ATTRIBUTE

APPROPRIATE SYNTAX:
An ENUMERATED VALUE that has the following entries:
disabled
enabled

BEHAVIOUR DEFINED AS:
A read-only value that indicates the mode of operation of the Reconcilation Sublayer for PLCA operation. A disabled PLCA utilizes Clause 22 reconciliation sublayer without modification. An enabled PLCA modifies the behavior of the reconciliation sublayer per Clause 148. By default, PLCA is disabled.;

30.3.9.2 PLCA device actions
30.3.2.2.1 acPLCAAdminControl

ACTION

APPROPRIATE SYNTAX:
Same as aPLCAAdminState

BEHAVIOUR DEFINED AS:
This action provides a means to alter aPLCAAdminState. Setting PLCA to the enabled state will result in alteration of the Reconciliation Sublayer behavior to follow Clause 148 provided the PHY implements and enables optional Clause 147 PLCA as indicated in MDIO interface register ability bit 3.2292.13 and enable bit 3.2291.13;

30.3.2.2.2 acPLCAReset

ACTION

APPROPRIATE SYNTAX:
An ENUMERATED VALUE that has the following entries:
reset
normal

BEHAVIOUR DEFINED AS:
This action provides a means to reset the PLCA state of a Reconciliation Sublayer. Setting acPLCAReset to reset will reset the PLCA portion of a Reconciliation Sublayer provided the PHY implements and enables optional Clause 147 PLCA as indicated in MDIO interface register ability bit 3.2292.13 and enable bit 3.2291.13. After reset is complete, acPLCAReset returns to normal. The default state of acPLCAReset is normal.;

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Jon Lewis to to develop new Figure 30-3 to suppport a "replace" change instruction, and add new clause as suggested.

Cl **30** *SC* **30.5.1.1.4** *P* **29** *L* **35** # 302

Maguire, Valerie The Siemon Company

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

1000BASE-RH was made the third sentence and 100BASE-T1 the fourth sentence in the draft 3.2 revision of 802.3cj.

SuggestedRemedy

Change "Change the third sentence" to "Change the fourth sentence" in the editing instruction on line 35.

Response *Response Status* **C**

ACCEPT.
Change "Change the third sentence" to "Change the fourth sentence" in the editing instruction on line 35.

Cl **30** *SC* **30.5.1.1.4** *P* **29** *L* **38** # 303

Maguire, Valerie The Siemon Company

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

Unchanged text should not be shown.

SuggestedRemedy

Delete, "All other states of link_status map to the enumeration "not available"." on line 38.

Response *Response Status* **C**

ACCEPT.

Delete, "All other states of link_status map to the enumeration "not available"." on line 38.

Cl **45** *SC* **45.2.1.174a** *P* **32** *L* **36** # 291

Graber, Steffen Pepperl+Fuchs GmbH

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

1 = Enable 1.0 Vpp operating mode, 0 = Enable 2.4 Vpp operating mode

SuggestedRemedy

1 = Enable 2.4 Vpp operating mode, 0 = Enable 1.0 Vpp operating mode (1.0 Vpp is intended to be the default behavior in the future, to support 1.8 V only supply voltages for a PHY IC) (See presentation "10BASE-T1L Auto-Negotiation". This bit can be independently set by the management entity, if auto-negotiation is disabled. If auto-negotiation is enabled, this bit has to be set by management entity according to the auto-negotiation rules defined in the next page mechanism.)

Response *Response Status* **C**

ACCEPT.
Change from,
1 = Enable 1.0 Vpp operating mode
0 = Enable 2.4 Vpp operating mode

to,
1 = Enable 2.4 Vpp operating mode
0 = Enable 1.0 Vpp operating mode

Cl **45** *SC* **45.2.1.174a** *P* **32** *L* **40** # 292

Graber, Steffen Pepperl+Fuchs GmbH

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

Bit 1.2294.10 is reserved

SuggestedRemedy

Change bit 1.2294.10 functionality to: 1 = Enable EEE functionality, 0 = Disable EEE functionality (See presentation "10BASE-T1L Auto-Negotiation". This bit is set by independently the management entity, if auto-negotiation is disabled. If auto-negotiation is enabled, this bit has to be set by management entity according to the auto-negotiation rules defined in the next page mechanism.)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change reserved row bits from,
1.2294.10:0

to,
1.2294.9:0

Insert new bit after 1.2294.11
Bit(s): 1.2294.10
Name: EEE functionality
Description:
1 = Enable EEE functionality
0 = Disable EEE functionality
R/W: R/W

Cl **45** *SC* **45.2.1.174a.4** *P* **33** *L* **25** # 293

Graber, Steffen Pepperl+Fuchs GmbH

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

When bit 1.2294.12 is set to one, the 10BASE-T1L PMA shall transmit using the 1.0 Vpp operating mode according to 146.5.4.1. When bit 1.2294.12 is set to zero, the 10BASE-T1L PMA shall transmit using the 2.4 Vpp operating mode according to 146.5.4.1. The default value of bit 1.2294.12 is zero.

SuggestedRemedy

When bit 1.2294.12 is set to one, the 10BASE-T1L PMA shall transmit using the 2.4 Vpp operating mode according to 146.5.4.1. When bit 1.2294.12 is set to zero, the 10BASE-T1L PMA shall transmit using the 1.0 Vpp operating mode according to 146.5.4.1. The default value of bit 1.2294.12 is zero. (reverse signal amplitude levels and add Auto-Negotiation enable bit)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change from,
When bit 1.2294.12 is set to one, the 10BASE-T1L PMA shall transmit using the 1.0 Vpp operating mode according to 146.5.4.1. When bit 1.2294.12 is set to zero, the 10BASE-T1L PMA shall transmit using the 2.4 Vpp operating mode according to 146.5.4.1.

to,
When bit 1.2294.12 is set to one, the 10BASE-T1L PMA shall transmit using the 2.4 Vpp operating mode according to 146.5.4.1. When bit 1.2294.12 is set to zero, the 10BASE-T1L PMA shall transmit using the 1.0 Vpp operating mode according to 146.5.4.1.

Cl **45** *SC* **45.2.1.174a.6** *P* **33** *L* **45** # 294

Graber, Steffen Pepperl+Fuchs GmbH

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

Description for bit "Enable EEE functionality" needs to be added.

SuggestedRemedy

Add chapter "45.2.1.174a.6 EEE functionality (1.2294.10)". When bit 1.2294.10 is set to one, the 10BASE-T1L PHY shall enable EEE functionality. When bit 1.2294.10 is set to zero, the 10BASE-T1L PHY shall disable EEE functionality. The default value of bit 1.2294.10 is zero.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Insert new clause,

45.2.1.174a.6 EEE functionality (1.2294.10)

When bit 1.2294.10 is set to one, the 10BASE-T1L PHY shall enable EEE functionality. When bit 1.2294.10 is set to zero, the 10BASE-T1L PHY shall disable EEE functionality. The default value of bit 1.2294.10 is zero.

Cl **45** *SC* **45.2.1.174b** *P* **34** *L* **13** # 295

Graber, Steffen Pepperl+Fuchs GmbH

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

1 = PHY has 1.0 Vpp operating mode ability, 0 = PHY does not have 1.0 Vpp operating mode ability

SuggestedRemedy

1 = PHY has 2.4 Vpp operating mode ability, 0 = PHY does not have 2.4 Vpp operating mode ability (default value is now 1.0 Vpp, optional mode is 2.4 Vpp, therefore 1.0 Vpp needs to be changed to 2.4 Vpp)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change from,
1 = PHY has 1.0 Vpp operating mode ability 0 = PHY does not have 1.0 Vpp operating mode ability

to,
1 = PHY has 2.4 Vpp operating mode ability, 0 = PHY does not have 2.4 Vpp operating mode ability

Cl **45** *SC* **45.2.1.174b.1** *P* **34** *L* **38** # 338

Graber, Steffen Pepperl+Fuchs GmbH

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

When read as one ...

SuggestedRemedy

When read as a one . (align with other text parts of Clause 45)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change from,
"When read as one"

to,
"When read as a one" on line 38

Change from,
"When read as zero"

to,
"When read as a zero" on line 39

Cl **45** *SC* **45.2.1.174b.2** *P* **34** *L* **40** # 296

Graber, Steffen Pepperl+Fuchs GmbH

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

45.2.1.174b.2 1.0 Vpp operating mode ability (1.2295.12)
When read as one, this bit indicates that the 10BASE-T1L PHY supports a transmit level of 1.0 Vpp. When read as a zero, this bit indicates that the 10BASE-T1L PHY does not support a transmit level of 1.0 Vpp.

SuggestedRemedy

45.2.1.174b.2 2.4 Vpp operating mode ability (1.2295.12)
When read as one, this bit indicates that the 10BASE-T1L PHY supports a transmit level of 2.4 Vpp. When read as a zero, this bit indicates that the 10BASE-T1L PHY does not support a transmit level of 2.4 Vpp. (change 1.0 Vpp to 2.4 Vpp at three locations)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change from,
45.2.1.174b.2 1.0 Vpp operating mode ability (1.2295.12)
When read as a one, this bit indicates that the 10BASE-T1L PHY supports a transmit level of 1.0 Vpp. When read as a zero, this bit indicates that the 10BASE-T1L PHY does not support a transmit level of 1.0 Vpp.

to,
45.2.1.174b.2 2.4 Vpp operating mode ability (1.2295.12)
When read as one, this bit indicates that the 10BASE-T1L PHY supports a transmit level of 2.4 Vpp. When read as a zero, this bit indicates that the 10BASE-T1L PHY does not support a transmit level of 2.4 Vpp.

Cl **45** *SC* **45.2.1.174b.2** *P* **34** *L* **43** # 339

Graber, Steffen Pepperl+Fuchs GmbH

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

When read as one ...

SuggestedRemedy

When read as a one . (align with other text parts of Clause 45)

Response *Response Status* **C**

ACCEPT.
Change from,
"When read as one"

to,
"When read as a one" on line 43

Cl **45** *SC* **45.2.1.174b.5** *P* **35** *L* **11** # 340

Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **R** *EZ*

.. Is controlled using .

SuggestedRemedy

is controlled by using .

Response *Response Status* **C**

REJECT.
"Controlled by using" doesn't show up at all in section 4 of 802.3-2015.

"Controlled using" shows up many times.

Cl **45** *SC* **45.2.1.174b.6** *P* **35** *L* **16** # 341

Graber, Steffen Pepperl+Fuchs GmbH

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

When read as zero ...

SuggestedRemedy

When read as a zero . (align with other text parts of Clause 45)

Response *Response Status* **C**

ACCEPT.
Change from,
"When read as zero"

to,
"When read as a zero"

Cl **45** *SC* **45.2.1.174b.6** *P* **35** *L* **16** # 342

Graber, Steffen Pepperl+Fuchs GmbH

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

When read as one ...

SuggestedRemedy

When read as a one . (align with other text parts of Clause 45)

Response *Response Status* **C**

ACCEPT.
Change from,
"When read as one"

to,
"When read as a one"

Cl **45** *SC* **45.2.1.174b.6** *P* **35** *L* **17** # 343

Graber, Steffen — Pepperl+Fuchs GmbH

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

. that the polarity of receiver is reversed.

SuggestedRemedy

. that the polarity of the receiver is reversed.

Response *Response Status* **C**

ACCEPT.
Change from,
the polarity of receiver

to,
the polarity of the receiver

Cl **45** *SC* **45.2.1.174d** *P* **36** *L* **38** # 453

Brandt, David — Rockwell Automation

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

10BASE-T1S PMA control register lacks loopback

SuggestedRemedy

Copy: Table 45-142a, 1.2294.13,
Insert in Table 45-142d as 1.2299.13.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Copy: Table 45-142a, 1.2294.13,
Insert in Table 45-142d as 1.2299.13.In Table 45-142d, change the reserved row from 1.2299.13:12 to 1.2299.12

Insert new bit after 1.2299.14
Bit(s): 1.2299.13
Name: Loopback ability
Description:
1 = PHY has loopback ability
0 = PHY has no loopback ability
R/W: RO

Cl **45** *SC* **45.2.1.174d** *P* **37** *L* **11** # 454

Brandt, David — Rockwell Automation

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

10BASE-T1S PMA control register lacks loopback

SuggestedRemedy

Insert before 45.2.1.174d.2 and re-number rest of clause:

45.2.1.174d.2 Loopback (1.2299.13)
The 10BASE-T1S PMA shall be placed in loopback mode of operation when loopback bit 1.2299.13 is set to a one, and PLCA enable bit in MDIO register 3.2291.13 is set to a zero. When in loopback the 10BASE-T1S PMA shall accept data on the transmit path and return it on the receive path. The default value of bit 1.2299.13 is zero. Bit 1.2299.13 is a copy of 1.0.0 and setting
or clearing either bit shall set or clear the other bit. Setting either bit shall enable loopback.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert before 45.2.1.174d.2 Transmit disable (1.2299.14) and re-number rest of clause:

45.2.1.174d.2 Loopback (1.2299.13)
The 10BASE-T1S PMA shall be placed in loopback mode of operation when loopback bit 1.2299.13 is set to a one, and PLCA enable bit in MDIO register 3.2291.13 is set to a zero. When in loopback the 10BASE-T1S PMA shall accept data on the transmit path and return it on the receive path. The default value of bit 1.2299.13 is zero. Bit 1.2299.13 is a copy of 1.0.0 and setting or clearing either bit shall set or clear the other bit. Setting either bit shall enable loopback.

Cl **45** *SC* **45.2.1.174d.3** *P* **37** *L* **22** # 464

Brandt, David — Rockwell Automation

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

2 reference errors

SuggestedRemedy

Change 1.2294.11 to 1.2299.11, 2 places in paragraph.

Response *Response Status* **C**

ACCEPT.

Change1.2294.11 to 1.2299.11 in two locations in clause 45.2.1.174d.3

Cl **45** *SC* **45.2.1.174e** *P* **38** *L* **9** # 455

Brandt, David — Rockwell Automation

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

10BASE-T1S PMA status register lacks loopback

SuggestedRemedy

Copy: Table 45-142b, 1.2295.13,
Insert in Table 45-142e as 1.2300.13.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Copy: Table 45-142b, 1.2295.13,
Insert in Table 45-142e as 1.2300.13.In Table 45-142e, change the reserved row from 1.2300.15:12 to 1.2300.15:14

Insert new bit after reserved row 1.2300.15:14
Bit(s): 1.300.13
Name: Loopback ability
Description:
1 = PHY has loopback ability
0 = PHY has no loopback ability
R/W: RO

Insert new reserved row after new 1.300.13
Bit(s): 1.300.12
Name: Reserved
Description:
Value always 0
R/W: RO

Cl **45** *SC* **45.2.1.174e** *P* **38** *L* **33** # 456

Brandt, David — Rockwell Automation

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

10BASE-T1S PMA status register lacks loopback

SuggestedRemedy

Insert before 45.2.1.174e.1 and re-number:

45.2.1.174e.1 Loopback ability (1.2300.13)
When read as one, this bit indicates that the 10BASE-T1S PHY supports PMA loopback. When read as
zero, this bit indicates that the 10BASE-T1S PHY does not support PMA loopback.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert before 45.2.1.174e.1 10BASE-T1S OAM ability (1.2300.11) and re-number rest of clause:

45.2.1.174e.1 Loopback ability (1.2300.13)
When read as a one, this bit indicates that the 10BASE-T1S PHY supports PMA loopback. When read as a zero, this bit indicates that the 10BASE-T1S PHY does not support PMA loopback.

Cl **45** *SC* **45.2.1.174h.1** *P* **41** *L* **31** # 465

Brandt, David — Rockwell Automation

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

Wrong link

SuggestedRemedy

Change 147.5.2, text and link to 147.5.1

Response *Response Status* **C**

ACCEPT.
Change from,
147.5.2

to,
147.5.1

and update link

Cl **45** *SC* **45.2.1.174i** *P* **41** *L* **34** # 388

CORDARO, Jay BROADCOM

Comment Type **TR** *Comment Status* **R** *Cable Diagnostics Discuss*

Add PMA register for Cable Diagnostics Control (1.2304)

SuggestedRemedy

Bit(s)	Name	Description	R/Wa
2	Cable Diagnostics Control Mode	1= Through 0= Reflection	RW
1	Cable Diagnostics Control	1= Cable Diagnostics on 0= Cable diagnostics off	RW
0	Cable Diagnostics Supported	1= Cable Diagnostics Supported 0= Cable Diagnostics not Supported	RO

Response *Response Status* **C**

REJECT.
No consensus for change
See motions 10, 11, 12, 13

Cl **45** *SC* **45.2.1.174i.1** *P* **41** *L* **36** # 389

CORDARO, Jay BROADCOM

Comment Type **TR** *Comment Status* **D** *Cable Diagnostics Discuss*

Add description for Cable Diagnostics Control

SuggestedRemedy

When supported, if bit 1 is set to '1', normal opertaion is suspended and a cable diagnostics signal is passed to the PMA consisting of the following: 16 bit times where PMD drives a differential voltage of 0 V or high impedance then 16 bit times where a Ga32 SYNC word is transmitted then 16 bit times where the PMD drives a differential voltage of 0 V or high impedance, then a 16 bit time Gb32 BEACON word, followed finally by 16 bit times where the PMD drives a differential voltage of 0 V or high impedance.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Task Force to discuss along with presentation. Consider after comment #389 is resolved.

If accepted, change as proposed is to:

If comment #388 is accepted, insert new clause after new Table 45-142i,

45.2.1.174i.1 Cable diagnostics control (1.2304.2:0)
When supported, if bit 1 is set to '1', normal opertaion is suspended and a cable diagnostics signal is passed to the PMA consisting of the following: 16 bit times where PMD drives a differential voltage of 0 V or high impedance then 16 bit times where a Ga32 SYNC word is transmitted then 16 bit times where the PMD drives a differential voltage of 0 V or high impedance, then a 16 bit time Gb32 BEACON word, followed finally by 16 bit times where the PMD drives a differential voltage of 0 V or high impedance.

Cl **45** *SC* **45.2.1.174j** *P* **41** *L* **38** # 390

CORDARO, Jay BROADCOM

Comment Type **TR** *Comment Status* **R** *Cable Diagnostics Discuss*

Add Registers for Reflection Cable Diagnostics status (1.2305)

SuggestedRemedy

Reflection Cable Diagnostics status
Bit(s) | Name | Description | R/Wa
15:8 | distance to first reflection in tenths of meter | RO
3:0 | Reflection Cable Diagnostics Status | 111 = cable status indeterminate | RO
110 = one wire shorted to ground or voltage
101 =one wire open
100 = reserved
011 = high impedance
010 = cable wires shorted
001 = cable open/high impedance
000 = normal cable

Response *Response Status* **C**

REJECT.
No consensus for change
See motions 10, 11, 12, 13

Cl **45** *SC* **45.2.1.174k** *P* **41** *L* **40** # 391

CORDARO, Jay BROADCOM

Comment Type **TR** *Comment Status* **R** *Cable Diagnostics Discuss*

Add Registers for Transmission Cable Diagnostics status (1.2305)

SuggestedRemedy

Through Cable Diagnostics status
Bit(s) | Name | Description | R/Wa
15:10 | Reserved
9 | Cable Diagnostic Through Polarity | 1 = Polarity flipped from transmit node to receive node
0 = Polarity not flipped from transmit node to receive node
8:3 | Cable Diagnostic through Peak | 64 = highest | RO
...
0 = lowest
2:0 | Estimated Signal Quality Index (SQI) | 111 = SQI = 7 (Best) |RO
110 =
101 =
100 =
011 =
010 =
001 =
000 = SQi = 0 (worst)

Response *Response Status* **C**

REJECT.
No consensus for change
See motions 10, 11, 12, 13

Cl **45** *SC* **45.2.1.174k** *P* **41** *L* **42** # 392

CORDARO, Jay BROADCOM

Comment Type **T** *Comment Status* **R** *Cable Diagnostics Discuss*

Add description for Transmission Cable Diagnostics status polarity (1.2305.9)

SuggestedRemedy

Bit 9 indicates if the polarity of the wiring between the transmit and received node is flipped during a through cable diagnostic measurement.

Response *Response Status* **C**

REJECT.
No consensus for change
See motions 10, 11, 12, 13

Cl **45** *SC* **45.2.1.174k** *P* **41** *L* **44** # 393
CORDARO, Jay BROADCOM

Comment Type **T** *Comment Status* **R** *Cable Diagnostics Discuss*

Add description for Transmission Cable Diagnostics estimated correlation peak (1.2305.8:3)

SuggestedRemedy

Bits 8:3 list the correlation peak measured during a through measurement. This indicates the attenuation

Response *Response Status* **C**

REJECT.
No consensus for change
See motions 10, 11, 12, 13

Cl **45** *SC* **45.2.1.174k** *P* **41** *L* **46** # 394
CORDARO, Jay BROADCOM

Comment Type **T** *Comment Status* **R** *Cable Diagnostics Discuss*

Add description for Transmission Cable Diagnostics Estimated Signal Quality Index (1.2305.2:0)

SuggestedRemedy

Bits 2:0 list the estimated signal quality index for the through cable diagnostic from the transmitted node to the received node based upon the cable diagnostic signal. The estimated signal quality index can be derived by taking the L2 norm of the received cable diagnostics signal. The estimated signal quality may be measured periodically over the lifetime of the harness to determine harness aging and degradation.

Response *Response Status* **C**

REJECT.
No consensus for change
See motions 10, 11, 12, 13

Cl **45** *SC* **45.2.3.58c** *P* **45** *L* **8** # 458
Brandt, David Rockwell Automation

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

10BASE-T1S PCS control register lacks "PLCA enable" bit and status register lacks "PLCA ability" bit

SuggestedRemedy

Insert in Table 45-220c:

Bit(s): 3.2291.13
Name: PLCA enable
Description: 1 = Enable PLCA mode
0 = Disable PLCA mode
R/W: R/W

Insert in Table 45-220d:

Bit(s): 3.2292.13
Name: PLCA ability
Description: 1 = Supports PLCA mode
0 = Does not support PLCA mode
R/W: R/O

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. In Table 45-220c, change the reserved row from 3.2291.13:0 to 3.2291.12:0

Insert new bit after row 3.2291.14 Loopback
Bit(s): 3.2291.13
Name: PLCA enable
Description:
1 = Enable PLCA mode
0 = Disable PLCA mode
R/W: R/W

In Table 45-220d, change the reserved row from 3.2292.15:12 to 3.2292.15:14

Insert new bit after new reserved row 3.2292.15:14
Bit(s): 3.2292.13
Name: PLCA ability
Description:
1 = Supports PLCA mode
0 = Does not support PLCA mode
R/W: RO

Insert new reserved row after new 3.2292.13 PLCA ability
Bit(s): 3.2292.12
Name: Reserved

Description:
Value always 0
R/W: RO

Cl **45** *SC* **45.2.3.58c** *P* **45** *L* **35** # 459

Brandt, David Rockwell Automation

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

10BASE-T1S PCS control register lacks "PLCA enable" bit

SuggestedRemedy

Insert:

45.2.3.58c.3 PLCA enable (3.2291.13)

The 10BASE-T1S PCS shall be placed in PLCA mode of operation when bit 3.2291.13 is set to a one.

The default value of bit 3.2291.13 is zero.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert new clause after 45.2.3.58c.2 Loopback (3.2291.14)

45.2.3.58c.3 PLCA enable (3.2291.13)
The 10BASE-T1S PCS shall be placed in PLCA mode of operation when bit 3.2291.13 is set to a one. The default value of bit 3.2291.13 is zero.

Cl **45** *SC* **45.2.3.58c** *P* **45** *L* **35** # 460

Brandt, David Rockwell Automation

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

10BASE-T1S PCS control register lacks "PLCA reset" bit

SuggestedRemedy

Insert:

45.2.3.58c.4 PLCA reset (3.2291.12)

Resetting the 10BASE-T1S PCS PLCA state is accomplished by setting bit 3.2291.12 to a one. As a consequence, this action may change the internal
state of the 10BASE-T1S PCS and the state of the physical link. This bit is self-clearing, and the 10BASE-T1S PCS
shall return a value of one in bit 3.2291.12 when a PLCA reset is in progress; otherwise, it shall return a value of
zero.

NOTE-This operation may interrupt data communication.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert new clause after new 45.2.3.58c.3 PLCA enable (3.2291.13)

45.2.3.58c.4 PLCA reset (3.2291.12)
Resetting the 10BASE-T1S PCS PLCA state is accomplished by setting bit 3.2291.12 to a one. As a consequence, this action may change the internal
state of the 10BASE-T1S PCS and the state of the physical link. This bit is self-clearing, and the 10BASE-T1S PCS shall return a value of one in bit 3.2291.12 when a PLCA reset is in progress; otherwise, it shall return a value of
zero.

NOTE-This operation may interrupt data communication.

Cl **45** *SC* **45.2.3.58g** *P* **45** *L* **39** # 382

CORDARO, Jay BROADCOM

Comment Type **TR** *Comment Status* **R** *OAM Discuss*

Delete OAM registers 3.2296,3.2297,3.3.2298

SuggestedRemedy

Delete OAM registers 3.2296,3.2297,3.3.2298 from Table Table 45-220g

Response *Response Status* **C**

REJECT.
No consensus to change - see motions deck

Cl **45** *SC* **45.2.3.58d** *P* **45** *L* **41** # 462
Brandt, David Rockwell Automation

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

10BASE-T1S PCS status register lacks PLCA ability bit

SuggestedRemedy

Insert before 45.2.3.58d.1 and re-number:

45.2.3.58d.1 PLCA ability (1.2292.13)
When read as one, this bit indicates that the 10BASE-T1S PHY supports PLCA. When read as
zero, this bit indicates that the 10BASE-T1S PHY does not support PLCA.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Insert new clause before 45.2.3.58d.1 Tx LPI received (3.2292.11) and re-number subsequent clauses.

45.2.3.58d.1 PLCA ability (1.2292.13)
When read as a one, this bit indicates that the 10BASE-T1S PHY supports PLCA. When read as a zero, this bit indicates that the 10BASE-T1S PHY does not support PLCA.

Cl **45** *SC* **45.2.3.58e.1** *P* **47** *L* **35** # 466
Brandt, David Rockwell Automation

Comment Type **T** *Comment Status* **A** *EZ*

Missing definition

SuggestedRemedy

PCS_status is not defined in 147.3.7.1, nor anywhere else in the draft.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete,
This bit is a reflection of the PCS_status variable defined in 147.3.7.1.

Cl **45** *SC* **45.2.3.58e.2** *P* **47** *L* **41** # 467
Brandt, David Rockwell Automation

Comment Type **T** *Comment Status* **A** *EZ*

Missing definition

SuggestedRemedy

hi_rfer is not defined in 147.3.7.1, nor anywhere else in the draft.

Response *Response Status* **C**

ACCEPT.

Delete.
This bit is a reflection of the state of the hi_rfer variable defined in 147.3.7.1.

Cl **45** *SC* **45.2.3.58e.3** *P* **47** *L* **47** # 468
Brandt, David Rockwell Automation

Comment Type **T** *Comment Status* **A** *EZ*

Missing definition

SuggestedRemedy

block_lock is not defined in 147.3.7.1, nor anywhere else in the draft.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete,
This bit is a reflection of the state of the block_lock variable defined in 147.3.7.1.

Cl **45** *SC* **45.2.3.58e.6** *P* **48** *L* **14** # 469
Brandt, David Rockwell Automation

Comment Type **T** *Comment Status* **A** *EZ*

Missing definition

SuggestedRemedy

RFER_count is not defined in 147.3.7.2, nor anywhere else in the draft.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete,
The BER counter formed by bits 3.2293.5:0 is a six bit count as defined by RFER_count in 147.3.7.2.

Cl **45** *SC* **45.2.3.58g** *P* **50** *L* **27** # 383

CORDARO, Jay BROADCOM

Comment Type **TR** *Comment Status* **R** *OAM Discuss*

Delete OAM registers 3.2296,3.2297,3.3.2298

SuggestedRemedy

45.2.3.58g 10BASE-T1S OAM message register (Register 3.2295)
The 10BASE-T1S OAM message register contains the 2 octet 10BASE-T1S OAM message data to be transmitted.
The 8 octet message data is user defined and its definition is outside the scope of this standard. See
Table 45-220g.

Response *Response Status* **C**

REJECT.
No consensus to change - see motions deck

Cl **45** *SC* **45.2.3.58i** *P* **51** *L* **1** # 386

CORDARO, Jay BROADCOM

Comment Type **TR** *Comment Status* **R** *OAM Discuss*

Change Table 45-220h- to Table 45-220i (swap positions of these tables in the document) and take out OAM registers for messages 2-6 so it looks like:

SuggestedRemedy

Bit(s) |Name | Description | R/Wa
3.2300.15:8 |Link partner 10BASE-T1S OAM message 1 |Message octet 1. LSB received first. | RO
3.2300.7:0 |Link partner 10BASE-T1S OAM message 0 |Message octet 0. LSB received first. RO

Response *Response Status* **C**

REJECT.
No consensus to change - see motions deck

Cl **45** *SC* **45.2.3.58h** *P* **51** *L* **24** # 385

CORDARO, Jay BROADCOM

Comment Type **TR** *Comment Status* **R** *OAM Discuss*

Change description for 45.2.3.58h.1

SuggestedRemedy

Bit 3.2299.15 shall be set to one when the 10BASE-T1S OAM message from the link partner is stored into
registers 3.2300 and the message number in 3.2299.11:8. This register shall be cleared when register 3.2303 is read.

Response *Response Status* **C**

REJECT.
No consensus to change - see motions deck

Cl **45** *SC* **45.2.3.58i** *P* **51** *L* **44** # 387

CORDARO, Jay BROADCOM

Comment Type **TR** *Comment Status* **R** *OAM Discuss*

Change text to read as follows:

SuggestedRemedy

45.2.3.58i Link partner 10BASE-T1S OAM message register (Register 3.2300)
The link partner 10BASE-T1S OAM message register contains the 2 octet 10BASE-T1S OAM message
data from the link partner. Bit 3.2299.15 shall be cleared when register 3.2303 is read. The assignment of
bits in the Link partner 10BASE-T1S OAM message register bit is shown in.Table 45-220i

Response *Response Status* **C**

REJECT.
No consensus to change - see motions deck

Cl **45** *SC* **Table 45-220i-** *P* **52** *L* **1** # 384

CORDARO, Jay BROADCOM

Comment Type **TR** *Comment Status* **R** *OAM Discuss*

(editorial) Table 45-220i- Change table to 45-220h (swap this table's position with table 45-220h) & (technical) Change description for register 15 to following

SuggestedRemedy

3.2299.15 Link partner 10BASE-T1S OAM message valid
This bit is used to indicate message data in registers
3.2299.11:8, 3.2300, are stored and ready to be read.
This bit shall self clear when register 3.2317 is
read.
1 = Message data in registers are valid
0 = Message data in registers are not valid
RO, SC

Response *Response Status* **C**

REJECT.
No consensus to change - see motions deck

Cl **45** *SC* **45.5** *P* **53** *L* **1** # 401

Zimmerman, George CME Consulting et al

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

PICS for clause 45 need completing

SuggestedRemedy

PICS editor to fill in from changes in clause 45

Response *Response Status* **C**

ACCEPT.

Chief Editor to coordinate with Curtis Donahue to develop PICS for clause 45.

Cl **78** *SC* **78** *P* **55** *L* **1** # 344

Graber, Steffen Pepperl+Fuchs GmbH

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

EEE Timing Parameters missing

SuggestedRemedy

Please replace chapter by text being provided in "Energy Efficient Ethernet.pdf" (see also presentation "10BASE-T1L Energy Efficient Ethernet.pdf").

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert text from http://www.ieee802.org/3/cg/public/May2018/Energy%20Efficient%20Ethernet.pdf into clause

Cl **78** *SC* **78.1.4** *P* **55** *L* **4** # 402

Zimmerman, George CME Consulting et al

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

10BASE-T1L needs to be defined for EEE as per the objectives. (10BASE-T1S is naturally EEE)

SuggestedRemedy

Bring 78.1.4 and Table 78-1 into draft, and insert 10BASE-T1L , clause 146 as new first (content) row, above 10BASE-Te. Bring 78.2 and Table 78-2 into draft, and new first row for 10BASE-T1L (leave values TBD for now). Similarly, bring 78.5 and Table 78-4 into draft and insert new first row for 10BASE-T1L with values TBD.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

No change required. Resolved by comment #344.

Cl **98** *SC* **98.2.1.1.2** *P* **55** *L* **15** # 470

Brandt, David — Rockwell Automation

Comment Type **E** *Comment Status* **D** *AutoNeg*

Undefined terms "in high speed mode" and "in low speed mode"

SuggestedRemedy

"for 100BASE-T1 or 1000BASE-T1" and "for 10BASE-T1L and 10BASE-T1S in half-duplex"

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Terms are used and defined throughout the changed text.

Cl **98** *SC* **98.2.1.1.3** *P* **57** *L* **30** # 490

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **D** *Late*

A new start delimiter is needed. See presentation “Auto-Negotiation Start Delimiter.pdf”.

SuggestedRemedy

Insert clause 98.2.1.1.3 with change marks from,

"The page is preceded by a unique Start Delimiter consisting of a 26 × T1 sequence that includes multiple
DME transition violations. For a Start Delimiter starting with a 0 to +1 transition, the bit sequence is:
+1 –1 +1 +1 –1 –1 +1 –1 –1 –1 –1 +1 –1 +1 –1 –1 –1 –1 +1 +1 –1 –1 –1 +1 –1 +1."

to,
"The page is preceded by a unique Start Delimiter consisting of a 26 × T1 sequence that includes multiple DME transition violations.

For a Start Delimiter starting with a 0 to +1 transition, the bit sequence for high speed Auto-Negotiation mode is:
+1 –1 +1 +1 –1 –1 +1 –1 –1 –1 –1 +1 –1 +1 –1 –1 –1 –1 +1 +1 –1 –1 –1 +1 –1 +1.

For a Start Delimiter starting with a 0 to +1 transition, the bit sequence for low speed Auto-Negotiation mode is:
+1 –1 +1 –1 +1 –1 +1 –1 +1 +1 –1 –1 +1 +1 –1 +1 +1 –1 +1 –1 –1 +1 –1 +1 +1 –1."

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Straw poll 5:
Pick one:
A: I accept the proposed resolution
B: I need more time and would like to consider this at a later face-to-face meeting
C: I would oppose the proposed resolution, even at a later date

A:23
B:9
C:0

Cl **98** *SC* **98.5.2** *P* **58** *L* **34** # 297
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg_timers*

backoff_timer

SuggestedRemedy

backoff_timer_[HSM] (reference that this timer is used in high speed Auto-Negotiation mode)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "backoff_timer" to "backoff_timer_[HSM]" and update subsequent text and state diagram references.

Cl **98** *SC* **98.5.2** *P* **58** *L* **37** # 345
Graber, Steffen Pepperl+Fuchs GmbH

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

If T[4] bit is 1 then the timer duration is set as .

SuggestedRemedy

If T[4] bit is 1, then the timer duration will be set as . (add comma and use will be instead of is)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "If T[4] bit is 1 then the timer duration is set as" to "If T[4] is 1, the timer duration is"

Cl **98** *SC* **98.5.2** *P* **58** *L* **37** # 346
Graber, Steffen Pepperl+Fuchs GmbH

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

If T[4] bit is 0 then the timer duration is set as .

SuggestedRemedy

If T[4] bit is 0, then the timer duration will be set as . (add comma and use will be instead of is)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change "If T[4] bit is 0 then the timer duration is set as" to "If T[4] is 0, the timer duration is"

Cl **98** *SC* **98.5.2** *P* **58** *L* **44** # 194
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg_timers*

blind_timer

SuggestedRemedy

blind_timer_[HSM] (reference that this timer is used in high speed Auto-Negotiation mode)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "blind_timer" to "blind_timer_[HSM]" and update subsequent text and state diagram references.

Cl **98** *SC* **98.5.2** *P* **58** *L* **47** # 195
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg_timers*

break_link_timer

SuggestedRemedy

break_link_timer_[HSM] (reference that this timer is used in high speed Auto-Negotiation mode)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "break_link_timer" to "break_link_timer_[HSM]" and update subsequent text and state diagram references.

Cl **98** *SC* **98.5.2** *P* **58** *L* **47** # 196
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg_timers*

clock_detect_max_timer

SuggestedRemedy

clock_detect_max_timer_[HSM] (reference that this timer is used in high speed Auto-Negotiation mode)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "clock_detect_max_timer" to "clock_detect_max_timer_[HSM]" and update subsequent text and state diagram references.

Cl **98** *SC* **98.5.2** *P* **59** *L* **1** # 197
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg_timers*

clock_detect_min_timer

SuggestedRemedy

clock_detect_min_timer_[HSM] (reference that this timer is used in high speed Auto-Negotiation mode)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "clock_detect_min_timer" to "clock_detect_min_timer_[HSM]" and update subsequent text and state diagram references.

Cl **98** *SC* **98.5.2** *P* **59** *L* **5** # 198
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg_timers*

data_detect_max_timer

SuggestedRemedy

data_detect_max_timer_[HSM] (reference that this timer is used in high speed Auto-Negotiation mode)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "..._timer" to "..._timer_[HSM]" and update subsequent text and state diagram references.

Cl **98** *SC* **98.5.2** *P* **59** *L* **10** # 199
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg_timers*

data_detect_min_timer

SuggestedRemedy

data_detect_min_timer_[HSM] (reference that this timer is used in high speed Auto-Negotiation mode)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "..._timer" to "..._timer_[HSM]" and update subsequent text and state diagram references.

Cl **98** *SC* **98.5.2** *P* **59** *L* **15** # 200
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg_timers*

interval_timer

SuggestedRemedy

interval_timer_[HSM] (reference that this timer is used in high speed Auto-Negotiation mode)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "..._timer" to "..._timer_[HSM]" and update subsequent text and state diagram references.

Cl **98** *SC* **98.5.2** *P* **59** *L* **19** # 201
Graber, Steffen Pepperl+Fuchs GmbH

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

link_fail_inhibit_timer

SuggestedRemedy

Remove this timer, the explanation, and the associated note (lines 19 to 27) from this position of the document (as this timer is not depending on high speed or low speed autoneg mode, but on the selected PHY type and the associated training time, it will be reapplied to another position of the document by a later comment)

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **5.2** *P* **59** *L* **26** # 491
Bains, Amrik Cisco System

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

Original clause 98.5.2 has "Note:" on line 26 but has been removed

SuggestedRemedy

Add" Note:" on start of line 25

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add "NOTE -" using special style (copy from page 60, line 42).

Cl **98** *SC* **98.5.2** *P* **59** *L* **28** # 202

Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg_timers*

page test_max_timer

SuggestedRemedy

page_test_max_timer_[HSM] (reference that this timer is used in high speed Auto-Negotiation mode)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "..._timer" to "..._timer_[HSM]" and update subsequent text and state diagram references.

Cl **98** *SC* **98.5.2** *P* **59** *L* **32** # 203

Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg_timers*

receive_DME_timer

SuggestedRemedy

receive_DME_timer_[HSM] (reference that this timer is used in high speed Auto-Negotiation mode)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "..._timer" to "..._timer_[HSM]" and update subsequent text and state diagram references.

Cl **98** *SC* **98.5.2** *P* **59** *L* **35** # 204

Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg_timers*

rx_wait_timer

SuggestedRemedy

rx_wait_timer_[HSM] (reference that this timer is used in high speed Auto-Negotiation mode)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "..._timer" to "..._timer_[HSM]" and update subsequent text and state diagram references.

Cl **98** *SC* **98.5.2** *P* **59** *L* **40** # 205

Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg_timers*

silent_timer

SuggestedRemedy

silent_timer_[HSM] (reference that this timer is used in high speed Auto-Negotiation mode)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "..._timer" to "..._timer_[HSM]" and update subsequent text and state diagram references.

Cl **98** *SC* **98.5.2** *P* **59** *L* **45** # 206

Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg_timers*

backoff_timer

SuggestedRemedy

backoff_timer_[LSM] (reference that this timer is used in low speed Auto-Negotiation mode)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "..._timer" to "..._timer_[LSM]" and update subsequent text and state diagram references.

Cl **98** *SC* **98.5.2** *P* **59** *L* **48** # 207

Graber, Steffen Pepperl+Fuchs GmbH

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

If T[4] bit is 1 then the timer duration is set as (145712 ns to 148912 ns) + (random integer from 0 to 15) × (18728 ns to 19788 ns).
If T[4] bit is 0 then the timer duration is set as (155341 ns to 158541 ns) + (random integer from 0 to 15) × (18728 ns to 19788 ns).

SuggestedRemedy

If T[4] bit is 1 then the timer duration is set as (145668 ns to 148868 ns) + (random integer from 0 to 15) × (20868 ns to 24068 ns).
If T[4] bit is 0 then the timer duration is set as (156902 ns to 160102 ns) + (random integer from 0 to 15) × (20868 ns to 24068 ns). (see presentation "10BASE-T1L Auto-Negotiation")

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change "If T[4] bit is 1 then the timer duration is set as (145712 ns to 148912 ns) + (random integer from 0 to 15) × (18728 ns to 19788 ns).
If T[4] bit is 0 then the timer duration is set as (155341 ns to 158541 ns) + (random integer from 0 to 15) × (18728 ns to 19788 ns)."
to
"If T[4] is 1, the timer duration is (145668 ns to 148868 ns) + (random integer from 0 to 15) × (20868 ns to 24068 ns).
If T[4] is 0, the timer duration is (156902 ns to 160102 ns) + (random integer from 0 to 15) × (20868 ns to 24068 ns).

Cl **98** *SC* **98.5.2** *P* **59** *L* **48** # 347

Graber, Steffen Pepperl+Fuchs GmbH

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

If T[4] bit is 1 then the timer duration is set as .

SuggestedRemedy

If T[4] bit is 1, then the timer duration will be set as . (add comma and use will be instead of is)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "If T[4] bit is 1 then the timer duration is set as" to
"If T[4] is 1, the timer duration is"

Cl **98** *SC* **98.5.2** *P* **59** *L* **50** # 348

Graber, Steffen Pepperl+Fuchs GmbH

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

If T[4] bit is 0 then the timer duration is set as .

SuggestedRemedy

If T[4] bit is 0, then the timer duration will be set as . (add comma and use will be instead of is)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change "If T[4] bit is 0 then the timer duration is set as" to
"If T[4] is 0, the timer duration is"

Cl **98** *SC* **98.5.2** *P* **60** *L* **1** # 208

Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg_timers*

blind_timer

SuggestedRemedy

blind_timer_[LSM] (reference that this timer is used in low speed Auto-Negotiation mode)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "..._timer" to "..._timer_[LSM]" and update subsequent text and state diagram references.

Cl **98** *SC* **98.5.2** *P* **60** *L* **3** # 209

Graber, Steffen Pepperl+Fuchs GmbH

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

18728 ns

SuggestedRemedy

20868 ns (see presentation "10BASE-T1L Auto-Negotiation")

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.5.2** *P* **60** *L* **5** # 210
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg_timers*

break_link_timer

SuggestedRemedy

break_link_timer_[LSM] (reference that this timer is used in low speed Auto-Negotiation mode)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "..._timer" to "..._timer_[LSM]" and update subsequent text and state diagram references.

Cl **98** *SC* **98.5.2** *P* **60** *L* **6** # 211
Graber, Steffen Pepperl+Fuchs GmbH

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

The timer shall expire TBD µs to TBD µs after being started.

SuggestedRemedy

The timer shall expire 300 µs to 305 µs after being started. (see presentation "10BASE-T1L Auto-Negotiation")

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.5.2** *P* **60** *L* **9** # 212
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg_timers*

clock_detect_max_timer

SuggestedRemedy

clock_detect_max_timer_[LSM] (reference that this timer is used in low speed Auto-Negotiation mode)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "..._timer" to "..._timer_[LSM]" and update subsequent text and state diagram references.

Cl **98** *SC* **98.5.2** *P* **60** *L* **13** # 213
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg_timers*

clock_detect_min_timer

SuggestedRemedy

clock_detect_min_timer_[LSM] (reference that this timer is used in low speed Auto-Negotiation mode)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "..._timer" to "..._timer_[LSM]" and update subsequent text and state diagram references.

Cl **98** *SC* **98.5.2** *P* **60** *L* **16** # 214
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg_timers*

data_detect_max_timer

SuggestedRemedy

data_detect_max_timer_[LSM] (reference that this timer is used in low speed Auto-Negotiation mode)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "..._timer" to "..._timer_[LSM]" and update subsequent text and state diagram references.

Cl **98** *SC* **98.5.2** *P* **60** *L* **22** # 215
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg_timers*

data_detect_min_timer

SuggestedRemedy

data_detect_min_timer_[LSM] (reference that this timer is used in low speed Auto-Negotiation mode)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "..._timer" to "..._timer_[LSM]" and update subsequent text and state diagram references.

Cl **98** *SC* **98.5.2** *P* **60** *L* **27** # 216
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg_timers*
interval_timer

SuggestedRemedy
interval_timer_[LSM] (reference that this timer is used in low speed Auto-Negotiation mode)

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

Change "..._timer" to "..._timer_[LSM]" and update subsequent text and state diagram references.

Cl **98** *SC* **98.5.2** *P* **60** *L* **30** # 217
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EZ*
Editor's Note

SuggestedRemedy
Please remove Editor's note.

Response *Response Status* **C**
ACCEPT.
Delete Editor's Note on lines 31-34.

Cl **98** *SC* **98.5.2** *P* **60** *L* **35** # 218
Graber, Steffen Pepperl+Fuchs GmbH

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

SuggestedRemedy
Remove this timer, the explanation, and the associated note (lines 35 to 43) from this position of the document (as this timer is not depending on high speed or low speed autoneg mode, but on the selected PHY type and the associated training time, it will be reapplied to another position of the document by a later comment)

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

Cl **98** *SC* **98.5.2** *P* **60** *L* **45** # 219
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg_timers*
page test_max_timer

SuggestedRemedy
page_test_max_timer_[LSM] (reference that this timer is used in low speed Auto-Negotiation mode)

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

Change "..._timer" to "..._timer_[LSM]" and update subsequent text and state diagram references.

Cl **98** *SC* **98.5.2** *P* **60** *L* **48** # 220
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg_timers*
receive_DME_timer

SuggestedRemedy
receive_DME_timer_[LSM] (reference that this timer is used in low speed Auto-Negotiation mode)

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

Change "..._timer" to "..._timer_[LSM]" and update subsequent text and state diagram references.

Cl **98** *SC* **98.5.2** *P* **60** *L* **49** # 221
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg*
The timer shall expire 145712 ns to 148912 ns after being started.

SuggestedRemedy
The timer shall expire 145668 ns to 148868 ns after being started. (see presentation "10BASE-T1L Auto-Negotiation")

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

Cl **98** *SC* **98.5.2** *P* **60** *L* **52** # 222

Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg_timers*

rx_wait_timer

SuggestedRemedy

rx_wait_timer_[LSM] (reference that this timer is used in low speed Auto-Negotiation mode)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "..._timer" to "..._timer_[LSM]" and update subsequent text and state diagram references.

Cl **98** *SC* **98.5.2** *P* **61** *L* **1** # 223

Graber, Steffen Pepperl+Fuchs GmbH

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

The rx_wait_timer shall expire TBD µs to TBD µs after being started or restarted.

SuggestedRemedy

The rx_wait_timer shall expire 300 µs to 340 µs after being started or restarted. (see presentation "10BASE-T1L Auto-Negotiation")

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.5.2** *P* **61** *L* **5** # 224

Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *AutoNeg_timers*

silent_timer

SuggestedRemedy

silent_timer_[LSM] (reference that this timer is used in low speed Auto-Negotiation mode)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "..._timer" to "..._timer_[LSM]" and update subsequent text and state diagram references.

Cl **98** *SC* **98.5.2** *P* **61** *L* **5** # 225

Graber, Steffen Pepperl+Fuchs GmbH

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

The timer shall expire 18728 ns to 19788 ns after being started.

SuggestedRemedy

The timer shall expire 20868 ns to 24068 ns after being started. (see presentation "10BASE-T1L Auto-Negotiation")

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.5.2** *P* **61** *L* **7** # 226

Graber, Steffen Pepperl+Fuchs GmbH

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

link_fail_inhibit_timer

SuggestedRemedy

Decribe the behavior of the PHY type dependent link_fail_inhibit_timer at this position in the following way: Depending on the selected PHY type, done by Auto-Negotiation, the following timer values shall be used: (new line) link_fail_inhibit_timer_[HCD] (new line) Timer for qualifying a link_status=FAIL indication or a link_status=OK indication when a specific technology link is first being established. A link will only be considered "failed" if the link_fail_inhibit_timer_[HCD] has expired and the link has still not gone into the link_status=OK state. The expiration time of the link_fail_inhibit_timer_[HCD] shall be dependent on the selected PHY type. For all PHY types, except 10BASE-T1L this timer shall expire 97 ms to 98 ms after entering the AN GOOD CHECK state. For a 10BASE-T1L PHY this timer shall expire 3030 to 3090 ms after entering the AN GOOD CHECK state. The link_fail_inhibit_timer expiration value is greater than the time required for the link partner to complete Auto-Negotiation after the local device has completed Auto-Negotiation plus the time required for the specific technology to enter the link_status=OK state. (Remark (not to write in the standards text): This assumes that a 10BASE-T1S PHY at maximum starts up in less than 97 ms which likely will be true, but needs to get confirmation.)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Show additions in suggested remedy in underline.

Cl **98** *SC* **98.5.6** *P* **61** *L* **17** # 227

Graber, Steffen — Pepperl+Fuchs GmbH

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

A PHY supporting only one Auto-Negotiation speed shall implement the behavior shown in Figure 98-12, depending on the supported Auto-Negotiation speed.

SuggestedRemedy

A PHY supporting only one Auto-Negotiation speed shall implement the behavior as shown in Figures 98-7, 98-8, 98-9 and 98-10 without any further modification, using the associated timer values for high speed mode (HSM) or low speed mode (LSM) Auto-Negotiation as described in Clause 98.5.2. (see presentation "10BASE-T1L Auto-Negotiation")

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change "A PHY supporting only one Auto-Negotiation speed shall implement the behavior shown in Figure 98-12, depending on the supported Auto-Negotiation speed."
to
"A PHY supporting only one Auto-Negotiation speed shall implement the behavior as shown in Figures 98-7, 98-8, 98-9 and 98-10 without any further modification, using the associated timer values for high speed mode (HSM) or low speed mode (LSM) Auto-Negotiation as described in 98.5.2. "
(deleted "Clause" from suggested remedy)

Cl **98** *SC* **98.5.6** *P* **61** *L* **21** # 228

Graber, Steffen — Pepperl+Fuchs GmbH

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

Figure 98-11

SuggestedRemedy

Modify Figure 98-11 according to presentation "10BASE-T1L Auto-Negotiation", slide 9.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Jon Lewis modify Figure 98-11 according to presentation "10BASE-T1L Auto-Negotiation (http://www.ieee802.org/3/cg/public/May2018/Graber_3cg_01a_0418.pdf)", slide 10.

Cl **98** *SC* **5.6** *P* **61** *L* **25** # 493

Bains, Amrik — Cisco System

Comment Type **T** *Comment Status* **D** *Late*

Figure 98-11 shows DME speed selection, and then "auto_negotiation done" signal should be sent to Figure 98-7. This is not shown on figure 98-7

SuggestedRemedy

Add "Auto_negotiation done" to Figure 98-7 next to pwr_on=true

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **98** *SC* **5.6** *P* **61** *L* **48** # 492

Bains, Amrik — Cisco System

Comment Type **ER** *Comment Status* **D** *Late*

After the selection of high/low speed selection, Figure 98-11 has "auto_negotiation done" signal. This ture for slectiing speed operation for the DME signaling but not the final auto-negotiation of data speed.

SuggestedRemedy

Rename signal to "DME auto_negotiation done"

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **98** *SC* **98.5.6** *P* **62** *L* **1** # 229

Graber, Steffen — Pepperl+Fuchs GmbH

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

Figure 98-12

SuggestedRemedy

Please remove Figure 98-12. (see presentation "10BASE-T1L Auto-Negotiation")

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.5.6.1** *P* **62** *L* **22** # 230

Graber, Steffen Pepperl+Fuchs GmbH

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

This variable is set by the management entity to restart the Auto-Negotiation process.

SuggestedRemedy

If two different Auto-Negotiation speeds are implemented and this variable is set to TRUE by the management entity, the state machine described in Figure 98-11 and subsequently also the state machines described in Figures 98-7, 98-8, 98-9 and 98-10 are resetted. If only single speed Auto-Negotiation is implemented, variable mr_main_reset has to be used instead as described in Clause 98.5.1. (see presentation "10BASE-T1L Auto-Negotiation")

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

On line 22, replace,
This variable is set by the management entity to restart the Auto-Negotiation process.

With,

If two different Auto-Negotiation speeds are implemented and this variable is set to TRUE by the management entity, then the state machine described in Figure 98-11 and, subsequently, also the state machines described in Figure 98-7, Figure 98-8, Figure 98-9, and Figure 98-10, are restarted. If only single speed Auto-Negotiation is implemented, variable mr_main_reset has to be used instead as described in 98.5.1.

Editor: Among other editorial corrections, resetted was changed to retarted

Cl **98** *SC* **98.5.6.1** *P* **62** *L* **26** # 231

Graber, Steffen Pepperl+Fuchs GmbH

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

pwr_on_reset (complete section)

SuggestedRemedy

Replace this section by variable power_on and reference this to Clause 98.5.1. In Clause 98.5.1 add in the description for power_on also the 10BASE-T1L PHY: Condition that is true until such time as the power supply for the device that contains the Auto-Negotiation state diagrams has reached the operating region or the device has low-power mode set via 1000BASE-T1 PMA control register bit 1.2304.11 or via 10BASE-T1L PMA control register bit 1.2294.11. (see presentation "10BASE-T1L Auto-Negotiation")

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace,
pwr_on_reset
This variable is set to TRUE for the first cycle after applying power to initiate the Auto-Negotiation process.
Values: TRUE or FALSE

With,
power_on
See 98.5.1.

Insert the following after 98.5 Detailed functions and state diagrams,

98.5.1 State diagram variables

Change the variable for power-on as follows:

power_on
Condition that is true until such time as the power supply for the device that contains the Auto-Negotiation state diagrams has reached the operating region or the device has low-power mode setvia 1000BASE-T1 PMA control register bit 1.2304.11 <start underline> or via 10BASE-T1L PMA control register bit 1.2294.11 <end underline>.
Values:
false: the device is completely powered (default)
true: the device has not been completely powered

Cl **98** *SC* **98.5.6.1** *P* **62** *L* **28** # 232

Graber, Steffen Pepperl+Fuchs GmbH

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

Add missing variables.

SuggestedRemedy

Please add the following variables with reference to Clause 98.5.1 (and sort the variables afterwards in alphabetic order): mr_restart_negotiation, mr_autoneg_enable, mr_main_reset, and an_link_good (the explanation of these variables is already done in Clause 98.5.1) (see presentation "10BASE-T1L Auto-Negotiation")

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add the following variables to 98.5.6.1 in alphabetical order:

mr_restart_negotiation
See 98.5.1.

an_link_good
See 98.5.1.

mr_main_reset
See 98.5.1.

mr_autoneg_enable
See 98.5.1.

Cl **98** *SC* **98.5.6.2** *P* **62** *L* **32** # 233

Graber, Steffen Pepperl+Fuchs GmbH

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

auto_negotiation done

SuggestedRemedy

Remove this function, at it is replaced by variable mr_autoneg_complete. (see presentation "10BASE-T1L Auto-Negotiation")

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Delete,

auto_negotiation done
This function returns TRUE, if the under laying Auto-Negotiation state machines have completed the Auto-Negotiation process, otherwise the function returns the value FALSE.
Values: TRUE or FALSE

Cl **98** *SC* **98.5.6.2** *P* **62** *L* **39** # 234

Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *AutoNeg*

., otherwise this function returns false.

SuggestedRemedy

., otherwise this function returns FALSE. (write FALSE in capital letters)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

On line 40, change "false" to "FALSE".

Cl **98** *SC* **98.5.6.2** *P* **62** *L* **43** # 235

Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *AutoNeg*

This function returns TRUE, if at least the last 12 received DME pulses are within the allowed range for the high speed Auto-Negotiation communication (400 ns to 3600 ns pulse width) including the violations of the DME encoding within the start delimiter.

SuggestedRemedy

This function returns TRUE, if at least the last 12 received DME pulses are within the allowed range for the low speed Auto-Negotiation communication (400 ns to 3600 ns pulse width) including the violations of the DME encoding within the start delimiter, otherwise this function returns FALSE. (replace high speed by low speed and add FALSE condition)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

On line 45, replace, "high speed" with "low speed"

On line 46, "start delimiter." with "start delimiter, otherwise this function returns FALSE."

Cl **98** *SC* **98.5.6.2** *P* **62** *L* **49** # 236
Graber, Steffen Pepperl+Fuchs GmbH

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

energy_detected

SuggestedRemedy

Remove energy_detected function and description, as this is not needed anymore. (see presentation "10BASE-T1L Auto-Negotiation")

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete,
energy_detected
This function returns TRUE, if signal energy is detected on the link segment and the pulse width of at least the last 12 received pulses is within the allowed range for the high speed Auto-Negotiation DME communication (15 ns to 135 ns pulse width) or the low speed Auto-Negotiation DME communication (400 ns to 3600 ns pulse width).
Values: TRUE or FALSE

Cl **98** *SC* **98.5.6.3** *P* **63** *L* **3** # 237
Graber, Steffen Pepperl+Fuchs GmbH

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

Editor's Note

SuggestedRemedy

Please remove Editor's Note.

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.5.6.3** *P* **63** *L* **11** # 238
Graber, Steffen Pepperl+Fuchs GmbH

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

Timer value: TBD

SuggestedRemedy

Timer value: (2.5 ms ± 0.1 ms) + (random integer from 0 to 15) x (0.5 ms ± 0.05 ms)

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.5.6.3** *P* **63** *L* **13** # 239
Graber, Steffen Pepperl+Fuchs GmbH

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

Timer value: TBD

SuggestedRemedy

Timer value: 100 ms ± 1 ms

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.6.8** *P* **63** *L* **46** # 240
Graber, Steffen Pepperl+Fuchs GmbH

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

Editor's Note

SuggestedRemedy

Please remove Editor's Note.

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.6.8** *P* **64** *L* **4** # 241
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *AutoNeg_timers*

timer values are listed in table without references to high speed (_[HSM]) or low speed (_[LSM]) auto-negotiation modes.

SuggestedRemedy

Suggestion is to keep the table from the timer references as they are and not to add_[HSM] and _[LSM] referrers, as this seems to make the readability worse.
Alternatively the timers could be referenced with additional _[HSM] and _[LSM] text, splitted, and made optional, depending on the supported auto-negotiation speed grades (in this case there is also need to add the splitting for the backoff_timer). The group needs to decide, which style to use.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Make PICS consistent with resolution of naming of "AutoNeg_timers" comments, referencing the timers as named.
Currently proposed ACCEPT, (Split the rows to show the additional _[HSM], _[LSM] text and made optional depending on whether auto-negotiation speed is supported)

Cl **98** *SC* **98.6.8** *P* **64** *L* **5** # 349
Graber, Steffen Pepperl+Fuchs GmbH

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

All value/comment fields in the table start with "Expire".

SuggestedRemedy

Please change "Expire" to "Expires" in each row of the table, as only a single timer is referenced.

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.6.8** *P* **64** *L* **6** # 242
Graber, Steffen Pepperl+Fuchs GmbH

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

. and 15000 ns to 15900 ns in low speed mode.

SuggestedRemedy

. and 17668 ns to 20868 ns in low speed mode.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Incorporate remedy with underline.

Cl **98** *SC* **98.6.8** *P* **64** *L* **10** # 243
Graber, Steffen Pepperl+Fuchs GmbH

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

Expire 300 µs to 305 µs after being started in high speed mode and TBD µs to TBD µs in low speed mode.

SuggestedRemedy

Expire 300 µs to 305 µs after being started (the timer value is the same for both high speed and low speed mode).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Incorporate remedy with underline.

Cl **98** *SC* **98.6.8** *P* **64** *L* **35** # 244
Graber, Steffen Pepperl+Fuchs GmbH

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

Expire 97 ms to 98 ms after entering the AN GOOD CHECK state in high speed mode and TBD ms to TBD ms in low speed mode.

SuggestedRemedy

Expire 3030 ms to 3090 ms after endering the AN GOOD CHECK state for a 10BASE-T1L PHY and 97 ms to 98 ms for all other BASE-T1 PHYs.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace SD11 with,

Expire <strikethrough>97<underline>3030 ms to <strikethrough>98<underline>3039 ms after entering the AN GOOD CHECK <begin underline> state for a 10BASE-T1L PHY and 97 ms to 98 ms for all other BASE-T1 PHYs<end underline>.

Cl **98** *SC* **98.6.8** *P* **64** *L* **44** # 245
Graber, Steffen Pepperl+Fuchs GmbH

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

. and 143040 ns to 147140 ns in low speed mode.

SuggestedRemedy

. and 145668 ns to 148868 ns in low speed mode.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Incorporate remedy with underline.

Cl **98** *SC* **98.6.8** *P* **64** *L* **48** # 246
Graber, Steffen Pepperl+Fuchs GmbH

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

. and TBD µs to TBD µs in low speed mode.

SuggestedRemedy

. and 300 µs to 340 µs in low speed mode.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Incorporate remedy with underline.

Cl **98** *SC* **98.6.8** *P* **64** *L* **52** # 247
Graber, Steffen Pepperl+Fuchs GmbH

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

. and 15900 ns to 16800 ns in low speed mode.

SuggestedRemedy

. and 20868 ns to 24068 ns in low speed mode.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Incorporate remedy with underline.

Cl **104** *SC* **104** *P* **65** *L* **1** # 496
Jones, Peter Cisco

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

Change to align with PAR modification throughout rest of clause

SuggestedRemedy

Change "Single Balanced Twisted-Pair" to "Single Balanced Pair"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "Single Balanced Twisted-Pair Ethernet" to "Single-Pair Ethernet"

Cl **104** *SC* **104.1.3** *P* **65** *L* **10** # 395
Zimmerman, George CME Consulting et al

Comment Type **T** *Comment Status* **A** *Power*

Due to the similar requirements of the MDI Return Loss a type A or type C PoDL interface should be compatible with 100BASE-T1S. 100BASE-T1S needs to be added here.

SuggestedRemedy

Change "A Type A or Type C PSE and Type A or Type C PD is compatible with 100BASE-T1 PHYs." to "A Type A or Type C PSE and Type A or Type C PD is compatible with 100BASE-T1 or 10BASE-T1S PHYs.", and change line 12 from "A Type C PSE and Type C PD is compatible with both 100BASE-T1 and 1000BASE-T1 PHYs." to "A Type C PSE and Type C PD is compatible with 10BASE-T1S, 100BASE-T1 and 1000BASE-T1 PHYs."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Make the following changes showing strikeouts and underlines as appropriate:
Change from,
"A Type A or Type C PSE and Type A or Type C PD is compatible with 100BASE-T1 PHYs."

to,
"A Type A or Type C PSE and Type A or Type C PD is compatible with 10BASE-T1S and 100BASE-T1 PHYs.",

and change line 12 from,
"A Type C PSE and Type C PD is compatible with both 100BASE-T1 and 1000BASE-T1 PHYs."

to,
"A Type C PSE and Type C PD is compatible with 10BASE-T1S, 100BASE-T1 and 1000BASE-T1 PHYs."

Cl **104** *SC* **104.6.2** *P* **69** *L* **42** # 407
Zimmerman, George CME Consulting et al

Comment Type **T** *Comment Status* **A** *EZ*

The PI for Type E PSEs and PDs shall meet the fault tolerance requirements as specified in 146.8.xxx. - needs to be filled in. Since Type E is only for 10BASE-T1L, this is only for clause 146.

SuggestedRemedy

Change 146.8.xxx to 146.8.4 (cross reference)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Duplicate of Comment 248
Same resolution - change 146.8.xxx to 146.8.4

Cl **104** *SC* **104.6.2** *P* **69** *L* **43** # 248
Graber, Steffen Pepperl+Fuchs GmbH

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

. as specified in 146.8.xxx.

SuggestedRemedy

. as specified in 146.8.4.

Response *Response Status* **C**

ACCEPT.

Cl **104** *SC* **104.7.1.3** *P* **73** *L* **12** # 249
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *Power*

72 (TBD)

SuggestedRemedy

80 (suggestion is to go to 80 ns as a typical fieldbus type A cable is having approx. 70 nF capacitance per 1000 m. Thus 72 nF seem to be too close to the typical values, and 80 nF would provide a higher margin).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "72 (TBD)" to "80"

Cl **104** *SC* **104.7.1.3** *P* **73** *L* **12** # 400
Zimmerman, George CME Consulting et al

Comment Type **T** *Comment Status* **A** *Power*

TBD for max bus capacitance has been under review without comment

SuggestedRemedy

Delete TBD

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "72 (TBD)" to "80". Resolved by comment #249.

Cl **146** *SC* **146** *P* **77** *L* **1** # 354
Graber, Steffen Pepperl+Fuchs GmbH

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

Energy Efficient Ethernet description is missing in Clause 146.

SuggestedRemedy

Please add text and modify state machines as described in "Energy Efficient Ethernet.pdf" (see also presentation "10BASE-T1L Energy Efficient Ethernet.pdf").

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Incorporate modifications to PCS Receive and PMA state diagrams on slides 5 and 6 of 10BASE-T1L Energy Efficient Ethernet.pdf
Incorporate timer values on slides 3 and 4 in clause 78 tables 78-2 (T_q, T_s and T_r) and 78-4 (T_w_PHY, T_w_sys_tx, T_w_sys_rx, T_phy_shrink_tx, T_phy_shrink_rx)

MASTER EEE_T1L

Cl **146** *SC* **146.1** *P* **77** *L* **9** # 471
Brandt, David Rockwell Automation

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

Typo

SuggestedRemedy

Change "fully functional and electrical specifications" to "full functional and electrical specifications"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "Provided in this clause are fully functional and electrical specifications for type 10BASE-T1L PCS and PMA."
to
"Provided in this clause are fully functional and electrical specifications for type 10BASE-T1L PCS, PMA, and MDI."

Cl **146** *SC* **146.1** *P* **77** *L* **9** # 334
Shariff, Masood CommScope

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

Improve sentence.

Provided in this clause are fully functional and electrical specifications for the type 10BASE-T1L PCS and PMA.

SuggestedRemedy

Provided in this clause are fully functional and electrical specifications for the type 10BASE-T1L PCS and PMA.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by comment 471

Cl **146** *SC* **146.1** *P* **77** *L* **23** # 350
Graber, Steffen Pepperl+Fuchs GmbH

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

Editor's Note

SuggestedRemedy

Please replace Editor's Note with the following text: This clause also specifies an optional Energy-Efficient Ethernet (EEE) capability. A 10BASE-T1L PHY that supports this capability may enter a Low Power Idle (LPI) mode of operation during periods of low link utilization as described in Clause 78.

Response *Response Status* **C**

ACCEPT.
#EEE_T1L

Cl **146** *SC* **146.1.2** *P* **77** *L* **36** # 497
Jones, Peter Cisco

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

Change to align with PAR modification

SuggestedRemedy

Change "over single balanced twisted-pair cabling" to "a single balanced pair of conductors"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "over single balanced twisted-pair cabling" to "a single balanced pair of conductors" and perform global check (see comment #300).

Cl **146** *SC* **146.1.2** *P* **77** *L* **38** # 498
Jones, Peter Cisco

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

Change to align with PAR modification throughout rest of clause

SuggestedRemedy

Change "single balanced twisted-pair cabling" to "a single balanced pair"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "single balanced twisted-pair cabling" to "single balanced pair cabling".

Cl **146** *SC* **146.1.2** *P* **78** *L* **36** # 397
Zimmerman, George CME Consulting et al

Comment Type **E** *Comment Status* **A** *EEE*

Editor's note has served its purpose, Text has been reviewed throught 2 cycles, AND is redundant with other notes

SuggestedRemedy

Delete editor's note at P78 line 36

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by comment 351
#EEE_T1L

Cl **146** *SC* **146.1.2** *P* **78** *L* **36** # 351
Graber, Steffen Pepperl+Fuchs GmbH

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

Editor's Note

SuggestedRemedy

Please replace Editor's Note with the following text: A 10BASE-T1L PHY may optionally support Energy-Efficient Ethernet (see Clause 78) and advertise the EEE capability during Auto-Negotiation as described in Annex 98C.5. The EEE capability is a mechanism by which 10BASE-T1L PHYs are able to reduce power consumption during periods of low link utilization.

Response *Response Status* **C**

ACCEPT.
#EEE_T1L

Cl **146** *SC* **146.1.2** *P* **78** *L* **36** # 250
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EEE*

Editor's Note

SuggestedRemedy

Remove all text besides last line from Editor's Note.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by comment 351 which removed the editor's note and accomplished all the items in it.
#EEE_T1L

Cl **146** *SC* **146.1.2** *P* **79** *L* **4** # 403
Zimmerman, George CME Consulting et al

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

EEE must be advertised during autoneg - training sequence doesn't support it.

SuggestedRemedy

Insert new 3rd sentence following "link utilization.": "EEE capability is advertised during the Auto-Negotiation process." - delete editor's note on line 5

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by comment 351
#EEE_T1L

Cl **146** *SC* **146.1.2** *P* **79** *L* **5** # 251
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *EEE*

Editor's Note

SuggestedRemedy

Please remove Editor's Node (EEE is advertised using next page machanism during Autoneg and can be set by PMA control register, if Autoneg is not present or disabled).

Response *Response Status* **C**

ACCEPT.
#EEE_T1L

Cl **146** *SC* **146.1.2** *P* **79** *L* **13** # 396
Zimmerman, George CME Consulting et al

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

Editor's note has served its purpose, Text has been reviewed throught 2 cycles

SuggestedRemedy

Delete editor's note at P79 line 13

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.1.2** *P* **79** *L* **13** # 252
Graber, Steffen Pepperl+Fuchs GmbH

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

Editor's Note

SuggestedRemedy

Please remove Editor's Note, as the text has been added for review in D1.1 and therefore has been reviewed and commented in the meantime.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Duplicate of comment 396

Cl **146** *SC* **146.2** *P* **81** *L* **1** # 253
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *Primitives*

PMA_LINK.request (link_control) is missing.

SuggestedRemedy

Please add PMA_LINK.request before PMA_LINK.indication (link_control)

Response *Response Status* **C**

ACCEPT.
#PRIMITIVES

Cl **146** *SC* **146.2** *P* **81** *L* **10** # 254
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *Primitives*

TX_EN

SuggestedRemedy

Change TX_EN to tx_enable_mii (in PCS the TX_EN signal form MII is preprocessed in dependence of the current tx_mode and the resulting signal fed into PMA is tx_enable_mii).

Response *Response Status* **C**

ACCEPT.
#PRIMITIVES

Cl **146** *SC* **146.2** *P* **81** *L* **11** # 255
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *Primitives*

Description of Service Primitives is missing.

SuggestedRemedy

Please add text suggested in "Service Primitives.pdf"

Response *Response Status* **C**

ACCEPT.
MASTER PRIMITIVES COMMENT

Cl **146** *SC* **146.3.1** *P* **82** *L* **22** # 256
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *Primitives*

Signal tx_enable_mii going to PMA is missing.

SuggestedRemedy

Please add singnal tx_enable_mii from block PCS DATA TRANSMISSION ENABLE to PMA service interface.

Response *Response Status* **C**

ACCEPT.
#PRIMITIVES

Cl **146** *SC* **146.3.1** *P* **82** *L* **38** # 257
Graber, Steffen Pepperl+Fuchs GmbH

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

Font for MEDIA INDEPENDENT INTERFACE and PMA SERVICE INTERFACE does not match.

SuggestedRemedy

Please match used font to rest of the document.

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.3.3.1.1** *P* **85** *L* **36** # 258
Graber, Steffen Pepperl+Fuchs GmbH

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

Editor's Note

SuggestedRemedy

Please remove Editor's Note as it is just an explantion for what loc_lpi_req variable is being used. That EEE definitions are missing is stated already at other positions in the document.

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.3.4.1.1** *P* **96** *L* **22** # 352
Graber, Steffen Pepperl+Fuchs GmbH

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

. received that this not allowed .

SuggestedRemedy

. received that is not allowed .

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.3.4.1.1** *P* **96** *L* **25** # 353
Graber, Steffen Pepperl+Fuchs GmbH

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

. in Figure 146-10 else it is set .

SuggestedRemedy

.. in Figure 146-10, else it is set . (comma is missing)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "Figure 146-10 else it is set to FALSE." to
"Figure 146-10 and set FALSE otherwise"

Cl **146** *SC* **146** *P* **98** *L* **26** # 502
Huszák, Gergely Kone

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

Figure 146-11 is confusing and unnecessary. It contradicts text stating how the output behaves when in PCS loopback. Most Base-T clauses have no figure.

SuggestedRemedy

Delete figure 146-11 and all references to it.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete Figure 146-11 and delete, "The PCS loopback data flow is illustrated in Figure 146–11." on line 23. Search for other references for Figure 146-11 in document and delete them.

Cl **146** *SC* **146.4** *P* **99** *L* **10** # 259
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *Primitives*

TX_EN

SuggestedRemedy

tx_enable_mii (the variable is not directly coming from MII, but from the PCS Data Transmission Enabling state diagram)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change signal name in diagram from TX_EN to tx_enable_mii.
(the signal name at the PMA service interface)

#PRIMITIVES

Cl **146** *SC* **146.4.3** *P* **100** *L* **38** # 299
Maguire, Valerie The Siemon Company

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

Align media references with revised objectives.

SuggestedRemedy

Replace, "single pair" with "single balanced pair"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "PMA Receive has the ability to translate the received signals on the single pair into the PMA_UNITDATA.indication parameter rx_symb_vector"

to "PMA Receive has the ability to translate the received signals at the MDI into the PMA_UNITDATA.indication parameter rx_symb_vector"

Cl **146** *SC* **146.4.4** *P* **101** *L* **23** # 260
Graber, Steffen Pepperl+Fuchs GmbH

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

AUTONEG mode

SuggestedRemedy

Auto-Negotiation

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change AUTONEG to Auto-Negotiation on lines 23 and 26.

Cl **146** *SC* **146.4.4** *P* **101** *L* **23** # 261
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *EZ*

PMA_CONFIG

SuggestedRemedy

variable config

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change PMA_CONFIG to "the configuration of the PMA" on lines 23 and 26

Cl **146** *SC* **146.4.4** *P* **101** *L* **25** # 262
Graber, Steffen Pepperl+Fuchs GmbH

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

AUTONEG mode

SuggestedRemedy

Auto-Negotiation

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by comment 260

Cl **146** *SC* **146.4.4** *P* **101** *L* **25** # 263
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *EZ*

PMA_CONFIG

SuggestedRemedy

variable config

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by comment 261

Cl **146** *SC* **146.5.1** *P* **104** *L* **48** # 418
Zimmerman, George CME Consulting et al

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

Editor's note is unnecessary. EMC is being discussed. Note just gives general information.

SuggestedRemedy

Delete editor's note.

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.5.2** *P* **105** *L* **31** # 404
Zimmerman, George CME Consulting et al

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

Editor's note has served its purpose

SuggestedRemedy

delete editor's note as per instruction

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Duplicate of comment 264

Cl **146** *SC* **146.5.2** *P* **105** *L* **32** # 264
Graber, Steffen Pepperl+Fuchs GmbH

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

Editor's Note

SuggestedRemedy

Please remove Editor's Note, as the test mode 3 in the meantime has been added to the draft.

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.5.4.1** *P* **106** *L* **42** # 265
Graber, Steffen Pepperl+Fuchs GmbH

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

Default setting is to use Auto-Negotiation.

SuggestedRemedy

Default setting is to use Auto-Negotiation, if available.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "Default setting is to use Auto-Negotiation." to "The default setting is to use Auto-Negotiation, if available."

(Auto-Negotiation is not required for the PHY operation)

Cl **146** *SC* **146.5.4.4** *P* **107** *L* **3** # 405
Zimmerman, George CME Consulting et al

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

All values in the document are subject to change, and editor's note has served its purpose.

SuggestedRemedy

Delete editor's note saying "the values of the mask are and power level are TBD"

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.5.4.4** *P* **107** *L* **4** # 266
Graber, Steffen Pepperl+Fuchs GmbH

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

Editor's Note

SuggestedRemedy

PSD mask limits are already in since D1.1 for commenting. Please remove Editor's note. If other comments related to the PSD mask are available during this meeting cycle, the PSD mask can be adjusted accordingly. Otherwise comments related to the PSD mask are also possible during Working Group Ballot.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by comment 405

Cl **146** *SC* **146.5.4.4** *P* **107** *L* **28** # 406
Zimmerman, George CME Consulting et al

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

Editor's note has served its purpose

SuggestedRemedy

delete editor's note as specified in instruction.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by comment 267.

Cl **146** *SC* **146.5.4.4** *P* **107** *L* **28** # 267
Graber, Steffen Pepperl+Fuchs GmbH

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

Editor's Note

SuggestedRemedy

Please remove Editor's note in the next draft, as the drawing has been in for commenting since D1.2.

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.5.5.3** *P* **109** *L* **3** # 398
Zimmerman, George CME Consulting et al

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

Text has resolved the technical issues in the editor's note.

SuggestedRemedy

Delete editor's note at P109 L3

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by comment 268

Cl **146** *SC* **146.5.5.3** *P* **109** *L* **3** # 268
Graber, Steffen Pepperl+Fuchs GmbH

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

Editor's Note

SuggestedRemedy

During the meeting in Rosemont, there were some discussions about noise tests and outcome of the discussions was, not to implement the summed transmitter noise test for now. Therefore suggestion is to remove the Editor's node and stay with the Alien Crosstalk noise test like it is currently specified in D1.2. If then during Working Group Ballot another reasonable noise test is found, it can be added later on.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Delete editor's note

Cl **146** *SC* **146.5.5.3** *P* **109** *L* **34** # 269

Graber, Steffen — Pepperl+Fuchs GmbH

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

Editor's Note

SuggestedRemedy

Outcome of the discussions in Rosemont was, to stay with the current Alien Crosstalk test and not use a summed transmitter test. As there will be different link segment descriptions for the 1.0 Vpp and the 2.4 Vpp transmitter which are adapted according to the lower transmit power, there is no need to specify different noise levels for 1.0 Vpp and 2.4 Vpp transmit amplitudes. As long as shielded cables (shield attenuation typ. 60 dB for E3 additionally to the mode conversion of the twisted pair) are used, the margin seems to be ok (typ. 100 dB attenuation). For unshielded twisted pairs (see link segment definitions) further investigation is necessary. But as this is handled in the link segment section, please remove the Editor's Note at this position.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by comment 408.

Cl **146** *SC* **146.5.5.3** *P* **109** *L* **34** # 408

Zimmerman, George — CME Consulting et al

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

Many issues in the editor's note have been resolved and discussed. The only issue left is how this test relates to the transmit voltage option.

SuggestedRemedy

Delete "several points here..." through end of editor's note. Insert "how alien noise test relates to transmit amplitude option." so that the editor's note body text reads: "Task Force needs to discuss how alien noise test relates to transmit amplitude option."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Delet editor's note at P109 L34
Change 146.7.1.1 at P112 L 12:
from:
"The insertion loss of each 10BASE-T1L link segment shall meet the values determined using Equation (146–10)."
to:
"For PHYs in the 2.4 Vpp operation mode, the insertion loss of each 10BASE-T1L link segment shall meet the values determined using Equation (146–10)."

Insert in 147.7.1.1 after the figure,
as follows:
"For PHYs in the 1.0 Vpp operation mode, the insertion loss of each 10BASE-T1L link segment shall meet the values determined using Equation (146–10a)."

(equation from bottom of slide 4 of Graber_3cg_02_0518.pdf here)
(and add new figure to show equation.)

Cl **146** *SC* **146.5.6** *P* **109** *L* **46** # 270

Graber, Steffen — Pepperl+Fuchs GmbH

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

2.76 Vpp

SuggestedRemedy

2.64 Vpp (5 % tolerance of output voltage, 20 % droop (+/- 10 %) using test mode 2 pulses, which are 10 bit times long, see 146.5.4.2. As the maximum pulse length in the 4B3T encoded signal form is only 5 bit times instead of 10 bit times, during normal communication the droop shall be less than 10 % (+/- 5 %). Thus the maximum peak-to-peak voltage will be 2.64 Vpp instead of 2.76 Vpp.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Replace 2.76 Vpp with 2.64 Vpp on P109 L46

Cl **146** *SC* **146.5.6** *P* **109** *L* **46** # 271
Graber, Steffen Pepperl+Fuchs GmbH

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

1.15 Vpp

SuggestedRemedy

1.10 Vpp (5 % tolerance of output voltage, 20 % droop (+/- 10 %) using test mode 2 pulses, which are 10 bit times long, see 146.5.4.2. As the maximum pulse length in the 4B3T encoded signal form is only 5 bit times instead of 10 bit times, during normal communication the droop shall be less than 10 % (+/- 5 %). Thus the maximum peak-to-peak voltage will be 1.10 Vpp instead of 1.15 Vpp.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Replace 1.15 Vpp with 1.10 Vpp on P109 L46

Cl **146** *SC* **146.5.6** *P* **109** *L* **50** # 272
Graber, Steffen Pepperl+Fuchs GmbH

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

Editor's Note

SuggestedRemedy

Please remove Editor's Note, see the two comments above this comment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Delete Editor's note
See comments 270 and 271

Cl **146** *SC* **146.5.6** *P* **109** *L* **50** # 399
Zimmerman, George CME Consulting et al

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

Editor's note has served its purpose - issues have been considered in recirc

SuggestedRemedy

Delete editor's note at P109 L50

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by comment 399

Cl **146** *SC* **146.6.1** *P* **110** *L* **47** # 273
Graber, Steffen Pepperl+Fuchs GmbH

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

Editor's Note

SuggestedRemedy

Please remove Editor's Note and add the following text instead: If Auto-Negotiation is enabled, the MASTER-SLAVE configuration between the PHYs is established using the method being described in Clause 98.2.1.2.5 and Table 98-4. If there is no Auto-Negotiation functionality preset or if Auto-Negotiation function has been disabled, then the MASTER-SLAVE configuration is done separately for each PHY using bit 1.2100.14 (BASE-T1 PMA/PMD control register).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Delete Editor's Note.

Insert new paragraph at line 47:

"If Auto-Negotiation is available and enabled, the MASTER-SLAVE configuration between the PHYs is established using the method being described in 98.2.1.2.5 and Table 98-4. If there is no Auto-Negotiation functionality present or if Auto-Negotiation function has been disabled, the MASTER-SLAVE configuration is performed for each PHY using bit 1.2100.14 (BASE-T1 PMA/PMD control register) or equivalent functionality.

Cl **146** *SC* **146.6.2** *P* **111** *L* **11** # 274
Graber, Steffen Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **A** *EZ*

Default setting is to use Auto-Negotiation.

SuggestedRemedy

Default setting is to use Auto-Negotiation, if available.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "Default setting is to use Auto-Negotiation."
to "The default setting is to use Auto-Negotiation, if available."

Cl **146** *SC* **146.6.3** *P* **111** *L* **26** # 275

Graber, Steffen — Pepperl+Fuchs GmbH

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

10BASE-T1 PMA/PMD control register

SuggestedRemedy

BASE-T1 PMA/PMD control register

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "10BASE-T1" to "BASE-T1"

Cl **146** *SC* **146.6.3** *P* **111** *L* **28** # 276

Graber, Steffen — Pepperl+Fuchs GmbH

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

10BASE-T1 PMA/PMD control register

SuggestedRemedy

BASE-T1 PMA/PMD control register

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change 10BASE-T1 to BASE-T1

Cl **146** *SC* **146.7.1.2** *P* **113** *L* **5** # 314

Horrmeyer, Bernd — Phoenix Contact

Comment Type **TR** *Comment Status* **A** *Link Segment*

Equation gives 13,25 dB, but figure 146-23 shows 13,5 dB

SuggestedRemedy

Change '13.25 dB' in eq. 146-11 to '13.5 dB'

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Equation 146-11 at 0.5 MHz is 13.5 dB.
Change P113, L5: 13.25 dB to 13.5 dB

Typo in implementing slide 5
diminico_02_0318.pdf

Cl **146** *SC* **146.7.1.3** *P* **113** *L* **42** # 335

Shariff, Masood — CommScope

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

This is an international standard and should use the SI system for conductor diameter globally.

SuggestedRemedy

Globally use soft conversions of AWG to SI as shown below. Eg. 14 AWG (1.63 mm)

AWG D(ins) D(mm) CA(mm2)
110.09072.304.17
120.08082.053.31
130.07201.832.63
140.06411.632.08
150.05711.451.65
160.05081.291.31
170.04531.151.04
180.04031.020.82
190.03590.910.65
200.03200.810.52
210.02850.720.41
220.02540.650.33
230.02260.570.26
240.02010.510.20
250.01790.450.16
260.01590.400.13

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Add mm dimension to AWG globally e.g., 14 AWG (1.63 mm).

For committee discussion

Cl **146** *SC* **146.7.1.5** *P* **114** *L* **27** # 364

Schicketanz, Dieter — Reutlingen University

Comment Type **T** *Comment Status* **A** *Link Segment*

Coupling attenuation: there are similar measurement limitations as for the electromagnetic classification, therefore standarized set ups specify coupling attenuation from 30 MHz upwards only. As there is a need now to have a standarized set ups below 30MHz IEC TC46 decided last week to start a project on the basis of allready published standards IEC62153-4-x (x = 2 ,7,9 and others) which allready specifies measurements of coupling attenuation below 20 MHz. Taking a presentation from Proceedings of the 62nd IWCS Conference (http://www.bedea.com/images/PDF/Messtechnik/english/IWCS%20-%20Halme_Mund%20-%20EMC%20of%20Cables,%20Connectors.pdf) it can be seen in fig.6 that the coupling attenuaation has a slpoe of about 20 dB/dec below 100 MHz till it ends in noise below 20 MHz. The measurement goes down to 350 KHz. An explanation is prepared to be presented May 9.

SuggestedRemedy

On the basis of the measurements presented it is proposed th use the known values (ISO,802.3bp Schicketanz122017_10SPE_01_adhoc Page 7) of coupling attenuation at 100 MHz and add later , if needed , a formula presented by IEC TC46. In Table 146-6 coupling attenuation replace frequency range with 0.1 <f< 20, E1 with 40, E2 with 50, and E3 with 60. Delete editors note at line 35.

Response *Response Status* **C**

ACCEPT.
In Table 146-6 coupling attenuation replace frequency range with 0.1 <f< 20, E1 with 40, E2 with 50, and E3 with 60. Delete editors note at line 35.

Cl **146** *SC* **146.7.1.6** *P* **115** *L* **6** # 363

Schicketanz, Dieter — Reutlingen University

Comment Type **T** *Comment Status* **A** *Link Segment*

Table 146-7 electromagnetic classification. Due to measurement limitations CISPR has divided up the frequency range in radiated emmisions for frequencies higher than 80MHz, and conducted RF below 80 MHz. It is therefore not necesary to specifiy the radiated emmision as outside the frequency range of T1L

SuggestedRemedy

Delete line 1 Radiated RF-AM from Table 146-7

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete line 1 Radiated RF-AM from Table 146-7 on the basis of the specified PHY channel frequency range (0.1MHz 20MHZ) and associated wavelength.

Cl **146** *SC* **146.7.2.3** *P* **116** *L* **23** # 277

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **E** *Comment Status* **A** *Link Segment*

Editor's Note

SuggestedRemedy

Please remove Editor's Note as the referenced text is already in since D1.1 and has been discussed during the meeting is Rosemont.

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.8** *P* **116** *L* **23** # 409

Zimmerman, George — CME Consulting et al

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

Editor's note has served its purpose, this text has now been recirculated twice

SuggestedRemedy

Delete editor's note

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.8.1** *P* **116** *L* **40** # 310

Maguire, Valerie — The Siemon Company

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

It's too early in the amendment development process to be explicitly calling out a specific M8/M12 interface. The sentence structure could be improved.

SuggestedRemedy

Replace, "For industrial applications also a four pin M8/M12 according to IEC 61076-3-125 or a four pin 7/8" connector may be used" with, "For industrial applications, a four pin M8/M12 or a four pin 7/8" connector may be used".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by resolution to comment 315.
#MDI_CONNECTORS

Cl **146** *SC* **146.8.1** *P* **116** *L* **40** # 278

Graber, Steffen — Pepperl+Fuchs GmbH

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

For industrial applications . defined in 146.7.

SuggestedRemedy

Please replace the complete sentence by: For industrial applications also a two pin M8/M12 connector according to IEC 61076-3-125, a four pin M8 connector according to IEC 61076-2-104, a four pin M12 connector according to IEC 61076-2-101, or a four pin 7/8" connector may be used as long as it conforms to the requirements of the link segment defined in 146.7. For the four pin connectors the following pinout shall be used: Pin 1 - BI_DA+, Pin 2 - Shield or drain wire, Pin 3 - BI_DA-. If a metal connector housing is being used, this housing may also be connected to the cable shield.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by resolution to comment 315.
#MDI_CONNECTORS

Cl **146** *SC* **146.8.1** *P* **116** *L* **40** # 410

Zimmerman, George — CME Consulting et al

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

Previous comments have been accepted asking us to consider ISO/IEC and TIA connector processes in our MDI connector selection. The selection of a connector here is unnecessary for technical completeness and premature

SuggestedRemedy

Delete lines 40 through 49 (paragraphs 2 & 3 as well as editor's note in 146.8.1)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by resolution to comment 315.
#MDI_CONNECTORS

Cl **146** *SC* **146.8** *P* **116** *L* **40** # 355

Fritsche, Matthias — HARTING Technology

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

During the comment resolution discussion of comment 138 we lost the two pin versions. See comment 138 on Draft 1.1.

SuggestedRemedy

For industrial applications also a two or four pin M8/M12 according to IEC 61076-3-125 or a two or four pin 7/8" connector may be used as long as it conforms to the requirements of the link segment defined in 146.7.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by resolution to comment 315.
#MDI_CONNECTORS

Cl **146** *SC* **146.8** *P* **116** *L* **40** # 356

Fritsche, Matthias — HARTING Technology

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

According to the editor note a "better specificity of "lower environmental requirements", e.g., MICE1 or IP20" is needed. From my point of view the MICE classifications are useful here.

SuggestedRemedy

Alternatively for MICE 1 applications with lower environmental requirements a TBD connector may be used.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by resolution to comment 315.
#MDI_CONNECTORS

Cl **146** *SC* **146.8.1** *P* **116** *L* **40** # 315

Horrmeyer, Bernd — Phoenix Contact

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

There are several connectors announced as suitable for SPE. Therefore TIA and ISO/IEC introduced a selecting process for MICE1 and MICE3 connectors. IEEE802.3 asked also these SDO's via the liasion process for recommendations. So, cg should wait for results until defining a specific type.

SuggestedRemedy

For applications in a MICE1 environment a connector according to IEC [tbd] and for application in a MICE2 or 3 environment a connector according to IEC [tbd] may be used . Alternatively for applications with specific requirements another connector may be used as long as it conforms to the requirements of the link segment defined in 146.7. (Editor's note: tbd to be replaced prior to draft 2.0)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
MASTER COMMENT MDI_CONNECTORS
Delete P116 lines 40-50:
"For industrial applications also a four pin M8/M12 according to IEC 61076-3-125 or a four pin 7/8" connector may be used as long as it conforms to the requirements of the link segment defined in 146.7. Alternatively for applications with lower environmental requirements a TBD connector may be used. In this case pin TBD (BI_DA+) and pin TBD (BI_DA-) of the connector shall be used."

The sense of the Task Force has been towards an optional MDI connector (a recommendation), so specifying a connector isn't essential to technical completeness. A recommendation can be added later.

This resolves the existing TBDs, doesn't add another TBD to the draft, and aligns the draft with our response to comment 76 on D1.1 (responses of ISO and TIA groups should be considered before making any decision). We can add when we get responses from ISO and TIA.

Also, the current text incorrectly states the requirement (the full MDI connector isn't part of the link segment. - despite the ambiguity of the mating interface - but the connector itself isn't conforming to the link segment requirements.)

This leaves the section 146.8.1 MDI Connectors reading simply:
"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 which conforms to the link segment specification defined in 146.7."

Add Editor's Note - a liaison is expected from ISO/IEC SC25 WG3 when they complete their currently ongoing connector selection process.

Cl **146** *SC* **146.8.1** *P* **116** *L* **43** # 279

Graber, Steffen — Pepperl+Fuchs GmbH

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

Alternatively for applications . shall be used.

SuggestedRemedy

Please replace the complete paragraph by: Alternatively for applications with lower environmental requirements, like MICE E1 or IP20 a RJ45 connector may be used. In this case pin 3 (BI_DA+) and pin 6 (BI_DA-) of the connector shall be used. (I would recommend also using a RJ45 connector, if there is need for another TBD connector with TBD pinout, and there is a suggestion, what to use, we could add this additionally in (also at a later time during WG ballot).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by resolution to comment 315.
#MDI_CONNECTORS

Cl **146** *SC* **146.8.1** *P* **116** *L* **43** # 337

Shariff, Masood — CommScope

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

Improve specificity and provide references to the statement as requested in the Editors note on line 46.

"Alternatively for applications with lower environmental requirements a TBD connector may be used."

SuggestedRemedy

"Alternatively for applications in M1I1C1E1 environments (e.g. commercial buildings, hospitality, education) a connector specified by IEC SC48B (e.g. IEC 63171-1 Ed1) and selected by ISO/IEC/JTC1/SC 25/WG 3 may be used."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by resolution to comment 315.
#MDI_CONNECTORS

Cl **146** *SC* **146.8.1** *P* **116** *L* **46** # 280

Graber, Steffen — Pepperl+Fuchs GmbH

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

Editor's Note

SuggestedRemedy

Please remove Editor's Note, see previous comment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by resolution to comment 315.
(editor's note deleted)
#MDI_CONNECTORS

Cl **146** *SC* **146.8.3** *P* **117** *L* **7** # 281

Graber, Steffen — Pepperl+Fuchs GmbH

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

Editor's Note

SuggestedRemedy

Please remove Editor's Note and replace the MDI return loss formula by the formula given in presentation "10BASE-T1L MDI Return Loss.pdf", page "MDI Return Loss Limit Curve".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Remove editor's note.
Replace MDI return loss equation with:
20 dB - 18 dB * log10(0.2/f) for 0.1 MHz <= f < 0.2 MHz
20 dB for 0.2 MHz <= f <= 1 MHz
20 dB - 16.7 dB · log10(f) for 1 MHz < f <= 10 MHz
3.3 dB - 7.6 log10 (f/10) 10 MHz < f <= 20 MHz

where f is the frequency in MHz.

Cl **146** *SC* **146.8.3** *P* **117** *L* **14** # 333

Shariff, Masood — CommScope

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

Delete editors note on lines 7 - 10 and change equation 146-16 to use the proposed RL values in the remedy

SuggestedRemedy

Use these values for the RL from TIA-568.5 draft 0.5a

0.1 <= f < 0.5 9+9(f)
0.5 <= f <= 20 13.25

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by comment 281.
MDI return loss is not the same as connecting hardware return loss in TIA or ISO/IEC specifications. Must include effect of passive PHY circuitry which dominates in this case well beyond the connector contribution.

Cl **146** *SC* **146.8.3** *P* **117** *L* **19** # 411

Zimmerman, George — CME Consulting et al

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

All values are subject to change. Editor's note is unnecessary

SuggestedRemedy

Delete Editor's note

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.8.3** *P* **117** *L* **20** # 282

Graber, Steffen — Pepperl+Fuchs GmbH

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

Editor's Note

SuggestedRemedy

Please remove Editor's Note, see previous comment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolved by comment 411.

Cl **146** *SC* **146.9.1** *P* **118** *L* **10** # 412
Zimmerman, George CME Consulting et al

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

Isolation ad hoc is not changing the sections in the base standard this is modifying. Editor's note is unnecessary.

SuggestedRemedy

Delete editor's note.

Response *Response Status* **C**

ACCEPT.

Cl **146** *SC* **146.9.2** *P* **118** *L* **23** # 336
Shariff, Masood CommScope

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

Simplify and improve sentence:

"In industrial applications, all 10BASE-T1L cabling shall be routed according to any applicable local, state or national standards considering all relevant safety requirements."

SuggestedRemedy

"In industrial applications, 10BASE-T1L cabling shall be routed in accordance with applicable local, state or national safety requirements."

Response *Response Status* **C**

REJECT.
After much discussion of various possible rewordings, the Task Force recognized that the Isolation ad hoc is already working this text and it will almost surely change in the future.

Cl **146** *SC* **146.11.3** *P* **121** *L* **38** # 283
Graber, Steffen Pepperl+Fuchs GmbH

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

1.0 Vpp operating mode

SuggestedRemedy

2.4 Vpp operating mode (1.0 Vpp has been changed to be the default mode, 2.4 Vpp to be the additional option)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Align with clause 45 changes.

Cl **146** *SC* **146.11.4.2.2** *P* **126** *L* **42** # 284
Graber, Steffen Pepperl+Fuchs GmbH

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

Less than 2.76 Vpp for the 2.4 Vpp operating mode and less than 1.15 Vpp for the 1.0 Vpp operating mode.

SuggestedRemedy

Less than 2.64 Vpp for the 2.4 Vpp operating mode and less than 1.10 Vpp for the 1.0 Vpp operating mode. (has been changed to align the maximum signal amplitude test with the droop test levels)

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.1** *P* **129** *L* **8** # 472
Brandt, David Rockwell Automation

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

Typo

SuggestedRemedy

Change from "PCS, and PMA" to "PCS and PMA"

Response *Response Status* **C**

ACCEPT.
Change "the PCS, and PMA sublayers" to "the PCS and PMA sublayers"

Cl **147** *SC* **147.1** *P* **129** *L* **9** # 473
Brandt, David Rockwell Automation

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

Typo

SuggestedRemedy

Change "fully functional and electrical specifications" to "full functional and electrical specifications"

Response *Response Status* **C**

ACCEPT.
Change "clause are fully functional and electrical" to "clause are full functional and electrical"

Cl **147** *SC* **147.1** *P* **129** *L* **23** # 413

Zimmerman, George CME Consulting et al

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

DME 10BASE-T1S is inherently energy efficient. No need to transmit separate LPIs.

SuggestedRemedy

Delete editor's note. Insert New paragraph in its place. "DME-based 10BASE-T1S is silent during Idle symbols making it inherently energy efficient and without the need for a separate low-power-idle (LPI) mode such as is defined in Clause 78."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
2 changes:
- Delete editor's note.
- Insert New paragraph in its place: "DME-based 10BASE-T1S is silent during Idle symbols making it inherently energy efficient and without the need for a separate low-power-idle (LPI) mode, as is defined in Clause 78."

Cl **147** *SC* **147.1** *P* **129** *L* **28** # 451

Pannell, Don NXP (donald.pannell@

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

"An optional support for PHY Level Collision Avoidance (PLCA) functions, described in Clause 148, is also specified in this clause."

SuggestedRemedy

Change to "Optional support for PHY Level Collision Avoidance (PLCA) functions are described in Sub-clause 147.3.7 and Clause 148."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change this:
====
An optional support for PHY Level Collision Avoidance (PLCA) functions, described in Clause 148, is also specified in this clause.
====
to this:
====
Optional support for PHY Level Collision Avoidance (PLCA) functions are described in 147.3.7 and Clause 148.
====

Cl **147** *SC* **147.1.1** *P* **129** *L* **36** # 360

iyer, venkat microchip

Comment Type **T** *Comment Status* **A** *Autoneg*

as discussed in ad-hoc, autonegotiation is N/A for half duplex or multi-drop

SuggestedRemedy

Add (Auto negotiation is not defined 10BASE-T1S PHY operating in half-duplex mode or multi-drop situation)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change this:
====
defined in Clause 22.
====
to this:
====
defined in Clause 22. Auto negotiation is not defined for 10BASE-T1S PHY operating in half-duplex multidrop mode.
====

Cl **147** *SC* **147.1.2** *P* **129** *L* **41** # 499

Jones, Peter Cisco

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

Change to align with PAR modification

SuggestedRemedy

Change "single twisted-pair copper cable" to "single balanced pair of conductors"

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.1.2** *P* **129** *L* **44** # 477

Brandt, David — Rockwell Automation

Comment Type **E** *Comment Status* **A** *TBDs*

TBDs exist. Page 151 line 1 already indicates "up to at least eight nodes and 25 m of cabling".

SuggestedRemedy

Replace paragraph:

Additionally, the 10BASE-T1S PHY may operate using half-duplex multidrop communications on a mixing
segment using a single twisted-pair copper cable interconnecting up to at least TBD in-line PHYs with up to
10 cm stubs and supporting up to at least TBD meters, achieving an overall effective rate of 10 Mb/s, shared
among the nodes.

With:

Additionally, the 10BASE-T1S PHY may operate using half-duplex multidrop communications on a mixing segment using a single twisted-pair copper cable, interconnecting up to at least eight PHYs, to a trunk up to at least 25 m. PHYs may be attached in-line with the trunk or at the end of stubs up to 10 cm. An overall effective rate of 10 Mb/s is shared among the nodes. Larger PHY count and reach are desirable in some applications and are not precluded.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change this:
====
Additionally, the 10BASE-T1S PHY may operate using half-duplex multidrop communications on a mixing segment using a single twisted-pair copper cable interconnecting up to at least TBD in-line PHYs with up to 10 cm stubs and supporting up to at least TBD meters, achieving an overall effective rate of 10 Mb/s, shared among the nodes.
====
to this:
====
Additionally, the 10BASE-T1S PHY may operate using half-duplex multidrop communications on a mixing segment using a single twisted-pair copper cable, interconnecting up to at least 8 PHYs, to a trunk up to at least 25 m. PHYs may be attached in-line with the trunk or at the end of stubs up to 10 cm. An overall effective rate of 10 Mb/s is shared among the nodes. Larger PHY count and reach may be achieved provided the mixing segment specifications in 147.8 are met.
====
Note: spaces between values and units is to be non-breaking

Cl **147** *SC* **147.1.2** *P* **129** *L* **45** # 414

Zimmerman, George — CME Consulting et al

Comment Type **E** *Comment Status* **A** *TBDs*

"interconnecting up to at least TBD in-line PHYs with up to 10 cm stubs and supporting up to at least TBD meters," - has been defined as 8 in-line PHYs with up to at least 25 meters

SuggestedRemedy

Change to read "interconnecting up to at least 8 in-line PHYs with up to 10 cm stubs and supporting up to at least 25 meters,"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
This has been dealt with by #477
Change this:
====
Additionally, the 10BASE-T1S PHY may operate using half-duplex multidrop communications on a mixing segment using a single twisted-pair copper cable interconnecting up to at least TBD in-line PHYs with up to 10 cm stubs and supporting up to at least TBD meters, achieving an overall effective rate of 10 Mb/s, shared among the nodes.
====
to this:
====
Additionally, the 10BASE-T1S PHY may operate using half-duplex multidrop communications on a mixing segment using a single twisted-pair copper cable, interconnecting up to at least 8 PHYs, to a trunk up to at least 25 m. PHYs may be attached in-line with the trunk or at the end of stubs up to 10 cm. An overall effective rate of 10 Mb/s is shared among the nodes. Larger PHY count and reach may be achieved provided the mixing segment specifications in 147.8 are met.
====
Note: spaces between values and units is to be non-breaking

Cl **147** *SC* **147.1.2** *P* **129** *L* **45** # 439

Pannell, Don NXP (donald.pannell@

Comment Type **TR** *Comment Status* **A** *TBDs*

Page 151 sub-clause 147.8 line 1 states "A mixing segment is specified based on automotive cabling supporting up to at least eight nodes and 25 m of cabling". But page 129 sub-clause 147.1.2 line 45 states "up to at least TBD in-line PHYs with up to 10 cm stubs and supporting at lest TBD meters"

SuggestedRemedy

Get rid of the TBD's on page 129 by referring to section 147.8 so these numbers are only in one place in the document (so it they change you will change all occurances).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Already dealt with by #477
Change this:
====
Additionally, the 10BASE-T1S PHY may operate using half-duplex multidrop communications on a mixing segment using a single twisted-pair copper cable interconnecting up to at least TBD in-line PHYs with up to 10 cm stubs and supporting up to at least TBD meters, achieving an overall effective rate of 10 Mb/s, shared among the nodes.
====
to this:
====
Additionally, the 10BASE-T1S PHY may operate using half-duplex multidrop communications on a mixing segment using a single twisted-pair copper cable, interconnecting up to at least 8 PHYs, to a trunk up to at least 25 m. PHYs may be attached in-line with the trunk or at the end of stubs up to 10 cm. An overall effective rate of 10 Mb/s is shared among the nodes. Larger PHY count and reach may be achieved provided the mixing segment specifications in 147.8 are met.
====
Note: spaces between values and units is to be non-breaking

Cl **147** *SC* **147.1.2** *P* **129** *L* **53** # 317

Orzelli, Antonio Canova Tech

Comment Type **T** *Comment Status* **A** *Scrambler*

Add scrambler proposal as in
http://www.ieee802.org/3/cg/public/adhoc/beruto_3cg_scrambler.pdf

SuggestedRemedy

change "at a 12.5 MBd rate (± TBD). 4B/5B encoding is used to further improve EMC performance" with "at a 12.5 MBd rate (± TBD). A 17-bit self-synchronizing scrambler is used to improve the EMC performance. 4B/5B encoding is used to further improve EMC performance"

See attached PDF (slide 3).

Response *Response Status* **C**

ACCEPT.
TASK FORCE TO DISCUSS
#scrambler (THIS is the MASTER)
Carry out first (red-ish) block of changes shown at page 3/17 of beruto_3cg_29_0418.pdf

Cl **147** *SC* **147.1.2** *P* **129** *L* **53** # 415

Zimmerman, George CME Consulting et al

Comment Type **T** *Comment Status* **A** *EZ*

"12.5 MBd rate (+/- TBD). " - rate is redundant (Bd is rate), and tolerance is inappropriate here - this is not the specification for the signalling rate - this is general description.

SuggestedRemedy

Change "12.5 MBd rate (+/- TBD)." to "12.5 MBd."

Response *Response Status* **C**

ACCEPT.
Change "12.5 MBd rate" to "12.5 MBd"

Cl **147** *SC* **147.1.2** *P* **130** *L* **2** # 318
Orzelli, Antonio Canova Tech

Comment Type **T** *Comment Status* **A** *Scrambler*

Add scrambler proposal as in
http://www.ieee802.org/3/cg/public/adhoc/beruto_3cg_scrambler.pdf

SuggestedRemedy

change "The 4B/5B mapping is contained in the PCS" with "The 4B/5B mapping and the scrambler are contained in the PCS"

See attached PDF (slide 3).

Response *Response Status* **C**

ACCEPT.
TASK FORCE TO DISCUSS
#scrambler (MASTER is #317)
Carry out second (red-ish) block of changes shown at page 3/17 of beruto_3cg_29_0418.pdf

---

Cl **147** *SC* **147.1.2** *P* **130** *L* **3** # 474
Brandt, David Rockwell Automation

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

Wrong link

SuggestedRemedy

Change text and link from 147.5 to 147.4.

Response *Response Status* **C**

ACCEPT.
Change link "147.5" to "147.4"

Cl **147** *SC* **147.2** *P* **130** *L* **45** # 500
Jones, Peter Cisco

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

Change to align with PAR modification throughout rest of clause

SuggestedRemedy

Change "single balanced twisted-pair cabling" to "a single balanced pair"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

On line number is 37, delete, ", in support of 10 Mb/s operations over single balanced twisted-pair cabling".

Cl **147** *SC* **147.2** *P* **131** *L* **1** # 503
Beruto, Piergiorgio Canova Tech S.r.l.

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

PMA primitives implemented by 10BASE-T1S are not the ones listed in 147.2

SuggestedRemedy

Modify figure 147-2 removing elements marked in red in file 147_2.png

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.2** *P* **131** *L* **4** # 452
Pannell, Don NXP (donald.pannell@

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

Right side of the figure is cut off.

SuggestedRemedy

Readjust the size of the figure so that all of it's text shows.

Response *Response Status* **C**

ACCEPT.
Fix figure

Cl **147** *SC* **Figure 147-2** *P* **131** *L* **5** # 475
Brandt, David Rockwell Automation

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

Figure is chopped off at right

SuggestedRemedy

Adjust figure

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Already dealt with by #452
Fix figure

Cl **147** *SC* **147.2** *P* **131** *L* **37** # 429

Pannell, Don NXP (donald.pannell@

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

"The 10BASE-T1S PHY used the Media Independent Interface (MII) as specified in Clause 22 instead of a Gigabit Media Independent Interface (GMII)."

SuggestedRemedy

Change to "The 10BASE-T1S PHY used the Media Independent Interface (MII) as specified in Clause 22." Don't need to specify what it isn't. That list would be huge.

Response *Response Status* **C**

ACCEPT.
Change "The 10BASE-T1S PHY uses the Media Independent Interface (MII) as specified in Clause 22 instead of a
Gigabit Media Independent Interface (GMII)." to "The 10BASE-T1S PHY uses the Media Independent Interface (MII) as specified in Clause 22."

Cl **147** *SC* **147.2** *P* **131** *L* **42** # 504

Beruto, Piergiorgio Canova Tech S.r.l.

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

PMA primitives implemented by 10BASE-T1S are not the ones listed in 147.2

SuggestedRemedy

Replace:
"PMA_LINK.indication (link_status)
PMA_TXMODE.indication (tx_mode)
PMA_UNITDATA.indication (rx_symb_vector)
PMA_UNITDATA.request (tx_symb_vector)
PMA_RXSTATUS.indication (loc_rcvr_status)
PMA_REMRXSTATUS.request (rem_rcvr_status)
PMA_SCRSTATUS.request (scr_status)
PMA_TXEN.request (TX_EN)"

with:

"PMA_UNITDATA.indication (rx_sym)
PMA_UNITDATA.request (tx_sym)"

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.3.2.2** *P* **133** *L* **29** # 457

Brandt, David Rockwell Automation

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

PCS signal plca_en lacks reference to management interface register

SuggestedRemedy

Replace:

The plca_en signal described in 148.4.5.2.

With:

The plca_en signal controls the optional PLCA function in the PCS. This signal is set to ON when PLCA ability bit in MDIO register 3.2292.13 is set to a one and PLCA enable bit in MDIO register 3.2291.13 is set to a one. This signal is set to OFF when PLCA ability bit in MDIO register 3.2292.13 is set to a zero or PLCA enable bit in MDIO register 3.2291.13 is set to a zero.
Values: ON or OFF

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change this:
====
The plca_en signal described in 148.4.5.2.
When the optional PLCA RS is not implemented, plca_en shall be set to OFF
====
to this:
====
The plca_en signal, described in 148.4.5.2, controls the optional PLCA function in the PCS. When PLCA is not implemented, this plca_en shall be set to OFF. If MDIO registers are implemented, the plca_en may be set by MDIO register 3.2291.13.
Values: ON or OFF
====

Cl **147** *SC* **147.3.2.1** *P* **133** *L* **48** # 505

Beruto, Piergiorgio — Canova Tech S.r.l.

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

Text should be clear about tx_sym being conveyed by a PMA service primitive

SuggestedRemedy

Change:
"In each symbol period, PCS Transmit generates a symbol tx_sym conveyed to the PMA"
to:
"At each symbol period, PCS Transmit generates a symbol tx_sym conveyed to the PMA through the PMA_UNITDATA.request service primitive"

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.3.2.1** *P* **133** *L* **52** # 368

CORDARO, Jay — BROADCOM

Comment Type **TR** *Comment Status* **D** *Scrambler*

if proposed preamble adopted, replace the paragraph beginning at line 52 with the following:

SuggestedRemedy

Upon the assertion of TX_EN, the PCS Transmit function passes the Ga32 SYNC word to the
PMA, which replaces the first 16 bits of the preamble. After the Ga32 SYNC word, 24 bits of data are transmitted. It is recommended the data be random to prevent the multiplicative scrambler from aligning with the payload and causing a peak emissions issue. Twenty-four bit times after Ga32 SYNC word, if OAM is supported, two OAM octets are transmitted into 5B symbols using the encoding rules specified in Table 147-1. After the two OAM words, starting with the 7th preamble octet, TXD<3:0> is encoded into 5B symbols using encoding rules specified in Table 147-1, until TX_EN is deasserted.
If the PMA does not support OAM transmission, 24 bit times after the Ga32 SYNC word, TXD<3:0> is
encoded into 5B symbols using encoding rules specified in Table 147-1, until TX_EN is deasserted.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

TASK FORCE TO DISCUSS
#Golay (MASTER is #369)
NOTE: Consider comments #388 and #393 immediately after resolution of all #Golay comments
Replace this:
====
Upon the assertion of TX_EN, the PCS Transmit function passes a group of three SYNC symbols to the
PMA, followed by an SSD, which replaces the first 16 bits of the preamble. Following SSD, TXD<3:0> is
encoded into 5B symbols using encoding rules specified in Table 147-1, until TX_EN is deasserted.
====
with this:
====
Upon the assertion of TX_EN, the PCS Transmit function passes the Ga32 SYNC word to the PMA, which replaces the first 16 bits of the preamble. After the Ga32 SYNC word, 24 bits of data are transmitted. It is recommended the data be random to prevent the multiplicative scrambler from aligning with the payload and causing a peak emissions issue. Twenty-four bit times after Ga32 SYNC word, if OAM is supported, two OAM octets are transmitted into 5B symbols using the encoding rules specified in Table 147-1. After

the two OAM words, starting with the 7th preamble octet, TXD<3:0> is encoded into 5B symbols using encoding rules specified in Table 147-1, until TX_EN is deasserted. If the PMA does not support OAM transmission, 24 bit times after the Ga32 SYNC word, TXD<3:0> is encoded into 5B symbols using encoding rules specified in Table 147-1, until TX_EN is deasserted.
====

Cl **147** *SC* **147.3.2.1** *P* **134** *L* **2** # 367

CORDARO, Jay BROADCOM

Comment Type **TR** *Comment Status* **A** *Scrambler*

Add support for end delimitter for differential detection

SuggestedRemedy

Replace text as follows: "Following the deassertion of TX_EN, the PCS Transmit generates a special code ESD, followed by either ESDOK or ESDERR when a transmit error is encountered. ESDOK or ESDERR followed by a DME zero to assist in differential decoding.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved by response to comment #366.

Cl **147** *SC* **147.3.2.2** *P* **135** *L* **9** # 369

CORDARO, Jay BROADCOM

Comment Type **TR** *Comment Status* **D** *Scrambler*

If proposed preamble is adopted, replace current SYNC/SSD with proposed preamble text.

SuggestedRemedy

Replace "Sync and SSD" with Ga32 -- a 32 bit Sync word defined as [1 0 1 1 0 1 1 1 1 0 1 1 0 1 1 1 0 1 0 0 0 1 1 1 1 0 1 1 1 0 0 0] which is biphase modulated and transmitted from left to right, top to bottom. The timing for the SYNC word is T3 so the SYNC word fits in the first 16 bits of the preamble.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

TASK FORCE TO DISCUSS
#Golay (THIS is the MASTER)
NOTE: Consider comments #388 and #393 immediately after resolution of all #Golay comments
3 changes:
- Replace "SYNC" with "Ga32, a 32 bit sync word defined as [1 0 1 1 0 1 1 1 1 0 1 1 0 1 1 1 0 1 0 0 0 1 1 1 1 0 1 1 1 0 0 0] which is biphase modulated and transmitted from left to right, top to bottom. The timing for the SYNC word is T3 so the SYNC word fits in the first 16 bits of the preamble.
- Remove "SSD"
- Remove "5B symbol defined as 'K' in 4B/5B encoding (see also Table 147-1)"

Cl **147** *SC* **147.3.2.2** *P* **135** *L* **20** # 366

CORDARO, Jay BROADCOM

Comment Type **TR** *Comment Status* **A** *Scrambler*

Add support for end delimitter for differential detection

SuggestedRemedy

DZ - a symbol consisting of a DME zero transmitted after final 4B/5B encoded R or H symbol. The purpose of this symbol is to assist in differential decoding of the DME encoded 10BASE-T1S packet.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Cl. 147.3.2.1
- p134, line 4:
change:

"When the PHY is operating in half-duplex multidrop mode, the PMA Transmit functions shall put the PMD into a high impedance state on reception of this symbol from the PCS Transmit. When operating in point-topoint mode, the PMA shall drive a zero voltage level on the line on receipt of the 'I' symbol."

to:

"SILENCE represents an indication for the PMA to change the PMD state according to 147.4.2."

Cl. 147.4.2
p145, line 1

Change "
If the tx_sym parameter value is the special 5B symbol 'I', the PMD would act according to its operation mode, as follows:

a) When in multidrop mode, the PMD shall be put into high-impedance/Z state,
b) While in point-to-point mode, the PMD shall drive a differential voltage of 0 V (BI_DA+ = BI_DA-) instead
"

to "
If the tx_sym parameter value is the special 5B symbol 'I', the PMA shall, in order:

a) Transmit an additional DME encoded 0 if the previous value of the tx_sym parameter was anything but the 5B symbol 'I'
b) When operating in multidrop mode, put the PMD into high-impedance state
c) When operating in point-to-point mode, have the PMD drive a differential voltage of 0 V (BI_DA+ = BI_DA-)

Cl **147** *SC* **147.3.2.3** *P* **135** *L* **27** # 319

Orzelli, Antonio Canova Tech

Comment Type **T** *Comment Status* **A** *Scrambler*

Add scrambler proposal as in
http://www.ieee802.org/3/cg/public/adhoc/beruto_3cg_scrambler.pdf

SuggestedRemedy

change ENCODE function description from "In the PCS transmit process, this function takes as its arguments the pcs_txd input data and returns the corresponding 5B symbol as defined in Table 147-1." to "In the PCS transmit process, this function takes as its arguments one data nibble, scrambles it into Sdn[3:0] as defined in 147.3.2.5 and returns the corresponding 5B symbol as defined in Table 147-1."

See attached PDF (slide 4).

Response *Response Status* **C**

ACCEPT.
TASK FORCE TO DISCUSS
#scrambler (MASTER is #317)
Carry out first (red) block of changes shown at page 4/17 of beruto_3cg_29_0418.pdf
Note: mind the link

Cl **147** *SC* **147.3.2.3** *P* **135** *L* **36** # 370

CORDARO, Jay BROADCOM

Comment Type **TR** *Comment Status* **D** *Scrambler*

If proposed preamble is adopted, remove 4B/5B code words for JK in 4B5B Encoding table

SuggestedRemedy

remove J and K rows from Table 147-1-4B/5B Encoding

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

TASK FORCE TO DISCUSS
#Golay (MASTER is #369)
NOTE: Consider comments #388 and #393 immediately after resolution of all #Golay comments
2 changes:
- Remove "I N/A 11111 SILENCE" from "Table 147-1-4B/5B Encoding"
- Remove "J N/A 11000 SYNC" from "Table 147-1-4B/5B Encoding"

Cl **147** *SC* **147.3.2.3** *P* **136** *L* **5** # 371

CORDARO, Jay BROADCOM

Comment Type **TR** *Comment Status* **D** *Scrambler*

If proposed preamble is adopted, remove 4B/5B code word for BEACON in 4B5B Encoding table

SuggestedRemedy

remove N row from Table 147-1-4B/5B Encoding

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

TASK FORCE TO DISCUSS
#Golay (MASTER is #369)
NOTE: Consider comments #388 and #393 immediately after resolution of all #Golay comments
Remove "N N/A 01000 BEACON" from "Table 147-1-4B/5B Encoding"

Cl **147** *SC* **147.3.2.3** *P* **136** *L* **25** # 372

CORDARO, Jay BROADCOM

Comment Type **TR** *Comment Status* **D** *Scrambler*

If proposed preamble adopted, add a table (Table 147-2) with 3 rows and 3 columns

SuggestedRemedy

create table with 3 rows:
Row 1: Name|Sequence |Special Function
Row2: Ga32| 1 0 1 1 0 1 1 1 1 0 1 1 0 1 1 1 0 1 0 0 0 1 1 1 1 0 1 1 1 0 0 0| SYNC
Row3: Gb32| 0 0 0 1 1 1 0 1 0 0 0 1 1 1 0 1 1 1 1 0 1 1 0 1 0 0 0 1 0 0 1 0| BEACON
below table Note: Timing for each symbol in Ga32 and Gb32 is T3 so they fit into 16 T2 data bits as shown in Table 147-2

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

TASK FORCE TO DISCUSS
#Golay (MASTER is #369)
NOTE: Consider comments #388 and #393 immediately after resolution of all #Golay comments
2 changes:
- Create a new table as shown at page 5/5 of figures_for_Gergely.docx
- Put the note shown at page 5/5 of figures_for_Gergely.docx underneath in a non-breaking manner
Note: in case of final acceptabnce, check preferred/best place for this with Mr. Cordaro

Cl **147** *SC* **147.3.2.3** *P* **137** *L* **18** # 373

CORDARO, Jay BROADCOM

Comment Type **TR** *Comment Status* **D** *Scrambler*

Replace Figure 147-4 with revised figure indicating transition from SILENT to SYNC (transmitting Ga32) to "A"

SuggestedRemedy

replace figure 147-4 with proposed figure

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

TASK FORCE TO DISCUSS
#Golay (MASTER is #369)
NOTE: Consider comments #388 and #393 immediately after resolution of all #Golay comments
Replace current figure 147-4 by the figure shown at page 4/5 of figures_for_Gergely.docx

Cl **147** *SC* **147.3.2.3** *P* **138** *L* **32** # 374

CORDARO, Jay BROADCOM

Comment Type **TR** *Comment Status* **A** *Scrambler*

Add a final state for both BAD_ESD and GOOD_ESD to transmit DZ for differential detection

SuggestedRemedy

replace figure Figure 147-5 with slightly revised figure to show DZ appended after GOOD_ESD and BAD_ESD.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved by response to comment #366.

Cl **147** *SC* **147.3.2.5** *P* **138** *L* **44** # 320

Orzelli, Antonio Canova Tech

Comment Type **T** *Comment Status* **A** *Scrambler*

Add scrambler proposal as in
http://www.ieee802.org/3/cg/public/adhoc/beruto_3cg_scrambler.pdf

SuggestedRemedy

Add paragraph 147.3.2.5 as reported in attached PDF (slide 5)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
TASK FORCE TO DISCUSS
#scrambler (MASTER is #317)
3 changes:
- Add all red text shown at page 5/17 of beruto_3cg_29_0418.pdf
- Add new (named) formula from the same page: change the order of members (highest degree first)
- Add new figure from the same page and make sure text reference to it is correct
Note: Editorial license needed to decide number for the figure

Cl **147** *SC* **147.3.3** *P* **139** *L* **1** # 375

CORDARO, Jay BROADCOM

Comment Type **TR** *Comment Status* **D** *Scrambler*

if proposed preamble accepted text for PCS RX and figure needs to change

SuggestedRemedy

The finite state machine defined in Figure 147-6 is triggered by the detection of Ga32 SYNC symbol from the PMA receive function.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

TASK FORCE TO DISCUSS
#Golay (MASTER is #369)
NOTE: Consider comments #388 and #393 immediately after resolution of all #Golay comments
Replace current figure 147-6 by the figure shown at page 4/5 of figures_for_Gergely.docx

Cl **147** *SC* **147.3.3.1** *P* **139** *L* **25** # 322

Orzelli, Antonio Canova Tech

Comment Type **T** *Comment Status* **A** *Scrambler*

Add scrambler proposal as in
http://www.ieee802.org/3/cg/public/adhoc/beruto_3cg_scrambler.pdf

SuggestedRemedy

Add variable "precnt" with description "counter for preamble regeneration"

See attached PDF (slide 7).

Response *Response Status* **C**

ACCEPT.
TASK FORCE TO DISCUSS
#scrambler (MASTER is #317)
Add the red-ish text shown at page 7/17 of beruto_3cg_29_0418.pdf

Cl **147** *SC* **147.3.3.2** *P* **139** *L* **42** # 321

Orzelli, Antonio Canova Tech

Comment Type **T** *Comment Status* **A** *Scrambler*

Add scrambler proposal as in
http://www.ieee802.org/3/cg/public/adhoc/beruto_3cg_scrambler.pdf

SuggestedRemedy

change DECODE function description from "In the PCS Receive process, this function takes as its arguments the RX input data from PMA and returns the corresponding 4B MII data as defined in Table 147-1. If a violation of the encoding rules is detected, PCS Receive asserts the signal RX_ER for at least one symbol period" to "In the PCS Receive process, this function takes as its arguments one 5B symbol, decodes the corresponding nibble as defined in Table 147-1 and returns the descrambled result as defined in 147.3.3.4. If a violation of the encoding rules is detected, PCS Receive asserts the signal RX_ER for at least one symbol period"

See attached PDF (slide 6).

Response *Response Status* **C**

ACCEPT.
TASK FORCE TO DISCUSS
#scrambler (MASTER is #317)
Carry out all red changes shown at page 6/17 of beruto_3cg_29_0418.pdf
Note: mind the links

Cl **147** *SC* **147.3.3.4** *P* **139** *L* **51** # 323

Orzelli, Antonio Canova Tech

Comment Type **T** *Comment Status* **A** *Scrambler*

Add scrambler proposal as in
http://www.ieee802.org/3/cg/public/adhoc/beruto_3cg_scrambler.pdf

SuggestedRemedy

Add paragraph 147.3.3.4 as reported in attached PDF (slide 8)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
TASK FORCE TO DISCUSS
#scrambler (MASTER is #317)
2 changes:
- Add all red text shown at page 8/17 of beruto_3cg_29_0418.pdf
- Add new figure from the same page and make sure text reference to it is correct
Note: Editorial license needed to decide figure number

Cl **147** *SC* **147.3.3.3** *P* **140** *L* # 361

iyer, venkat microchip

Comment Type **T** *Comment Status* **R** *State Diagram*

PRE2/3 actions need to be filled in

SuggestedRemedy

copy actions from PRE1

Response *Response Status* **C**

REJECT.
It appears in IEEE state diagram style definition you shall not repeat assignments unless you want to "refresh" the variable (for variables that do something on write despite the value that is being written) but indeed this is not the case.

Cl **147** *SC* **147.3.3** *P* **140** *L* **1** # 316

Orzelli, Antonio — Canova Tech

Comment Type **T** *Comment Status* **A** *State Diagram*

In figure 147-6 some errors occurred when porting the picture to Frame from draft 1.0

SuggestedRemedy

In figure 147-6 substitute "pcs_rxer <= TRUE" with "pcs_rxer <= FALSE" in BAD_SSD state

In figure 147-6 add missing transition from WAIT_SSD state to WAIT_SSD state with "ELSE" condition.

See attached PDF (slide 2).

Response *Response Status* **C**

ACCEPT.
2 changes to figure 147-6:
- Change "pcs_rxer <= TRUE" to "pcs_rxer <= FALSE" in BAD_SSD
- Add missing transition from WAIT_SSD state to WAIT_SSD state with label "ELSE"
Note: see page 2/17 of beruto_3cg_01_0518.pdf

Cl **147** *SC* **147.3.3** *P* **140** *L* **17** # 376

CORDARO, Jay — BROADCOM

Comment Type **TR** *Comment Status* **D** *Scrambler*

if proposed preamble accepted text for PCS RX and figure needs to change

SuggestedRemedy

replace figure Figure 147-6 with proposed figure

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

TASK FORCE TO DISCUSS
#Golay (MASTER is #369)
NOTE: Consider comments #388 and #393 immediately after resolution of all #Golay comments
Replace current figure 147-6 by the 2 figures shown at pages 2/5 and 3/5
figures_for_Gergely.docx
Note: in case of acceptance, consider merging these 2 into 1, or even merging 147-7 into this merged 147-7, as otherwise optionally requested by #324

Cl **147** *SC* **147.3.3** *P* **140** *L* **25** # 324

Orzelli, Antonio — Canova Tech

Comment Type **T** *Comment Status* **A** *Scrambler*

Add scrambler proposal as in
http://www.ieee802.org/3/cg/public/adhoc/beruto_3cg_scrambler.pdf

SuggestedRemedy

In figure 147-6 add "precnt <= 0" in state WAIT_SSD.
In figure 147-6 change state "PRE1" in state "PRE"; add "precnt <= precnt + 1" in state PRE; add transition from PRE to PRE with condition "RSCD * precnt ? 9"; add transition from PRE to "A" with condition "RSCD * precnt = 9".
In figure 147-6 remove state PRE2 and state PRE3 with relative transitions.
In figure 147-7 remove state PRE3 with relative transitions.
In figure 147-7 add transition from "A" to DATA.

Add editorial note: "figure 147-6 and 147-7 could be merged".

See attached PDF (slide 9).

Response *Response Status* **C**

ACCEPT.
TASK FORCE TO DISCUSS
#scrambler (MASTER is #317)
Carry out all red changes shown at page 9/17 of beruto_3cg_29_0418.pdf
Note: skip the merging (blue text)

Cl **147** *SC* **147.3.3.3** *P* **141** *L* # 362

iyer, venkat — microchip

Comment Type **T** *Comment Status* **R** *State Diagram*

PRE4 actions need to be filled in

SuggestedRemedy

copy actions from PRE1

Response *Response Status* **C**

REJECT.
It appears in IEEE state diagram style definition you shall not repeat assignments unless you want to "refresh" the variable (for variables that do something on write despite the value that is being written) but indeed this is not the case.
See also #361

Cl **147** *SC* **147.3.3** *P* **141** *L* **8** # 377

CORDARO, Jay BROADCOM

Comment Type **TR** *Comment Status* **D** *Scrambler*

if proposed preamble accepted text for PCS RX and figure needs to change

SuggestedRemedy

replace figure Figure 147-7 with proposed figure

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

TASK FORCE TO DISCUSS
#Golay (MASTER is #369)
NOTE: Consider comments #388 and #393 immediately after resolution of all #Golay comments
Replace current figure 147-7 by the figure shown at page 1/5 of figures_for_Gergely.docx

Cl **147** *SC* **147.3.3.3** *P* **141** *L* **23** # 357

iyer, venkat microchip

Comment Type **T** *Comment Status* **R** *PCS*

Exit condition from DATA to GOOD_ESD should look at RX(n-2) for ESD and RX(n-1) for ESDOK

SuggestedRemedy

change as indicated in comment

Response *Response Status* **C**

REJECT.
See http://www.ieee802.org/3/cg/public/Jan2018/beruto_3cg_01_0118.pdf slides 2 & 3.
The difference between the two branches is to maintain decoding on an even nibble boundary:
In DATA state we're decoding RXn-4
- GOOD ESD case: It is correct to exit when the {ESD, ESDOK} symbols are found in RXn-3 and RXn-2 respectively, otherwise you are going to miss the last data symbols.
- BAD ESD case: The MAC expects the PHY to always decode an even number of nibbles, otherwise an alignment error is reported, and therefore, we look for an ESDERR one symbol earlier than in the GOOD ESD case and stop decoding on an even boundary.

Cl **147** *SC* **147.3.7.1** *P* **143** *L* **10** # 430

Pannell, Don NXP (donald.pannell@

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

"When a sequence of at least two consecutive 'N' symbols is received" & on page 168 line 21 Sub-clause 148.4.5.3 states that the BEACON_TIMER's "Duration shall be enough to allow all PHYs to properly recover the BEACON indication."

SuggestedRemedy

Page 143's text appears to be an indirect 'shall' as an extension of the previous paragraph's 'shall'. But page 168's text's 'shall' does not state what is requred for "all PHYs to properly recover the BEACON indication". This should have a minimum value of 15 bit times so that at least 3 BEACON symbols are transmitted during each BEACON signal.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change this in "148.4.5.4 Timers" from:
====
Times the duration of the BEACON signal. Timer value shall be defined within specific Reconciliation sublayers. Duration shall be enough to allow all PHYs to properly recover the BEACON indication.
====
to this:
====
Times the duration of the BEACON signal. Timer value shall be 20 bit times.
====

Cl **147** *SC* **147.3.7.1** *P* **143** *L* **10** # 378

CORDARO, Jay BROADCOM

Comment Type **TR** *Comment Status* **D** *Scrambler*

see comment on row 13, above

SuggestedRemedy

When a Gb32 BEACON is received (see Table 147-2), the MII signals
RX_DV, RX_ER and RXD shall be set to the BEACON indication as shown in Table 22-2, overriding the
current state. Override shall cease as soon as the the BEACON timer has expired.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

TASK FORCE TO DISCUSS
#Golay (MASTER is #369)
NOTE: Consider comments #388 and #393 immediately after resolution of all #Golay comments
Replace the following paragraph:
====
When a sequence of at least two consecutive 'N' symbols is received (see Table 147-1), the MII signals RX_DV, RX_ER and RXD shall be set to the BEACON indication as shown in Table 22-2, overriding the current state. Override shall cease as soon as the currently received symbol is anything other than a 'N' code.
====
by this:
====
When a Gb32 BEACON is received (see Table 147-2), the MII signals RX_DV, RX_ER and RXD shall be set to the BEACON indication as shown in Table 22-2, overriding the current state. Override shall cease as soon as the BEACON timer has expired.
====
Note: mind the 2 table links

Cl **147** *SC* **147.3.7.2** *P* **143** *L* **19** # 379

CORDARO, Jay BROADCOM

Comment Type **TR** *Comment Status* **D** *Scrambler*

see comment on row 13, above

SuggestedRemedy

When a Ga32 SYNC signal is detected, the MII signals
RX_DV, RX_ER and RXD shall be set to the COMMIT indication as shown in Table 22-2, overriding the
current state. Override shall cease as soon as SYNC timer has expired.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

TASK FORCE TO DISCUSS
#Golay (MASTER is #369)
NOTE: Consider comments #388 and #393 immediately after resolution of all #Golay comments
Replace the following paragraph:
====
When a sequence of at least two consecutive 'J' symbols is received (see Table 147-1), the MII signals RX_DV, RX_ER and RXD shall be set to the COMMIT indication as shown in Table 22-2, overriding the current state. Override shall cease as soon as the currently received symbol is anything other than a 'J' code.
====
by this:
====
When a Ga32 SYNC signal is detected, the MII signals RX_DV, RX_ER and RXD shall be set to the COMMIT indication as shown in Table 22-2, overriding the current state. Override shall cease as soon as SYNC timer has expired.
====
Note: mind the table link

Cl **147** *SC* **147.4.2** *P* **144** *L* **42** # 433

Pannell, Don NXP (donald.pannell@

Comment Type **TR** *Comment Status* **A** *PMA*

Parameter T1's description in Table 147-2 ends with an "*".

SuggestedRemedy

Remove the "*" or complete the description.

Response *Response Status* **C**

ACCEPT.
Change "Delay between transmissions *" to "Delay between transmissions"

Cl **147** *SC* **147.4.2** *P* **144** *L* **50** # 416

Zimmerman, George — CME Consulting et al

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

Editor's note is unclear in itself and adds to lack of clarity - just what requirement is meant? The timing requirements belong in the PMA.

SuggestedRemedy

Delete editors note.

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.4.25** *P* **145** *L* **15** # 380

CORDARO, Jay — BROADCOM

Comment Type **TR** *Comment Status* **D** *Scrambler*

replace figure 147-9 if proposed preamble accepted with figure which will be provided which shows Ga32 preamble with DME encoded DATA and then I (SILENCE)

SuggestedRemedy

Replace Figure 147-9

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

TASK FORCE TO DISCUSS
#Golay (MASTER is #369)
NOTE: Consider comments #388 and #393 immediately after resolution of all #Golay comments
Replace figure 147-9 with the one at page 1 of 3 of figures_for_Gergely_2_1.docx from Mr. Cordaro
Note: the "don't care" (transient) states under "." and "DATA" can use any other (unambiguous) symbol, according to eh 802.3 habits and the capabilities of Frame

Cl **147** *SC* **147.4.2** *P* **145** *L* **16** # 434

Pannell, Don — NXP (donald.pannell@

Comment Type **TR** *Comment Status* **A** *PMA*

Figure 147-9, while it is just an example, is confusing when the figure goes from 'I' to only one 'J' and then the 'K' when sub-clause 147.4.3 line 39 (just below the figure) indicates that "At the start of transmission, the symbol sequence J/J/J/K" is used.

SuggestedRemedy

Fix the figure.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Remove "Figure 147–9—Example DME encoding of 5B symbols" and all references to it
Note: read through neighboring text to see if there are any explicit or implicit references to 147-9

Cl **147** *SC* **147.4.3** *P* **145** *L* **31** # 298

Maguire, Valerie — The Siemon Company

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

Align media references with revised objectives.

SuggestedRemedy

Replace, "single pair" with "single balanced pair"

Response *Response Status* **C**

ACCEPT.
Change "on the single pair into" to "on the single balanced pair into"

Cl **147** *SC* **147.4.3** *P* **145** *L* **35** # 437

Pannell, Don NXP (donald.pannell@

Comment Type **TR** *Comment Status* **A** *PMA*

Line 35 states "The PMA receive function shall recover encoded clock" and line 39 states "the sequence J/J/J/K"."is meant to allow the receiver to achieve such synchronization." It is not clear that all the reciever's PPL's will be able to lock their clocks such that no more than a single 'J' symbol is missed (i.e., in 1 symbol time). Consider the maximum number of PHYs on the net (say 16) and all are quiet. The only clock comes from the BEACON which is separated by 16 x 200 ns (as no one sends anything during idles). When some other PHY wants to Tx, all the other PHY's must lock to the Tx PHY's clock. In 10BASE-T the 7 byte preamble is used for this purpose and most of the preable time was needed in the Rx PHY to prevent CRC errors in the received frame.

SuggestedRemedy

The 'J/K' Start of Stream Delimiter was added in 100BASE-TX where the size of the preamble was not as critical since the idle symbols were constantly transmitted allowing the clocks to always remain locked. These active idle times are the reason Energy Efficient Ethernet (EEE) was not needed for 10BASE-T, but was for any faster PHYs. Where is the analysis that shows no more than one 'J' symbol will ever be lost and that that is suficient to lock all PHYs on the shared media? At the very least add an SSD_TIMER in sub-clause 148.4.5.4 that defines in symbol increments how many 'J's should be transmitted at the start of the MAC's preamble before a 'K' is inserted. Valid #'s are 0 (no SSD), 1, 3, 5, 7, 9, 11). Or removed the SSD as 10BASE-T does not have this, & let the PHYs lock their clocks as done in 10BASE-T.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Replace the following sentences:
====
5B boundary. At the start of each transmission, the symbol sequence J/J/J/K which replaces the first 20 bit of packet preamble is meant to allow the receiver to achieve such synchronization.
====
by these:
====
5B boundary within 1.2 us.
====
Note: use Greek small mu instead of u

Cl **147** *SC* **147.4.3** *P* **145** *L* **39** # 435

Pannell, Don NXP (donald.pannell@

Comment Type **TR** *Comment Status* **A** *PMA*

Line 35 states "The PMA receive function shall recover encoded clock" and line 39 states "the sequence J/J/J/K"."is meant to allow the receiver to achieve such synchronization." It is assumed "such synchronization" is referring to "recover encoded clock" but since these are two separate paragraphs it is not clear.

SuggestedRemedy

If this connection is correct, combine these two paragraphs into one.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
This text is being removed/chagned by #437
Replace the following sentences:
====
5B boundary. At the start of each transmission, the symbol sequence J/J/J/K which replaces the first 20 bit of packet preamble is meant to allow the receiver to achieve such synchronization.
====
by these:
====
5B boundary within 1.2 us.
====
Note: use Greek small mu instead of u

Cl **147** *SC* **147.4.3** *P* **145** *L* **39** # 436

Pannell, Don NXP (donald.pannell@

Comment Type **TR** *Comment Status* **A** *PMA*

Line 39 states "which replaces the first 20 bit of packet preamble". But the preamble from the MAC's point of view is 4 bit nibbles.

SuggestedRemedy

To make this clear change "the first 20 bit of packet preamble" with "the first 20 bits (in the 5b space) of packet preamble".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
This text is being removed/chagned by #437
Replace the following sentences:
====
5B boundary. At the start of each transmission, the symbol sequence J/J/J/K which replaces the first 20 bit of packet preamble is meant to allow the receiver to achieve such synchronization.
====
by these:
====
5B boundary within 1.2 us.
====
Note: use Greek small mu instead of u

Cl **147** *SC* **147.4.3** *P* **145** *L* **39** # 381

CORDARO, Jay BROADCOM

Comment Type **TR** *Comment Status* **D** *Scrambler*

PMA receive updated to show Ga32 as preamble

SuggestedRemedy

At the start of each packet transmission, the Ga32 SYNC sequence replaces the first 16 bits of the the preamble. The Ga32 SYNC sequence is meant to allow the receiver to achieve robust synchronization

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

TASK FORCE TO DISCUSS
#Golay (MASTER is #369)
NOTE: Consider comments #388 and #393 immediately after resolution of all #Golay comments
Replace the following paragraph:
====
At the start of each transmission, the symbol sequence J/J/J/K which replaces the first 20 bit of packet preamble is meant to allow the receiver to achieve such synchronization.
====
by this:
====
At the start of each packet transmission, the Ga32 SYNC sequence replaces the first 16 bits of the the preamble. The Ga32 SYNC sequence is meant to allow the receiver to achieve robust synchronization.
====

Cl **147** *SC* **147.5** *P* **145** *L* **51** # 417

Zimmerman, George CME Consulting et al

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

Copy in text from Clauses 146.5.1.1 and 146.5.1.2 as 147.5.

SuggestedRemedy

Copy in text and structure from 146.5.1, 146.5.1.1 and 146.5.1.2 as 147.5.1, 147.5.1.1, and 147.5.1.2. Renumber subsequent clauses, starting with 147.5.2 (currently 147.5.1)

Response *Response Status* **C**

ACCEPT.
With editorial license to decide final clause number (147.5.1.1/2 may not be it)

Cl **147** *SC* **147.5.1** *P* **146** *L* **16** # 358

iyer, venkat microchip

Comment Type **T** *Comment Status* **A** *Test Mode*

DME doesn't define +1, -1

SuggestedRemedy

replace with "repeatedly transmit DME encoded 1"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change this:
====
When test mode 1 is enabled, the PHY shall repeatedly transmit the data symbol sequence +1/-1.
====
to this:
====
When test mode 1 is enabled, the PHY shall repeatedly transmit DME encoded ones.
====

Cl **147** *SC* **147.5.1** *P* **146** *L* **19** # 359

iyer, venkat microchip

Comment Type **T** *Comment Status* **A** *Test Mode*

DME doesn't define +1, -1

SuggestedRemedy

remove test mode 2 since there is no droop with DME

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Insert droop specification as defined on slide 5 of beruto_3cg_05_0518.pdf

Cl **147** *SC* **147.5.1** *P* **146** *L* **22** # 419

Zimmerman, George CME Consulting et al

Comment Type **T** *Comment Status* **A** *Test Mode*

Generation of pseudorandom sequence is described in text that follows. Editor's note is no longer necessary

SuggestedRemedy

Delete editor's note

Response *Response Status* **C**

ACCEPT.
Delete the following editor's note:
====
Editor's Note (to be removed prior to draft 2.0):
How to generate the sequence below needs to be determined.
====

Cl **147** *SC* **147.5.2** *P* **146** *L* **35** # 420

Zimmerman, George CME Consulting et al

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

The text on line 35 should refer to Figure 147-11.

SuggestedRemedy

Test fixtures: Change title of 147.5.2 to Test fixtures. Change text at line 35 from Figure 147-10 to Figure 147-11. Move anchor for Figure 147-11 to P146 L35.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
3 changes:
- Change title of 147.5.2 from "Test fixture" to "Test fixtures"
- Change "shown in Figure 147-10, or" to "shown in Figure 147-11, or" (use llink)
- Move anchor of Figure 147-11 to 146/35

Cl **147** *SC* **147.5.2** *P* **146** *L* **46** # 422

Zimmerman, George CME Consulting et al

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

The Transmitter test fixture for the PSD mask is shown in the PSD mask section. Figure 146-10 is a duplicate

SuggestedRemedy

Delete figure 146-10

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Delete figure 147-10
Note: check renumbering to go OK
Note: make sure 147-10 is not referenced (directly or indiretly)

Cl **147** *SC* **147.5.2.1** *P* **147** *L* **1** # 423

Zimmerman, George CME Consulting et al

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

147.5.2.1 should be 147.5.3, and 147.5.3 is blank.

SuggestedRemedy

Delete 147.5.2.1 and editor's note on P147 line 3-6. Change 147.5.3 (currently blank), so that 147.5.3 is Transmitter electrical specifications and 147.5.3.1 is Transmitter output voltage

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
3 changes to be done:
- Delete 147.5.2.1 along with the editor's note it has
- Change the number of 147.5.3 from "" to "Transmitter electrical specification"

Cl **147** *SC* **147.5.3.1** *P* **147** *L* **21** # 421

Zimmerman, George CME Consulting et al

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

"Transmitter output voltage can be set..." There is only one transmitter output voltage setting.

SuggestedRemedy

Delete last 2 sentences of first paragraph of 147.5.3.1 (lines 21 - 23), starting with "Transmitter output voltage can be set...", and also delete editor's note on lines 44-48. Delete lines 1 through 3 on page 148."Fixed transmitter driving levels..." through "another interface."

Response *Response Status* **C**

ACCEPT.
2 changes:
- Remove this:
====
Transmitter output voltage can be set using the management interface or by hardware default set-up. Optionally, Auto-Negotiation can be used to find a common transmitter output voltage for the two PHYs.
====
- Remove editor's note from 147/44-48.

Cl **147** *SC* **147.5.3.4** *P* **149** *L* **23** # 438

Pannell, Don NXP (donald.pannell@

Comment Type **TR** *Comment Status* **A** *PMA*

"The symbol tranmission rate shall be withing the range of 12.5 MBd +/- TDB ppm." does not help with network clock locking times.

SuggestedRemedy

Fill in the "TBD" with some target number that is cost effective so that network clock locking analysis can started. Us the same number from 10BASE-T or 100BASE-TX.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Already dealt with by #365
Change "12.5 MBd ± TBD ppm" to "12.5 MBd ± 100 ppm"
Note: all the spaces shall we non-breaking (see other similar formulae)

Cl **147** *SC* **147.5.3.4** *P* **149** *L* **23** # 365

CORDARO, Jay BROADCOM

Comment Type **TR** *Comment Status* **A** *TBDs*

± 100 ppm accuracy will not preclude operation of 802.1AS. Note to editor: Looser accuracy is possible especially with differential detection however it will preclude operation of 802.1AS.

SuggestedRemedy

The symbol transmission rate shall be within the range 12.5 MBd ± 100 ppm.

Response *Response Status* **C**

ACCEPT.
Change "12.5 MBd ± TBD ppm" to "12.5 MBd ± 100 ppm"
Note: all the spaces shall we non-breaking (see other similar formulae)

Cl **147** *SC* **147.8.1** *P* **151** *L* **25** # 440

Pannell, Don NXP (donald.pannell@

Comment Type **TR** *Comment Status* **A** *PMD*

"specified for link segments in 147.8.1" points to itself.

SuggestedRemedy

Add in the Return loss content and refer to it or change the 1st sentence to "specified for link segments as specified below".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
2 changes to be done:
- Change "link segments in 147.8.1 at any" to "link segments in 147.7.2 at any" (it is a link)
- Change "specified for link segments in 147.8.2 between" to "specified for link segments in 147.7.1 between" (it is a link)

Cl **147** *SC* **147.8.1** *P* **151** *L* **26** # 479

Brandt, David Rockwell Automation

Comment Type **T** *Comment Status* **A** *PMD*

Return Loss conditions are not specific enough. "All other MDI attachment points" does not say how many other attachment points, the physical location of the attachment points, and whether they are attached by stubs or in-line.
http://www.ieee802.org/3/cg/public/Mar2018/brandt_cg_01a_0318.pdf provides some guidance. Worst case should be determined.

SuggestedRemedy

Change from:

The mixing segment shall meet the return loss characteristics specified for link segments in 147.8.1 at any
MDI attachment point, including ends of the mixing segment, with all other MDI attachment points disconnected
or terminated in a minimum 10 kOhm impedance.

To:

The mixing segment shall meet the return loss characteristics specified for link segments in 147.8.1 at any
MDI attachment point, including ends of the mixing segment, and at the end of stubs of length up to 10 cm, and with any combinations of up to at least seven other MDIs presenting minimum parallel load attached at any combination of permissible MDI attachment points. A reference configuration TBD is shown.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change this:
====
The mixing segment shall meet the return loss characteristics specified for link segments in 147.8.1 at any MDI attachment point, including ends of the mixing segment, with all other MDI attachment points disconnected or terminated in a minimum 10 kOhm impedance.
====
to this:
====
The mixing segment shall meet the return loss characteristics specified for link segments in 147.8.1 at any MDI attachment point and with any combinations of up to at least seven other MDIs presenting minimum parallel load attached at any combination of permissible MDI attachment points.
====

Cl **147** *SC* **147.8.2** *P* **151** *L* **32** # 480

Brandt, David — Rockwell Automation

Comment Type **T** *Comment Status* **A** *PMD*

Insertion Loss conditions are not specific enough. "All other MDI attachment points" does not say how many other attachment points, the physical location of the attachment points, and whether they are attached by stubs or in-line.
http://www.ieee802.org/3/cg/public/Mar2018/brandt_cg_01a_0318.pdf provides some guidance. Worst case should be determined.

SuggestedRemedy

Change from:

The mixing segment shall meet the insertion loss characteristics specified for link segments in 147.8.2
between any two MDI attachment points of the mixing segment, with all other MDI attachment points disconnected
or terminated in a minimum 10 kOhm impedance.

To:

The mixing segment shall meet the insertion loss characteristics specified for link segments in 147.8.2 between any two
MDI attachment points, including ends of the mixing segment, and at the end of stubs of length up to 10 cm, and with any combinations of up to at least seven other MDIs presenting minimum parallel load attached at any combination of permissible MDI attachment points. A reference configuration TBD is shown.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change this:
====
The mixing segment shall meet the insertion loss characteristics specified for link segments in 147.8.2 between any two MDI attachment points of the mixing segment, with all other MDI attachment points disconnected or terminated in a minimum 10 kOhm impedance.
====
to this:
====
The mixing segment shall meet the insertion loss characteristics specified for link segments in 147.8.2 between any two MDI attachment and at the end of stubs of length up to 10 cm, and with any combinations of up to at least seven other MDIs presenting minimum parallel load attached at any combination of permissible MDI attachment points.
====

Cl **147** *SC* **147.8.2** *P* **151** *L* **38** # 441

Pannell, Don — NXP (donald.pannell@

Comment Type **TR** *Comment Status* **A** *PMD*

"specified for link segments in 147.8.2" points to itself.

SuggestedRemedy

Add in the Insertion loss content and refer to it or change the 1st sentence to "specified for link segments as specified below".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Already dealt with by #440
2 changes to be done:
- Change "link segments in 147.8.1 at any" to "link segments in 147.7.2 at any" (it is a link)
- Change "specified for link segments in 147.8.2 between" to "specified for link segments in 147.7.1 between" (it is a link)

Cl **147** *SC* **147.8.3** *P* **151** *L* **38** # 481

Brandt, David — Rockwell Automation

Comment Type **T** *Comment Status* **A** *PMD*

Mode Conversion Loss conditions are not specific enough. "All other MDI attachment points" does not say how many other attachment points, the physical location of the attachment points, and whether they are attached by stubs or in-line. Worst case should be determined.

SuggestedRemedy

Change from:

The mixing segment shall meet the mode conversion loss characteristics specified for link segments in
147.8.3 at any MDI attachment point, including ends of the mixing segment, with all other MDI attachment
points disconnected or terminated in a minimum 10 kOhm impedance.
To:

The mixing segment shall meet the mode conversion loss characteristics specified for link segments in 147.8.3 at any
MDI attachment points, including ends of the mixing segment, and at the end of stubs of length up to 10 cm, and with any combinations of up to at least seven other MDIs presenting minimum parallel load attached at any combination of permissible MDI attachment points. A reference configuration TBD is shown.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
2 changes:
- Change this:
====
The mixing segment shall meet the mode conversion loss characteristics specified for link segments in 147.8.3 at any MDI attachment point, including ends of the mixing segment, with all other MDI attachment points disconnected or terminated in a minimum 10 kOhm impedance.
====
to this:
====
The mixing segment shall meet the mode conversion loss characteristics specified for link segments in 147.8.3 at any MDI attachment points and with any combinations of up to at least seven other MDIs presenting minimum parallel load attached at any combination of permissible MDI attachment points.
====
- Change "segments in 147.8.3 at any" to "segments in 147.7.3 at any"

Cl **147** *SC* **147.9.1** *P* **152** *L* **3** # 424

Zimmerman, George — CME Consulting et al

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

MDI connectors can be filled in simply without choosing a connector.

SuggestedRemedy

"The mechanical interface to the balanced cabling is a 3-pin connector (BI_DA+, BI_DA-, and SHIELD) or
alternatively a 2-pin connector with an additional mechanical shield connection which conforms to the link segment specification defined in 147.7 or to the mixing segment specification defined in 147.8."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add the following text (paragpraph) to under "147.9.1 MDI connectors" (links must be taken care of):
====
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 which conforms to the link segment specification defined in 147.7 or to the mixing segment specification defined in 147.8.
====
Notes:
- This is an <exact> copy of the text proposed for "146.8.1 MDI Connectors"

Cl **147** *SC* **147.9.2** *P* **152** *L* **5** # 478

Brandt, David — Rockwell Automation

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

Minimum impedance is not specified for the MDI. The following submission establishes an initial concept and values:
http://www.ieee802.org/3/cg/public/Mar2018/brandt_cg_01a_0318.pdf

SuggestedRemedy

Insert the following in
The MDI shall present a minimum parallel impedance across the MDI attachment points based on the following impedance equation and limits for R, L, and C over the stated frequency range:
Z = 1/sqrt((1/R)^2 + (1/(2*pi*f*L) - 2*pi*f*C)^2)
R > 5 kOhm
440uH < L < 1 mH
C < 4.5 pF
0.3 MHz < f < TBD MHz

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Insert the following text to under "147.9.2 MDI electrical specification":
====
The MDI shall present a minimum parallel impedance across the MDI attachment points based on the following impedance equation and limits for R, L, Ctot and Cnode over the stated frequency range, where Ctot is the total capacitance across all attachment points while Cnode is the max capacitance for each attachment point:
<EQUATION>
====
- <EQUATION> is at beruto_3cg_02_0518.pdf, page 15/15
- Equations should be numbered equations

Cl **147** *SC* **147.9.2.1** *P* **152** *L* **9** # 425

Zimmerman, George — CME Consulting et al

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

MDI return loss specifies the termination. Requiring the termination of the MDI would specify an implementation.

SuggestedRemedy

Change "In multidrop configuration the MDI shall be terminated by two 100 ? (nominal) impedances
satisfying Equation (147-6) when measured with 100 ? ±1% impedance at the edges." to "The MDI return loss (RL) shall meet or exceed Equation (147-6) for all frequencies specified (with 100 ? ± 0.1 % reference impedance) at all times when the PHY is transmitting data."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete 147.9.2.1 and its content.
See brandt_cg_03a_0518.pdf for rationale.

Cl **147** *SC* **147.9.2.1** *P* **152** *L* **14** # 426

Zimmerman, George — CME Consulting et al

Comment Type **T** *Comment Status* **A** *TBDs*

Upper frequency for MDI return loss should be consistent with mixing segment upper frequency - 40 MHz.

SuggestedRemedy

Fill in TBD upper frequency in Equation 147-6 (lines 14 and 17) with 40 MHz.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
2 changes:
- Replace the 2 TBDs by "40"
- Make the interval closed by replacing "< TBD" by "<= 40"

Cl **147** *SC* **147.10** *P* **153** *L* **1** # 484

Brandt, David — Rockwell Automation

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

Typo

SuggestedRemedy

Remove D from end of: "specificationsD"

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.10** *P* **153** *L* **3** # 485
Brandt, David Rockwell Automation

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

Artifact

SuggestedRemedy

Remove Editor's note

Response *Response Status* **C**

ACCEPT.

Cl **147** *SC* **147.10.1** *P* **153** *L* **7** # 486
Brandt, David Rockwell Automation

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

Clause has no content

SuggestedRemedy

Insert text from slide 3 of submission "brandt_cg_01_0518.pdf"

Response *Response Status* **C**

ACCEPT.
See page 3/6 of http://www.ieee802.org/3/cg/public/May2018/brandt_cg_01_0518.pdf

Cl **147** *SC* **147.10.2** *P* **153** *L* **9** # 487
Brandt, David Rockwell Automation

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

Clause has no content

SuggestedRemedy

Insert text from slide 4 of submission "brandt_cg_01_0518.pdf"

Response *Response Status* **C**

ACCEPT.
See page 4/6 of http://www.ieee802.org/3/cg/public/May2018/brandt_cg_01_0518.pdf

Cl **147** *SC* **147.10.2.1** *P* **153** *L* **11** # 488
Brandt, David Rockwell Automation

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

Clause has no content

SuggestedRemedy

Insert text from slide 5 of submission "brandt_cg_01_0518.pdf"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert new clause shown in slide 3 of
http://www.ieee802.org/3/cg/public/May2018/brandt_cg_02a_0518.pdf

Cl **147** *SC* **147.10.2.2** *P* **153** *L* **13** # 489
Brandt, David Rockwell Automation

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

Clause has no content

SuggestedRemedy

Insert text from slide 6 of submission "brandt_cg_01_0518.pdf"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Incorporate only this (first 2 senteces):
====
147.10.2.2 Electromagnetic compatibility
A system integrating the 10BASE-T1S PHY shall comply with applicable local and national codes. In addition, the system
may need to comply with more stringent requirements as agreed upon between customer and supplier, for the limitation of
electromagnetic interference.
====
from page 6/6 of this: http://www.ieee802.org/3/cg/public/May2018/brandt_cg_01_0518.pdf

Cl **148** *SC* **148.2** *P* **157** *L* **18** # 332

Orzelli, Antonio Canova Tech

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

Proposal for PLCA Overview.

SuggestedRemedy

Add text to paragraph 148.2 as reported in attached PDF (slide 17).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Editor suggests a more compact description.

Replace editor's note in subclause 148.2 with the following text:

"The working principle of PLCA is that each PHY on a multidrop network is granted, in turn, a single transmit opportunity based on its assigned unique node ID.

At any time, only the PHY owning a transmit opportunity is allowed to send data over the medium, therefore avoiding physical collisions.

Transmit opportunities are generated in a round-robin fashion every time the PHY with node ID = 0 signals a BEACON on the medium, indicating the start of a new cycle. This can only happen after each PHY has been given exatly one transmit opportunity, thus ensuring media acccess fairness.

PLCA relies on CSMA/CD functions to have the MAC delay a transmissions until a transmit opportunity is met."

Cl **148** *SC* **148.4.4.1.1** *P* **161** *L* **43** # 442

Pannell, Don NXP (donald.pannell@

Comment Type **TR** *Comment Status* **A** *Primitives*

"PHY specifications are free to map the BEACON request to any suitable coding as long as the requirement defined herin are met." Since this section is talking about the MII interface, which can be an exposed interface, allowing for custom codes does not allow for interoperability.

SuggestedRemedy

Change this to a shall use the code defined in Table 22-1. If this is not the intention, then this sentence needs to be clarified.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "PHY specifications are free to map the BEACON request to any suitable coding as long as the requirement defined herein are met."

to "PHY specifications are free to map the BEACON request to any suitable line coding as long as the requirement defined herein are met."

This sentence actually refers to the BEACON at the MDI. The change now refers to "line coding" to avoid confusion with MII codes.

Cl **148** *SC* **148.4.4.1.2** *P* **162** *L* **1** # 443

Pannell, Don NXP (donald.pannell@

Comment Type **TR** *Comment Status* **A** *Primitives*

"PHY specifications are free to map the COMMIT request to any suitable coding as long as the requirement defined herin are met." Since this section is talking about the MII interface, which can be an exposed interface, allowing for custom codes does not allow for interoperability.

SuggestedRemedy

Change this to a shall use the code defined in Table 22-1. If this is not the intention, then this sentence needs to be clarified.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "PHY specifications are free to map the COMMIT request to any suitable coding as long as the requirement defined herein are met."

to "PHY specifications are free to map the COMMIT request to any suitable line coding as long as the requirement defined herein are met."

This sentence actually refers to the COMMIT at the MDI. The change now refers to "line coding" to avoid confusion with MII codes.

Cl **148** *SC* **148.4.4.2.4** *P* **163** *L* **3** # 427

Zimmerman, George CME Consulting et al

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

Editor's note has served its purpose

SuggestedRemedy

Delete editor's note

Response *Response Status* **C**

ACCEPT.

Cl **148** *SC* **148.4.5.1** *P* **163** *L* **20** # 428

Zimmerman, George CME Consulting et al

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

Figure 148-TBD appears to refer to Figures 148-3 and 148-4.

SuggestedRemedy

Change Figure 148-TBD to "Figure 148-3 and Figure 148-4" (cross references)

Response *Response Status* **C**

ACCEPT.

Cl **148** *SC* **148.4.5.1** *P* **163** *L* **26** # 327

Orzelli, Antonio Canova Tech

Comment Type **T** *Comment Status* **A** *State Diagram*

The node with ID = 0 could be reset in the middle of a BEACON cycle and start over sending a new BEACON while other PHYs are still in the process of transmitting / waiting their TO.
To avoid this the node with ID = 0 could start in recovery mode and wait for the media to be silent before sending the BEACON.

SuggestedRemedy

change "When PLCA functions are enabled, the PHY with local_nodeID variable set to 0 immediately switches to SEND_BEACON state..." with "When PLCA functions are enabled, the PHY with local_nodeID variable set to 0 immediately switches to RECOVER state and waits for all other PHYs to be silent for at least RECV_BEACON_TIMER. Then it switches to SEND_BEACON state..."

See attached PDF (slide 12).

Response *Response Status* **C**

ACCEPT.

Replace text:
"When PLCA functions are enabled, the PHY with local_nodeID variable set to 0 immediately switches to
SEND_BEACON state to have all other PHYs synchronize their own transmit opportunity counter and
related timer."

With:
"When PLCA functions are enabled, the PHY with local_nodeID variable set to 0 immediately switches to RECOVER state and waits for all other PHYs to be silent for at least RECV_BEACON_TIMER. Then it switches to SEND_BEACON state to have all other PHYs synchronize their own transmit opportunity counter and
related timer."

Cl **148** *SC* **148.4.5.1** *P* **163** *L* **26** # 444

Pannell, Don NXP (donald.pannell@

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

"with local_nodeID variable set to 0 immediately"

SuggestedRemedy

Change to "with local_nodeID variable set to 0, immediately" i.e., add in the ',' after the '0'.

Response *Response Status* **C**

ACCEPT.

Cl **148** *SC* **148.4.5.1** *P* **163** *L* **28** # 445

Pannell, Don NXP (donald.pannell@

Comment Type **E** *Comment Status* **A** *State Diagram*

"Slave PHYs wait"

SuggestedRemedy

Change to "Slave PHYs (i.e., those with local_nodeID variable not set to 0) wait".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "Slave PHYs" to "PHYs with nonzero local_nodeID"

This should have been fixed by comment 168 on d1p1 which was part of a number of comments removing the term "Slave PHYs" and "MASTER PHY" from PLCA. Comment 168 fixed other parts of the sentence but missed the term "Slave PHYs" at the start of this sentence.

Cl **148** *SC* **148.4.5.1** *P* **165** *L* **10** # 328

Orzelli, Antonio Canova Tech

Comment Type **T** *Comment Status* **A** *State Diagram*

The node with ID = 0 could be reset in the middle of a BEACON cycle and start over sending a new BEACON while other PHYs are still in the process of transmitting / waiting their TO.
To avoid this the node with ID = 0 could start in recovery mode and wait for the media to be silent before sending the BEACON.

SuggestedRemedy

In Figure 148-3 add a transition from DISABLE state to RECOVER state with description "plca_en = ON * local_nodeID = 0".
In Figure 148-3 change transition from DISABLE to RESYNC state from "plca_en = ON" to "plca_en = ON * ELSE".

See attached PDF (slide 13).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

ELSE is not appropriate from an editorial point of view in this case.

In Figure 148-3 add a transition from DISABLE state to RECOVER state with description "plca_en = ON * local_nodeID = 0".
In Figure 148-3 change transition from DISABLE to RESYNC state from "plca_en = ON" to "plca_en = ON * local_nodeID != 0".

Where '!=' stands for the "not equal" symbol

Note: see updated presentation
http://www.ieee802.org/3/cg/public/May2018/beruto_3cg_01_0518.pdf

Cl **148** *SC* **Figure 148-4** *P* **166** *L* **11** # 483

Brandt, David Rockwell Automation

Comment Type **T** *Comment Status* **A** *State Diagram*

The exist conditions from WAIT_TO are ambiguous.

SuggestedRemedy

Change to:

curID = local_nodeID * packetPending= FALSE * plca_eri = FALSE
curID = local_nodeID * packetPending = TRUE * plca_eri = FALSE
TO_TIMER done * curID != local_nodeID * plca_eri = FALSE
plca_eri = TRUE

Response *Response Status* **C**

ACCEPT.

Change to:

curID = local_nodeID * packetPending= FALSE * plca_eri = FALSE
curID = local_nodeID * packetPending = TRUE * plca_eri = FALSE
TO_TIMER done * curID != local_nodeID * plca_eri = FALSE
plca_eri = TRUE

Cl **148** *SC* **148.4.5.2** *P* **167** *L* **3** # 476

Brandt, David Rockwell Automation

Comment Type **T** *Comment Status* **A** *Management*

RS signal plca_reset lacks reference to management interface register

SuggestedRemedy

Replace:

Generated by management interface (register TBD), resets the RS.

With:

The plca_reset signal is used to reset the optional PLCA function in the RS. This signal maps to ON when aPLCAReset is enabled and to OFF when aPLCAAdminState is normal, but is further qualified.
This signal is only set to ON when PLCA ability bit in MDIO register 3.2292.13 is set to a one and PLCA enable bit in MDIO register 3.2291.13 is set to a one. This signal is set to OFF when PLCA ability bit in MDIO register 3.2292.13 is set to a zero or PLCA enable bit in MDIO register 3.2291.13 is set to a zero.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Replace:

Generated by management interface (register TBD), resets the RS.

With:

The plca_reset signal is used to reset the optional PLCA function in the RS. This signal maps to ON when aPLCAReset is enabled and to OFF when aPLCAAdminState is normal, but is further qualified.
When the MDIO is present, this signal is only set to ON when PLCA ability bit in MDIO register 3.2292.13 is set to a one and PLCA enable bit in MDIO register 3.2291.13 is set to a one. This signal is set to OFF when PLCA ability bit in MDIO register 3.2292.13 is set to a zero or PLCA enable bit in MDIO register 3.2291.13 is set to a zero. When MDIO is not present, the functionality of 3.2291.13 and 3.2291.13 can be provided by equivalent means.

Cl **148** *SC* **148.4.5.2** *P* **167** *L* **9** # 463

Brandt, David Rockwell Automation

Comment Type **T** *Comment Status* **A** *Management*

RS signal plca_en lacks reference to management interface register

SuggestedRemedy

Replace:

Generated by management interface (register TBD), enables PLCA functions.

With:

The plca_en signal controls the optional PLCA function in the RS. This signal maps to ON when aPLCAAdminState is enabled and to OFF when aPLCAAdminState is disabled. This signal is set to ON when PLCA ability bit in MDIO register 3.2292.13 is set to a one and PLCA enable bit in MDIO register 3.2291.13 is set to a one. This signal is set to OFF when PLCA ability bit in MDIO register 3.2292.13 is set to a zero or PLCA enable bit in MDIO register 3.2291.13 is set to a zero.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Replace:

Generated by management interface (register TBD), enables PLCA functions.

With:

The plca_en signal controls the optional PLCA function in the RS. This signal maps to ON when aPLCAAdminState is enabled and to OFF when aPLCAAdminState is disabled. When the MDIO is present, this signal is set to ON when PLCA ability bit in MDIO register 3.2292.13 is set to a one and PLCA enable bit in MDIO register 3.2291.13 is set to a one. This signal is set to OFF when PLCA ability bit in MDIO register 3.2292.13 is set to a zero or PLCA enable bit in MDIO register 3.2291.13 is set to a zero. When MDIO is not present, the functionality of 3.2291.13 and 3.2291.13 can be provided by equivalent means.

Cl **148** *SC* **148.4.5.2** *P* **167** *L* **38** # 446

Pannell, Don NXP (donald.pannell@

Comment Type **TR** *Comment Status* **R** *State Diagram*

"Values: integer value from 0 to 255." does not match what is stated in sub-clause 147.8.

SuggestedRemedy

Change to: "Values: 8-bit integer in the range defined in Table-XYZ in section 147.8."
This clearly defines the size of the field and the expected range for conformance all in one place.

Response *Response Status* **C**

REJECT.
The local_nodeID range should not be tied to a specific PHY in this generic RS.
PLCA is designed for networks with a small number of nodes (see 148.1) and 255 is already an oversized value.
Additionally, there is no reference to this in 147.8 as the commenter suggests.

Cl **148** *SC* **148.4.5.2** *P* **167** *L* **48** # 447

Pannell, Don NXP (donald.pannell@

Comment Type **TR** *Comment Status* **R** *State Diagram*

"Values: integer value from 0 to 255." does not match what is stated in sub-clause 147.8.

SuggestedRemedy

Change to: "Values: 8-bit integer in the range defined in Table-XYZ in section 147.8."
This clearly defines the size of the field and the expected range for conformance all in one place.

Response *Response Status* **C**

REJECT.
The local_nodeID range should not be tied to a specific PHY in this generic RS.
PLCA is designed for networks with a small number of nodes (see 148.1) and 255 is already an oversized value.
Additionally, there is no reference to this in 147.8 as the commenter suggests.

Cl **148** *SC* **148.4.5.4** *P* **168** *L* **20** # 431

Pannell, Don NXP (donald.pannell@

Comment Type **TR** *Comment Status* **A** *State Diagram*

"Times the duration of the BEACON signal." does not specifiy the units.

SuggestedRemedy

Specify the units of this timer and its size (8-bits?). I suggest the units should be in number of BEACON symbols and not bit times. Else you have to define the proper operation for bit time values that are for a non-integer number of symbols!

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve with comment 430. (on clause 147)
Change "BEACON_TIMER Times the duration of the BEACON signal. Timer value shall be defined within specific Reconciliation sublayers. Duration shall be enough to allow all PHYs to properly recover the BEACON indication."
to
"BEACON_TIMER Times the duration of the BEACON signal.
Duration: 20 bit times."

Note: already solved by comment 430

Cl **148** *SC* **148.4.5.4** *P* **168** *L* **25** # 448

Pannell, Don NXP (donald.pannell@

Comment Type **TR** *Comment Status* **A** *State Diagram*

The RECV_TIMER's units are not specified.

SuggestedRemedy

Define the size of the RECV_TIMER (8-bit or 16-bit integer) and define its units. I recommend 5-bit symbols as the units to be consistent with the BEACON_TIMER.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change line 27 from: "The actual value of this timer is implementation..." to "Duration: This timer is implementation..." on line 27.

The comment suggests that the timer is a reported value rather than a timer in a state diagram. The description of the timer says that its duration is implementation-specific. Timers in 802.3 state diagrams do not state numbers of bits in representation nor units (unless the units are to define the duration). See 40.4.5.2 (referencing 14.2.3.2) in IEEE Std 802.3-2015, defining how timers operate.

Cl **148** *SC* **148.4.5.4** *P* **168** *L* **37** # 449

Pannell, Don NXP (donald.pannell@

Comment Type **TR** *Comment Status* **A** *State Diagram*

The TO_TIMER's units are specified as bit times. But are these media bit times or MII bit times (i.e., are we in the 4b space or the 5b space).

SuggestedRemedy

The size of the TO_TIMER is implied, but I would define it clearer to be a 16-bit integer and define its units. I recommend 5-bit symbols as the units to be consistent with the BEACON_TIMER.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "Value" to "Duration" on page 168 line 37.

Clause 148 is not specific to c147, it's generic. Besides, the PLCA control state machine is not tied to any specific clock, as a result, bit times are specified as the duration.

The comment suggests that the timer is a reported value rather than a timer in a state diagram. Timers in 802.3 state diagrams do not state numbers of bits in representation nor units (unless the units are to define the duration). See 40.4.5.2 (referencing 14.2.3.2) in IEEE Std 802.3-2015, defining how timers operate.

Cl **148** *SC* **148.4.5.4** *P* **168** *L* **43** # 450

Pannell, Don NXP (donald.pannell@

Comment Type **TR** *Comment Status* **A** *State Diagram*

The RECV_BEACON_TIMER's units are not specified.

SuggestedRemedy

Define the size of the RECV_TIMER (16-bit integer) and define its units. I recommend 5-bit symbols as the units to be consistent with the BEACON_TIMER.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change line 41 from "This timer value shall be set at least to TO_TIMER * MAX_ID + BEACON_TIMER for safe operations."
to "Duration: The duration of this timer is controllable and should be at least TO_TIMER * MAX_ID + BEACON_TIMER for reliable operations."

See comment 448 for a discussion of timers and units.

Cl **148** *SC* **148.4.6.1** *P* **169** *L* **14** # 482

Brandt, David Rockwell Automation

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

The variable delay line is not adequately described.

SuggestedRemedy

The variable delay line in Figure 148-2
Change from:

During the HOLD state the PLCA Control state machine is notified via the packetPending variable that data
is available to be transmitted. At next transmit opportunity the PLCA Control state machine eventually
allow transmitting the delayed data by setting the "committed" variable to TRUE. In such case the PLCA
Data state machine switches to TRANSMIT state to actually deliver the data for the PHY to encode and
transmit on the medium.

To:
During the HOLD state the PLCA Control state machine is notified via the packetPending variable that data
is available to be transmitted and the beginning of the transmission is held in the variable delay line. At next transmit opportunity the PLCA Control state machine
allow transmitting the delayed data by setting the "committed" variable to TRUE. In such case the PLCA
Data state machine switches to TRANSMIT state to actually deliver the data for the PHY to encode and
transmit on the medium.

The variable delay line is a small buffer that is necessary in order to avoid physical collisions by delaying transmission to the MII interface until the exclusive transmit opportunity for the node arrives. The variable delay line length is no greater than TO_TIMER * MAX_ID.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The BEACON_TIMER should also be taken into account while computing the maximum delay line size.

Replace text:

"During the HOLD state the PLCA Control state machine is notified via the packetPending variable that data
is available to be transmitted. At next transmit opportunity the PLCA Control state machine eventually
allow transmitting the delayed data by setting the "committed" variable to TRUE. In such case the PLCA
Data state machine switches to TRANSMIT state to actually deliver the data for the PHY to encode and
transmit on the medium."

To:
"During the HOLD state the PLCA Control state machine is notified via the packetPending variable that data
is available to be transmitted and the beginning of the transmission is held in the variable delay line. At next transmit opportunity the PLCA Control state machine
allow transmitting the delayed data by setting the "committed" variable to TRUE. In such case the PLCA
Data state machine switches to TRANSMIT state to actually deliver the data for the PHY to encode and
transmit on the medium.

The variable delay line is a small buffer that is necessary in order to avoid physical collisions by delaying transmission to the MII interface until the exclusive transmit opportunity for the node arrives. The variable delay line length is no greater than TO_TIMER * MAX_ID + BEACON_TIMER."

Cl **148** *SC* **148.4.6.1** *P* **169** *L* **19** # 329

Orzelli, Antonio Canova Tech

Comment Type **T** *Comment Status* **A** *TX_ER*

PLCA is not handling TX_ER. Add ABORT state in PLCA Data state machine to handle it.

SuggestedRemedy

Add text "If TX_ER is asserted during the HOLD state, the PLCA_Data state machine switches to ABORT state to assert packetPending = FALSE and to wait the MAC to stop sending data. The aborted packet will not be transmitted on the medium."

See attached PDF (slide 14).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accept proposed change and also amend clause 22.2.2.5 TX_ER (transmit coding error).

Change "Assertion of the TX_ER signal shall not affect the transmission of data when a PHY is operating at 10Mb/s, or when TX_EN is deasserted."
to
"Assertion of the TX_ER signal shall not affect the transmission of data when a PHY is operating at 10Mb/s (with the exception of 10BASE-T1S and 10BASE-T1L), or when TX_EN is deasserted"

Note: see comment 331

Cl **148** *SC* **148.4.6.1** *P* **169** *L* **23** # 325

Orzelli, Antonio Canova Tech

Comment Type **T** *Comment Status* **A** *State Diagram*

In mis-configured networks physical collisions might happen.
In such case setting packetPending flag in PLCA Data state machine in COLLIDE state may cause trouble (e.g. COMMITTING while JAMMING).

SuggestedRemedy

change "During the COLLIDE state, the PLCA Data state machine asserts CARRIER_STATUS = CARRIER_ON via the PLS_CARRIER.indication primitive to prevent the MAC to make new..." with "During the COLLIDE state, the PLCA Data state machine asserts packetPending = FALSE and CARRIER_STATUS = CARRIER_ON via the PLS_CARRIER.indication primitive. When the MAC has finished to send the jam bits as described in Clause 4 it waits for the next transmit opportunity by switching to PENDING state.

During the PENDING state, the PLCA Data state machine asserts packetPending = TRUE and keeps CARRIER_STATUS = CARRIER_ON via the PLS_CARRIER.indication primitive to prevent the MAC to make new..."

See attached PDF (slide 10).

Response *Response Status* **C**

ACCEPT.

Replace Text:
"During the COLLIDE state, the PLCA Data state machine asserts CARRIER_STATUS = CARRIER_ON via the PLS_CARRIER.indication primitive to prevent the MAC to make new"

With:
"During the COLLIDE state, the PLCA Data state machine asserts packetPending = FALSE and CARRIER_STATUS = CARRIER_ON via the PLS_CARRIER.indication primitive. When the MAC has finished to send the jam bits as described in Clause 4 it waits for the next transmit opportunity by switching to PENDING state.

During the PENDING state, the PLCA Data state machine asserts packetPending = TRUE and keeps CARRIER_STATUS = CARRIER_ON via the PLS_CARRIER.indication

Cl **148** *SC* **148.4.6** *P* **170** *L* **45** # 331

Orzelli, Antonio Canova Tech

Comment Type **T** *Comment Status* **A** *TX_ER*

PLCA is not handling TX_ER. Add ABORT state in PLCA Data state machine to handle it.

SuggestedRemedy

In Figure 148-5 add state "ABORT" with description "packetPending <= FALSE".

In Figure 148-5 add a transition from HOLD state to ABORT state with condition "committed = FALSE * TX_ER = TRUE".

In Figure 148-5 add a transition from ABORT state to IDLE state with condition "plca_txen = FALSE".

In Figure 148-5 change transition from HOLD state to HOLD state condition from "MCD * committed = FALSE" to "MCD * ELSE".

See attached PDF (slide 16).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accept proposed change and also amend clause 22.2.2.5 TX_ER (transmit coding error).

Change "Assertion of the TX_ER signal shall not affect the transmission of data when a PHY is operating at 10Mb/s, or when TX_EN is deasserted."
to
"Assertion of the TX_ER signal shall not affect the transmission of data when a PHY is operating at 10Mb/s (with the exception of 10BASE-T1S and 10BASE-T1L), or when TX_EN is deasserted"

Cl **148** *SC* **148.4.6.1** *P* **171** *L* **7** # 326

Orzelli, Antonio Canova Tech

Comment Type **T** *Comment Status* **A** *State Diagram*

In mis-configured networks physical collisions might happen.
In such case setting packetPending flag in PLCA Data state machine in COLLIDE state may cause trouble (e.g. COMMITTING while JAMMING).

SuggestedRemedy

In Figure 148-6 substitute "packetPending <= TRUE" with "packetPending <= FALSE" in state COLLIDE.
In Figure 148-6 add "packetPending <= TRUE" in state PENDING.

See attached PDF (slide 11).

Response *Response Status* **C**

ACCEPT.

Cl **148** *SC* **148.4.6.1** *P* **171** *L* **30** # 432
Pannell, Don NXP (donald.pannell@

Comment Type **TR** *Comment Status* **R** *State Diagram*

On page 143 line 19 Sub-clause 147.3.7.2 states "When a sequence of at least two consecutive 'J' symbols is received" & on page 148 line 39 Sub-clause 147.4.3 states that "At the start of transmission, the symbol sequence J/J/J/K" implies that 3 'J's are transmitted, but the state diagram in Fig 148-6 does not show the 1st two octets of the MAC's preamble being converted into the J/J/J/K sequence.

SuggestedRemedy

Show in Fig 148-6 the translation of the MAC's preamble octets into the the SSD (Start of Stream Delimiter) required for this PHY. Or define this as a 'shall' somewhere.

Response *Response Status* **C**

REJECT.
I believe the commenter is referring to page 145 line 39, not 148 line 39 (page 148 is the PSD mask).

Generation of the PHY-specific SYNC, SYNC, SYNC, SSD (J/J/J/K) is specified in clause 147. (see figure 147-4, and associated "shall" at P 133 L 45)

Cl **148** *SC* **148.4.6.2** *P* **172** *L* **25** # 330
Orzelli, Antonio Canova Tech

Comment Type **T** *Comment Status* **A** *TX_ER*

PLCA is not handling TX_ER. Add ABORT state in PLCA Data state machine to handle it.

SuggestedRemedy

Add variable description "TX_ER The MII signal TX_ER."

See attached PDF (slide 15).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Accept proposed change and also amend clause 22.2.2.5 TX_ER (transmit coding error).

Change "Assertion of the TX_ER signal shall not affect the transmission of data when a PHY is operating at 10Mb/s, or when TX_EN is deasserted."
to
"Assertion of the TX_ER signal shall not affect the transmission of data when a PHY is operating at 10Mb/s (with the exception of 10BASE-T1S and 10BASE-T1L), or when TX_EN is deasserted"

Note: see comment 331

Cl **200** *SC* **200** *P* **183** *L* **12** # 501
Jones, Peter Cisco

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

Change to align with PAR modification throughout rest of clause

SuggestedRemedy

Change "single balanced twisted-pair cabling" to "a single balanced pair"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "single balanced twisted-pair Ethernet" to "single-pair Ethernet"

Cl **200** *SC* **200A.1.1.2** *P* **200** *L* **21** # 305
Maguire, Valerie The Siemon Company

Comment Type **T** *Comment Status* **A** *Link Segment*

Trunk link sections and spur link sections are undefined.

SuggestedRemedy

Insert the following sentences before the sentence on line 21, "A trunk link section provides the feed to the the first PD or PSE in a 10BASE-T1L link segment. A spur link section feeds subsequent PDs or PSEs."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert the following sentences before the sentence on line 21, The trunk link section provides power to the single pair field switches. The trunk link section can also interconnect field switches. The spur link sections provides power to the PDs.

Align figure with text definition above. For media change all instances of single-pair to "single balanced pair".

Cl **200** *SC* **200A.1.1.2** *P* **200** *L* **30** # 307
Maguire, Valerie The Siemon Company

Comment Type **T** *Comment Status* **A** *Link Segment*

Clarify media in figure.

SuggestedRemedy

Insert "single balanced pair" after "AWG" in three locations in Figure 200A-2.

Response *Response Status* **C**

ACCEPT.

Cl **200** *SC* **200A.1.1.2** *P* **200** *L* **30** # 309

Maguire, Valerie — The Siemon Company

Comment Type **T** *Comment Status* **D** *Link Segment*

Clarify what gage conductors and length are used for this section.

SuggestedRemedy

Replace, "(e.g., 24V dc power) with "(e.g., XX Type E PoDL, 14 - 18 AWG single balanced pair cable, up to 1000m length). Commenter's note: Replace "XX" with correct voltage.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

200A.1.1.2 Powered trunk cable topologies
DCR characteristics and class power requirements have not been agreed to by the Task Group.
See editors notes under 200A.1.1.2.1 Powered trunk cable DCR characteristics and 200A.1.1.2.2 Powered trunk cable class power requirements.

Cl **200** *SC* **200A.1.1.2** *P* **200** *L* **30** # 308

Maguire, Valerie — The Siemon Company

Comment Type **T** *Comment Status* **D** *Link Segment*

This is just an example, but it would be nice to reference PoDL power.

SuggestedRemedy

Replace "dc power" with "Type E PoDL" in four locations in Figure 200A-2 (e.g., "48V dc power" becomes "XX V Type 3 PoDL" - Commenter's note: replace XX with correct voltage).

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

DCR characteristics and class power requirements have not been agreed to by the Task Group.
See editors notes under 200A.1.1.2.1 Powered trunk cable DCR characteristics and 200A.1.1.2.2 Powered trunk cable class power requirements.

Cl **200** *SC* **200A.1.1.2** *P* **200** *L* **30** # 306

Maguire, Valerie — The Siemon Company

Comment Type **T** *Comment Status* **A** *Link Segment*

Clarify if this is a spur link section or a trunk link section. Align media references.

SuggestedRemedy

Replace, "Powered Single-pair link section" with "Powered single balanced pair spur link section" in Figure 200A-2.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Powered single balanced pair Trunk link section.

Cl **200** *SC* **200A.1.1.2** *P* **200** *L* **185** # 304

Maguire, Valerie — The Siemon Company

Comment Type **E** *Comment Status* **A** *Link Segment*

Align media references with revised objectives.

SuggestedRemedy

Replace 4 occurances of the phrase "Single-pair" in Figure 200A-2 with "single balanced pair" (Commenter's note: single should not be capitalized).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolve with comment#305

Cl **98** *SC* **98.5.1** *P* **220** *L* **27** # 507

Graber, Steffen Pepperl+Fuchs GmbH

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

Description for variable autoneg_speed is missing.

SuggestedRemedy

Add autoneg_speed<new line>This variable contains the type of the selected Auto-Negotiation speed.<new line>Values: HSM (high speed mode) or LSM (low speed mode). Add also a copy of this variable to the variables section of 98.5.6.1.

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.5.5** *P* **227** *L* **13** # 506

Graber, Steffen Pepperl+Fuchs GmbH

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

Indices for high speed or low speed timer values are missing in the state diagrams in figures 98-7 to 98-10.

SuggestedRemedy

Add index _[autoneg_speed] to all references of blind_timer, break_link_timer, clock_detect_max_timer, clock_detect_min_timer, data_detect_max_timer, data_detect_min_timer, interval_timer, page_test_max_timer, receive_DME_timer, rx_wait_timer and silent_timer. Add index_[HCD] to link_fail_inhibit_timer.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
If necessary, bring Figures 98-7 to 98-10 into the draft, and do the following (the suggested remedy):
Add index _[autoneg_speed] to all references of blind_timer, break_link_timer, clock_detect_max_timer, clock_detect_min_timer, data_detect_max_timer, data_detect_min_timer, interval_timer, page_test_max_timer, receive_DME_timer, rx_wait_timer and silent_timer. Add index_[HCD] to link_fail_inhibit_timer.