*Cl* **00** *SC* **0** *P* **0** *L* **0** # r02-66

Thompson, Geoffrey Independent Consultant

*Comment Type* **GR** *Comment Status* **R** *PLCA_Scope*

One of my responsibilities as a balloter is to ensure that the scope of the draft is within the scope of the work authorized by the PAR. An affirmative vote indicates your agreement that the scope of the draft does not exceed the work authorized by the PAR. I cannot, in good conscience, affirm that for reasons previously stated, therefore my vote is DISAPPROVE. It is my belief that, in spite of the converging nature of the scope of commentable text on the draft that this comment is within the scope of this ballot.

*SuggestedRemedy*

Since the time for modifying the PAR to change the scope of this project is long past, the only choices at this point would be to (1) disapprove the project or (2) remove clause 148 and related text elsewhere in the project.

*Response* *Response Status* **W**

REJECT.
The CRG disagrees with the commenter.
This comment is a restatement of previous comments from the same commenter, including particularly R01-220 and R01-227, and restates the commenter's opinion without additional technical information. The commenter has a previously existing disapprove vote.

Response to R01-227 is:
REJECT.
The CRG disagrees with the commenter, and believes the draft is within the PAR scope.
A key responsibility of the ballot pool is to evaluate whether the scope of the draft is within the scope of the PAR, and an affirmative vote indicates your agreement that the work does not exceed the scope of the PAR. The ballot pool has voted in the affirmative.
This comment is essentially a restatement of the arguments in previously rejected comments i-27 and i-270, and are not associated with a new disapprove vote.
The majority of the CRG believes that the functions are appropriately placed in the architecture of IEEE Std. 802.3 and ISO layering model.

*Cl* **01** *SC* **1.3** *P* **29** *L* **23** # r02-2

Anslow, Peter Ciena

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

The reference "ISO 4892:1982, Plastics--Methods of exposure to laboratory light" has been removed from the draft, but references to this document are still present in 146.9.2.1 and 147.10.2.1

*SuggestedRemedy*

Restore the entry for ISO 4892

*Response* *Response Status* **C**

ACCEPT.

*Cl* **30** *SC* **30.3.1** *P* **38** *L* **41** # r02-26

Kabra, Lokesh Synopsys, Inc.

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

Incorrect reference to sub-clause number for "aSingleCollisionFrame" in 802.3-2018

*SuggestedRemedy*

Replace "30.3.1.3" with "30.3.1.1.3"

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accommodated by response to comment r02-56.
Response to comment r02-56 is:
ACCEPT.
Delete editing instructions related to the "The contents of this attribute are undefined for MAC entities using a Physical Layer with PLCA enabled.;" so that the intended change is to revert back to no change to this subclause and text.

*Cl* **30** *SC* **30.3.1** *P* **38** *L* **50** # r02-27

Kabra, Lokesh Synopsys, Inc.

*Comment Type* **G** *Comment Status* **A** *Management*

The newly added sentence is not accurate for MAC entity; Since we claim that PLCA does not impact the MAC entity (or MAC function including CSMA/CD), MAC should be counting collisions transparently independent of normal RS or PLCA RS. With PLCA active, probability of collisions are reduced by means of extending CRS and allowing transmit opportunity slots. But collisions can still occur if some other node in the mixing segment does not follow the PLCA rules or are incorrectly configured. Hence counting this "singleCollision" event is still valid and useful to have.

*SuggestedRemedy*

Delete the new sentence added in D3.2

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accomodated by comment r02-56
Response to comment r02-56 is:
ACCEPT.
Delete editing instructions related to the "The contents of this attribute are undefined for MAC entities using a Physical Layer with PLCA enabled.;" so that the intended change is to revert back to no change to this subclause and text.

*Cl* **30** *SC* **30.3.1.1** *P* **38** *L* **40** # r02-3

Anslow, Peter Ciena

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

The headings in the draft:
30.3.1 MAC entity managed object class
30.3.1.3 aSingleCollisionFrames

Should be:
30.3.1 MAC entity managed object class
30.3.1.1 MAC entity attributes
30.3.1.1.3 aSingleCollisionFrames

*SuggestedRemedy*

Insert the level 4 heading: "30.3.1.1 MAC entity attributes"
Chane the heading for 30.3.1.3 aSingleCollisionFrames to be level 5: 30.3.1.1.3 aSingleCollisionFrames

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accommodated by response to comment r02-56.
Response to comment r02-56 is:
ACCEPT.
Delete editing instructions related to the "The contents of this attribute are undefined for MAC entities using a Physical Layer with PLCA enabled.;" so that the intended change is to revert back to no change to this subclause and text.

*Cl* **30** *SC* **30.3.1.3** *P* **38** *L* **42** # r02-4

Anslow, Peter Ciena

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

The editing instruction should reference the subclause number rather than the title.
As noted in another comment this should be 30.3.1.1.3.
Also, refer to the "BEHAVIOUR DEFINED AS" section

*SuggestedRemedy*

Change the editing instruction to:
"Change the "BEHAVIOUR DEFINED AS" section of 30.3.1.1.3 as shown:

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accommodated by response to comment r02-56.
Response to comment r02-56 is:
ACCEPT.
Delete editing instructions related to the "The contents of this attribute are undefined for MAC entities using a Physical Layer with PLCA enabled.;" so that the intended change is to revert back to no change to this subclause and text.

*Cl* **30** *SC* **30.3.1.3** *P* **38** *L* **49** # r02-5

Anslow, Peter Ciena

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

"5.2.4.2" is an external cross-reference

*SuggestedRemedy*

Apply character tag External to "5.2.4.2"

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accommodated by response to comment r02-56.
Response to comment r02-56 is:
ACCEPT.
Delete editing instructions related to the "The contents of this attribute are undefined for MAC entities using a Physical Layer with PLCA enabled.;" so that the intended change is to revert back to no change to this subclause and text.

*Cl* **30** *SC* **30.3.1.3** *P* **38** *L* **50** # r02-15

Zimmerman, George ADI, APL Group, Aquantia, BMW, Cisco, Commscop

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

"The contents of this attribute are undefined for MAC entities using a Physical Layer with PLCA enabled" - the definition of the counter is identical, regardless of whether PLCA is enabled. This counter counts single collisions at the MAC. The situation is not analogous to use with a full duplex MAC. Reporting of the PHY asserting a corruption on the media to PLCA should occur in a PLCA clause 30 object if needed in clause 30.

*SuggestedRemedy*

Delete 30.3.1.3 from the draft, including editing instruction. Insert new attribute after 30.16.1.1.7 as follows: "PLCA managed object class 30.16.1.1.8 aPLCACorruptedTxCount<CR>ATTRIBUTE<CR>APPROPRIATE SYNTAX<CR> Generalized nonresetable counter. This counter has a maximum increment rate of 13 000 counts per second.<CR>BEHAVIOUR DEFINED AS<CR>A count of times the PLCA RS receives an asserted COL from the MII.;" In Add new row after aPLCATransmitOpportunityCounter: "aPLCACorruptedTxCount | ATTRIBUTE | GET | X"

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accomodated by comment r02-56
Response to comment r02-56 is:
ACCEPT.
Delete editing instructions related to the "The contents of this attribute are undefined for MAC entities using a Physical Layer with PLCA enabled.;" so that the intended change is to revert back to no change to this subclause and text.

*Cl* **30** *SC* **30.3.1.3** *P* **39** *L* **50** # r02-56

Kim, Yongbum NIO

*Comment Type* **TR** *Comment Status* **A** *Management*

The added text "The contents of this attribute are undefined for MAC entities using a Physical Layer with PLCA enabled." does not make sense. CL148 PLCA RS claims to be RS and does not perform MAC function. It further claims to work with half-duplex MAC without modification. This aSingleCollisionFrames counter is very relevant to half-duplex MAC and not relevant to fuill-duplex MAC. But this added text makes this counter irrelevant to the half-duplex MAC and CL148 PLCA. This change makes little sense.
a) this counter is relevant to half-duplex MAC
b) this counter will register relevent and meaningful event -- because PLCA does not eliminate collisions (if, PLCA always guarantees collision-free operation, then it should say so and show how, and
c) layer violation -- it makes little sense that optional behavior in the physical layer(s) somehow changes the relevancy of the upper layer statistics.

*SuggestedRemedy*

Delete editing instructions related to the "The contents of this attribute are undefined for MAC entities using a Physical Layer with PLCA enabled.;" so that the intended change is to revert back to no change to this subclause and text.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **30** *SC* **30.16.1** *P* **42** *L* **8** # r02-28

Kabra, Lokesh Synopsys, Inc.

*Comment Type* **E** *Comment Status* **A** *Management*

Section 30.16.1 describes both oPLCA managed object class attributes and device actions.

*SuggestedRemedy*

Add "and actions" to the end of the sentence.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **30** *SC* **30.16.1.1.1** *P* **42** *L* **24** # r02-29

Kabra, Lokesh Synopsys, Inc.

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

As per r01-127, agreement that the term "MII RS" is not a valid term.

*SuggestedRemedy*

Delete the term "RS MII".

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
On P42 L24, delete "MII"

*Cl* **30** *SC* **30.16.1.1.5** *P* **43** *L* **15** # r02-35

Law, David Hewlett Packard Enterprise

*Comment Type* **E** *Comment Status* **D** *Management*

It seems odd to hide a statement that the default for the to_timer is 24 in the management subclause.

*SuggestedRemedy*

Suggest that:

[1] The text 'The default value is 24.' be deleted from subclause 30.16.1.1.5.
[2] The text 'The default value is specified in 30.16.1.1.7.' be changed to read 'The default value is 24.' in subclause 148.4.5.4 'Timers' (page 242, line 52).

*Proposed Response* *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

*Cl* **104** *SC* **104.1.3** *P* **94** *L* **22** # r02-6

Anslow, Peter Ciena

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

"Replace 104-3" should be "Replace Figure 104-3"

*SuggestedRemedy*

Change "Replace 104-3" to: "Replace Figure 104-3"

*Response* *Response Status* **C**

ACCEPT.

*Cl* **104** *SC* **104.4.3.3** *P* **97** *L* **16** # r02-7

Anslow, Peter Ciena

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

The title of Table 104-2 in the base standard is "PSE power_available matrix". Consequently " matrix" should not be in underline font.

*SuggestedRemedy*

Remove the underline from " matrix"

*Response* *Response Status* **C**

ACCEPT.

*Cl* **104** *SC* **104.4.3.3** *P* **97** *L* **25** # r02-8

Anslow, Peter Ciena

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

In Table 104-2a there are two occurrences of "Classes 0-9".
The IEEE style manual includes:
"Ranges should repeat the unit (e.g., 115 V to 125 V). Dashes should never be used because they can be misconstrued as subtraction signs."

*SuggestedRemedy*

In Table 104-2a change "Classes 0-9" to "Classes 0 to 9" in two places

*Response* *Response Status* **C**

ACCEPT.

*Cl* **104** *SC* **104.4.3.5** *P* **97** *L* **51** # r02-64

Stewart, Heath Analog Devices Inc.

*Comment Type* **T** *Comment Status* **A** *Powering*

*** Comment submitted with the file 101686300003-stewart_0819_01.pdf attached ***

VOLT_POWER_INFO register was increased to 32 bits in order to accommodate higher power. Split this register into two 16 bit registers- VOLT_INFO and POWER_INFO. Add command - Read_POWER_INFO [0x77] and Rename command- Read_VOLT_POWER_INFO [0xBB] as Read_VOLT_INFO [0xBB]

*SuggestedRemedy*

Perform the following text changes:
-On P97, L51: Replace text: "VOLT_POWER_INFO_register: PSEs that support cable resistance measurement also return the VOLT_POWER_INFO register. Refer to Table 104-10 for a description of contents." With "VOLT_INFO_register: PSEs that support cable resistance measurement also return the VOLT_INFO register. Refer to Table 104-10 for a description of contents."
-On P98, L1: Add text: "POWER_INFO_register: PSEs that support cable resistance measurement also return the POWER_INFO register. Refer to Table 104-11 for a description of contents."
-On P101, L14: Replace text: "VOLT_POWER_INFO_register: PDs that support cable resistance measurement also return the VOLT_POWER_INFO register. Refer to Table 104-10 for a description of contents." With "VOLT_INFO_register: PDs that support cable resistance measurement also return the VOLT_INFO register. Refer to Table 104-10 for a description of contents."
-On P101, L18: Add text: "POWER_INFO_register: PDs that support cable resistance measurement also return the POWER_INFO register. Refer to Table 104-11 for a description of contents."
-On P103, L52: Replace text: "PSEs and PDs that implement cable resistance measurement support the VOLT_POWER_INFO and POWER_ASSIGN registers (see Table 104-10 and Table 104-11)." With "PSEs and PDs that implement cable resistance measurement support the VOLT_INFO, POWER_INFO and POWER_ASSIGN registers (see Table 104-10,Table 104-11 and Table 104-12)"
-On P108, L16: Replace text: "VReport_PD is the voltage at PD's PI during the presence pulse as reported in b[7:0] of VOLT_POWER_INFO in Table 104-10" With "VReport_PD is the voltage at PD's PI during the presence pulse as reported in b[7:0] of VOLT_INFO in Table 104-10"
-On P108, L38: Replace text: "via the PD Requested Power, PPD_req, field of the VOLT_POWER_INFO Register b[19:8]" With "via the PD Requested Power, PPD_req, field of the POWER_INFO Register b[11:0]."
-On P108, L49: Replace text: "PPD_req is the PD Requested Power as reported in b[19:8] of VOLT_POWER_INFO in Table 104-10" With "PPD_req is the PD Requested Power as reported in b[11:0] of POWER_INFO in Table 104-11"
-On P109, L11: Modify Figure 104-13 to rename the VOLT_POWER_INFO [0xBB] read command and to add the POWER_INFO [0x77] read command. Replace the figure with figure shown on slide 6 of attached presentation- "stewart_0819_01.pdf"
-On P111, L25: Replace text: "104.7.2.6 Read_VOLT_POWER_INFO command [0xBB] All PSEs and PDs that support cable resistance measurement shall support the 8-bit

Read_VOLT_POWER_INFO command. After receiving a Read_VOLT_POWER_INFO command, the PD shall respond with a 32-bit VOLT_POWER_INFO read payload followed by an 8-bit CRC8 field as specified in 104.7.2.5. A flowchart for operation of the address and the Read_VOLT_POWER_INFO command is shown in Figure 104-13. Table 104-10 illustrates the contents of the VOLT_POWER_INFO register" With "104.7.2.6 Read_VOLT_INFO command [0xBB] All PSEs and PDs that support cable resistance measurement shall support the 8-bit Read_VOLT_INFO command. After receiving a Read_VOLT_INFO command, the PD shall respond with a 16-bit VOLT_INFO read payload followed by an 8-bit CRC8 field as specified in 104.7.2.5. A flowchart for operation of the address and the Read_VOLT_INFO command is shown in Figure 104-13. Table 104-10 illustrates the contents of the VOLT_INFO register"
-On P111, L34: Change the title of Table 104-10 from "Table 104-10 VOLT_POWER_INFO Register Table" to "Table 104-10 VOLT_INFO Register Table"
-On P111, L34: Replace existing Table 104-10 with Table 104-10 shown on slide 7 of attached presentation- "stewart_0819_01.pdf"
-On P111, L50: Add text: "104.7.2.7 Read_POWER_INFO command [0x77] All PSEs and PDs that support cable resistance measurement shall support the 8-bit Read_POWER_INFO command. After receiving a Read_POWER_INFO command, the PD shall respond with a 16-bit POWER_INFO read payload followed by an 8-bit CRC8 field as specified in 104.7.2.5. A flowchart for operation of the address and the Read_POWER_INFO command is shown in Figure 104-13. Table 104-11 illustrates the contents of the POWER_INFO register."
-On P111, L50: Add "Table 104-11 POWER_INFO Register Table" after new paragraph added on L50. The Table 104-11 is as shown on slide 8 of attached presentation- "stewart_0819_01.pdf"
-On P112, L4: Replace text: "After transmitting a Write_POWER_ASSIGN command, the PSE shall transmit a 32-bit POWER_ASSIGN write payload followed by an 8-bit CRC8" With "After transmitting a Write_POWER_ASSIGN command, the PSE shall transmit a 16-bit POWER_ASSIGN write payload followed by an 8-bit CRC8"
-On P112, L10: Modify Table 104-12 POWER_ASSIGN Register Table as shown on slide 9 of attached presentation- "stewart_0819_01.pdf"
-On P112, L25: Replace text: "After receiving a Read_POWER_ASSIGN command, the PD shall respond with a 32-bit POWER_ASSIGN read payload followed by an 8-bit CRC8 field as specified in 104.7.2.5. A flowchart for operation of the address and the Read_POWER_ASSIGN command is shown in Figure 104-13. Table 104-11 illustrates the contents of the POWER_ASSIGN register." With "After receiving a Read_POWER_ASSIGN command, the PD shall respond with a 16- bit POWER_ASSIGN read payload followed by an 8-bit CRC8 field as specified in 104.7.2.5. A flowchart for operation of the address and the Read_POWER_ASSIGN command is shown in Figure 104-13. Table 104-12 illustrates the contents of the POWER_ASSIGN register."
-On P115, L9: Modify item PSE37 to change the Value/ Comment field from "Return VOLT_POWER_INFO and POWER_ASSIGN registers" to "Return VOLT_INFO, POWER_INFO and POWER_ASSIGN registers"

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
(commenter's response with editorial license to rearrange figure)

Perform the following text changes:
-On P97, L51: Replace text: "VOLT_POWER_INFO_register: PSEs that support cable resistance measurement also return the VOLT_POWER_INFO register. Refer to Table 104-10 for a description of contents." With "VOLT_INFO_register: PSEs that support cable resistance measurement also return the VOLT_INFO register. Refer to Table 104-10 for a description of contents."
-On P98, L1: Add text: "POWER_INFO_register: PSEs that support cable resistance measurement also return the POWER_INFO register. Refer to Table 104-11 for a description of contents."
-On P101, L14: Replace text: "VOLT_POWER_INFO_register: PDs that support cable resistance measurement also return the VOLT_POWER_INFO register. Refer to Table 104-10 for a description of contents." With "VOLT_INFO_register: PDs that support cable resistance measurement also return the VOLT_INFO register. Refer to Table 104-10 for a description of contents."
-On P101, L18: Add text: "POWER_INFO_register: PDs that support cable resistance measurement also return the POWER_INFO register. Refer to Table 104-11 for a description of contents."
-On P103, L52: Replace text: "PSEs and PDs that implement cable resistance measurement support the VOLT_POWER_INFO and POWER_ASSIGN registers (see Table 104-10 and Table 104-11)." With "PSEs and PDs that implement cable resistance measurement support the VOLT_INFO, POWER_INFO and POWER_ASSIGN registers (see Table 104-10,Table 104-11 and Table 104-12)"
-On P108, L16: Replace text: "VReport_PD is the voltage at PD's PI during the presence pulse as reported in b[7:0] of VOLT_POWER_INFO in Table 104-10" With "VReport_PD is the voltage at PD's PI during the presence pulse as reported in b[7:0] of VOLT_INFO in Table 104-10"
-On P108, L38: Replace text: "via the PD Requested Power, PPD_req, field of the VOLT_POWER_INFO Register b[19:8]" With "via the PD Requested Power, PPD_req, field of the POWER_INFO Register b[11:0]."
-On P108, L49: Replace text: "PPD_req is the PD Requested Power as reported in b[19:8] of VOLT_POWER_INFO in Table 104-10" With "PPD_req is the PD Requested Power as reported in b[11:0] of POWER_INFO in Table 104-11"

-On P109, L11: Modify Figure 104-13 to rename the VOLT_POWER_INFO [0xBB] read command and to add the POWER_INFO [0x77] read command. Replace the figure with figure shown on slide 6 of attached presentation- "stewart_0819_01.pdf"
WITH EDITORIAL LICENSE TO REARRANGE TO MAKE THE NEW FIGURE FIT.

-On P111, L25: Replace text: "104.7.2.6 Read_VOLT_POWER_INFO command [0xBB] All PSEs and PDs that support cable resistance measurement shall support the 8-bit Read_VOLT_POWER_INFO command. After receiving a Read_VOLT_POWER_INFO command, the PD shall respond with a 32-bit VOLT_POWER_INFO read payload followed by an 8-bit CRC8 field as specified in 104.7.2.5. A flowchart for operation of the address and the Read_VOLT_POWER_INFO command is shown in Figure 104-13. Table 104-10 illustrates the contents of the VOLT_POWER_INFO register" With "104.7.2.6 Read_VOLT_INFO command [0xBB] All PSEs and PDs that support cable resistance measurement shall support the 8-bit Read_VOLT_INFO command. After receiving a Read_VOLT_INFO command, the PD shall respond with a 16-bit VOLT_INFO read payload followed by an 8-bit CRC8 field as specified in 104.7.2.5. A flowchart for operation of the address and the Read_VOLT_INFO command is shown in Figure 104-13. Table 104-10 illustrates the contents of the VOLT_INFO register"

-On P111, L34: Change the title of Table 104-10 from "Table 104-10 VOLT_POWER_INFO Register Table" to "Table 104-10 VOLT_INFO Register Table"
-On P111, L34: Replace existing Table 104-10 with Table 104-10 shown on slide 7 of attached presentation- "stewart_0819_01.pdf"
-On P111, L50: Add text: "104.7.2.7 Read_POWER_INFO command [0x77] All PSEs and PDs that support cable resistance measurement shall support the 8-bit Read_POWER_INFO command. After receiving a Read_POWER_INFO command, the PD shall respond with a 16-bit POWER_INFO read payload followed by an 8-bit CRC8 field as specified in 104.7.2.5. A flowchart for operation of the address and the Read_POWER_INFO command is shown in Figure 104-13. Table 104-11 illustrates the contents of the POWER_INFO register."
-On P111, L50: Add "Table 104-11 POWER_INFO Register Table" after new paragraph added on L50. The Table 104-11 is as shown on slide 8 of attached presentation- "stewart_0819_01.pdf"
-On P112, L4: Replace text: "After transmitting a Write_POWER_ASSIGN command, the PSE shall transmit a 32-bit POWER_ASSIGN write payload followed by an 8-bit CRC8" With "After transmitting a Write_POWER_ASSIGN command, the PSE shall transmit a 16-bit POWER_ASSIGN write payload followed by an 8-bit CRC8"
-On P112, L10: Modify Table 104-12 POWER_ASSIGN Register Table as shown on slide 9 of attached presentation- "stewart_0819_01.pdf"
-On P112, L25: Replace text: "After receiving a Read_POWER_ASSIGN command, the PD shall respond with a 32-bit POWER_ASSIGN read payload followed by an 8-bit CRC8 field as specified in 104.7.2.5. A flowchart for operation of the address and the Read_POWER_ASSIGN command is shown in Figure 104-13. Table 104-11 illustrates the contents of the POWER_ASSIGN register." With "After receiving a Read_POWER_ASSIGN command, the PD shall respond with a 16- bit POWER_ASSIGN read payload followed by an 8-bit CRC8 field as specified in 104.7.2.5. A flowchart for operation of the address and the Read_POWER_ASSIGN command is shown in Figure 104-13. Table 104-12 illustrates the contents of the POWER_ASSIGN register."
-On P115, L9: Modify item PSE37 to change the Value/ Comment field from "Return VOLT_POWER_INFO and POWER_ASSIGN registers" to "Return VOLT_INFO, POWER_INFO and POWER_ASSIGN registers" and change the Status field to "SCCP:O CRM:M"

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*Cl* **104** *SC* **104.4.6** *P* **99** *L* **27** # r02-9

Anslow, Peter — Ciena

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

In the Additional information cell for Item 7 of Table 104-4, "104.4.6.4" is an external cross-reference.

*SuggestedRemedy*

Apply character tag External to "104.4.6.4"

*Response* *Response Status* **C**

ACCEPT.

---

*Cl* **104** *SC* **104.4.6** *P* **99** *L* **31** # r02-62

Stewart, Heath — Analog Devices Inc.

*Comment Type* **T** *Comment Status* **A** *Powering*

SCCP transaction times need to be modified to account for longer signaling times. Increase the TClass (max) timer to 1300ms

*SuggestedRemedy*

Change the edit to Table 104-4 (P99 L31) to change item 8- Classification time Max value from "800" to "1300". Edit the classification time limits as follows:
{
{{8} {Classification time} {TClass} {ms} {-} {366} {Classes 0 to 9} {All} {See 104.4.5}}
{{} {} {} {} {} {1300} {Classes 10 to 15} {} {}}
}

*Response* *Response Status* **C**

ACCEPT.

---

*Cl* **104** *SC* **104.5.1a** *P* **100** *L* **34** # r02-10

Anslow, Peter — Ciena

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

Repeated "Table" in "Table Table 104-4a"

*SuggestedRemedy*

Delete the first "Table"

*Response* *Response Status* **C**

ACCEPT.

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*Cl* **104** *SC* **104.5.6** *P* **102** *L* **47** # r02-63

Stewart, Heath — Analog Devices Inc.

*Comment Type* **T** *Comment Status* **A** *Powering*

SCCP transaction times need to be modified to account for longer signaling times. Increase the TSCCP_Watchdog timer to be from 1000ms to1300ms

*SuggestedRemedy*

Change the edit to Table 104-7 (P102 L47) to add an edit to item 15- SCCP watchdog timeout. Edit the watchdog timeout limits as follows:
{
{{15} {SCCP watchdog timeout} {TSCCP_watchdog} {ms} {150} {200} {Type A,B,C, and D} {See 104.5.5}}
{{} {} {} {} {1000} {1300} {Type E} {}}
}

*Response* *Response Status* **C**

ACCEPT.

*Cl* **104** *SC* **104.9.4.3** *P* **115** *L* **29** # r02-65

Stewart, Heath Analog Devices Inc.

*Comment Type* **T** *Comment Status* **A** *Powering*

Add PICS for CRM related SCCP commands

*SuggestedRemedy*

On P115, L29 insert rows for new items SCCP29, SCCP30, SCCP31, SCCP32, SCCP33, SCCP34, SCCP35, SCCP36 after last item SCCP28 as shown below:
"
{
{{SCCP29} {8-bit Read VOLT_INFO command} {104.7.2.6} {Supported by all PDs that implement CRM} {CRM:M} {Yes [] N/A []} }
{{SCCP30} {Reception of Read VOLT_INFO function command} {104.7.2.6} {PD shall respond with a 16-bit VOLT_INFO read payload followed by an 8-bit CRC8 field} {CRM:M} {Yes [] N/A []} }
{{SCCP31} {8-bit Read POWER_INFO command} {104.7.2.7} {Supported by all PDs that implement CRM} {CRM:M} {Yes [] N/A []} }
{{SCCP32} {Reception of Read POWER_INFO function command} {104.7.2.7} {PD shall respond with a 16-bit POWER_INFO read payload followed by an 8-bit CRC8 field} {CRM:M} {Yes [] N/A []} }
{{SCCP33} {8-bit Write POWER_ASSIGN command} {104.7.2.8} {Supported by all PDs that implement CRM} {CRM:M} {Yes [] N/A []} }
{{SCCP34} {Reception of Write POWER_ASSIGN function command} {104.7.2.8} {PSE shall transmit a 16-bit POWER_ASSIGN write payload followed by an 8-bit CRC8 field} {CRM:M} {Yes [] N/A []} }
{{SCCP35} {8-bit Read POWER_ASSIGN command} {104.7.2.9} {Supported by all PDs that implment CRM} {CRM:M} {Yes [] N/A []} }
{{SCCP36} {Reception of Read POWER_ASSIGN function command} {104.7.2.9} {PD shall respond with a 16-bit POWER_ASSIGN read payload followed by an 8-bit CRC8 field} {CRM:M} {Yes [] N/A []} }
}
"

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
On P115, L29
add new subclause 104.9.4.7 to the draft with editing instruction
Insert rows for new Items SCCP29 through SCCP36 after last item SCCP28 as follows (unchanged rows
not shown):

and insert rows for new items SCCP29, SCCP30, SCCP31, SCCP32, SCCP33, SCCP34, SCCP35, SCCP36 after last item SCCP28 as shown below:
"
{
{{SCCP29} {8-bit Read VOLT_INFO command} {104.7.2.6} {Supported by all PSEs and PDs that implement CRM} {SCCP:O CRM:M} {Yes [] N/A []} }
{{SCCP30} {Reception of Read VOLT_INFO function command} {104.7.2.6} {PD shall respond with a 16-bit VOLT_INFO read payload followed by an 8-bit CRC8 field} {SCCP:O CRM:M} {Yes [] N/A []} }
{{SCCP31} {8-bit Read POWER_INFO command} {104.7.2.7} {Supported by all PSEs and PDs that implement CRM} {SCCP:O CRM:M} {Yes [] N/A []} }
{{SCCP32} {Reception of Read POWER_INFO function command} {104.7.2.7} {PD shall respond with a 16-bit POWER_INFO read payload followed by an 8-bit CRC8 field} {SCCP:O CRM:M} {Yes [] N/A []} }
{{SCCP33} {8-bit Write POWER_ASSIGN command} {104.7.2.8} {Supported by all PSEs and PDs that implement CRM} {SCCP:O CRM:M} {Yes [] N/A []} }
{{SCCP34} {Reception of Write POWER_ASSIGN function command} {104.7.2.8} {PSE shall transmit a 16-bit POWER_ASSIGN write payload followed by an 8-bit CRC8 field} {SCCP:O CRM:M} {Yes [] N/A []} }
{{SCCP35} {8-bit Read POWER_ASSIGN command} {104.7.2.9} {Supported by all PSEs and PDs that implement CRM} {SCCP:O CRM:M} {Yes [] N/A []} }
{{SCCP36} {Reception of Read POWER_ASSIGN function command} {104.7.2.9} {PD shall respond with a 16-bit POWER_ASSIGN read payload followed by an 8-bit CRC8 field} {SCCP:O CRM:M} {Yes [] N/A []} }
}
"

*Cl* **146** *SC* **146.3.3.1** *P* **133** *L* **30** # r02-21

McCarthy, Mick Analog Devices Inc.

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

Figure 146-5 PCS Transmit state diagram uses undefined functions in certain states:
- SSD VECTOR calls RND_ESD; should be RND_SSD4
- ESD VECTOR calls RND_ESD; should be RND_ESD4

Some of the changes regarding delimiter randomization were not transcribed correctly into the draft standard. These changes are recorded in http://www.ieee802.org/3/cg/public/May2019/i-284%20Delimiter%20Randomization.txt, which includes the following:

In state SSD VECTOR replace tx_disparity <= 2, tx_symb_triplet <= SSD4 by {tx_symb_triplet, tx_disparity} <= RND_SSD4(Syn-1[4]).
In state ESD VECTOR replace tx_disparity <= 2, tx_symb_triplet <= ESD4 by {tx_symb_triplet, tx_disparity} <= RND_ESD4(Syn-1[4]).

*SuggestedRemedy*

Change Figure 146-5 PCS Transmit state diagram as follows:

- In state SSD VECTOR replace RND_ESD with RND_SSD4
- In state ESD VECTOR replace RND_ESD with RND_ESD4

*Response* *Response Status* **C**

ACCEPT.

*Cl* **146** *SC* **146.3.3.2.2** *P* **134** *L* **28** # r02-70

Graber, Steffen Pepperl+Fuchs AG

*Comment Type* **T** *Comment Status* **A** *Later*

The link between the symb_timer and TX_TCLK is missing.

*SuggestedRemedy*

Change text from: "A continuous free-running timer. PMA_UNITDATA.request messages are issued by the PCS concurrently with symb_timer_done." to: "A continuous free-running timer expiring synchronously to TX_TCLK, based on PMA_UNITDATA.request primitive being serviced (see 146.5.4.5)."

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change text from: "A continuous free-running timer. PMA_UNITDATA.request messages are issued by the PCS concurrently with symb_timer_done."
to:

"A continuous free-running timer. The symb_timer expires when the PMA_UNITDATA.request is serviced, synchronously with TX_TCLK."

*Cl* **146** *SC* **146.3.4.1.1** *P* **140** *L* **1** # r02-22

McCarthy, Mick Analog Devices Inc.

*Comment Type* **E** *Comment Status* **R** *State Diagrams*

The description of the receiving variable does not agree with how the receiving variable is generated by the PCS Receive state diagram (Figure 146-9 and Figure 146-10).
The receiving variable is not set to TRUE only when 'the PCS is in Data mode'.

*SuggestedRemedy*

Change the definition of the receiving variable to be as follows:

Generated by PCS Receive function; if set to TRUE, it indicates that the PCS Receive function is not in an idle mode.
Values: TRUE or FALSE

*Response* *Response Status* **C**

REJECT.
Comment is out of scope of the recirculation, on unchanged, descriptive text.

CRG disagrees with the commenter. While the text does not define "Data mode", it also does not define "idle modes". The variable receiving is not only set FALSE during idle or low power idle, but also when the link fails or is waiting for the scrambler to sync, so the commenter's proposed description is not precise.

*Cl* **146** *SC* **146.3.4.1.3** *P* **142** *L* **17** # r02-23

McCarthy, Mick Analog Devices Inc.

*Comment Type* **E** *Comment Status* **A** *State Diagrams*

The description of rcv_max_timer does not agree with how the timer is used in the state diagrams.
rcv_max_timer is not used in the 'PHY Receive state diagram', which presumably is intended to refer to the PCS Receive state diagram, and it does not determine the time spent in the DATA state.

*SuggestedRemedy*

Change the definition of the rcv_max_timer to be as follows:

A timer used to determine the maximum amount of time the Receive watchdog state diagram stays in the RECEIVE state. The timer shall expire 4 ms +/- 100 us after being started. The condition rcv_max_timer_done becomes true upon timer expiration.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
At P142 L17, change "PHY Receive state diagram stays in DATA state."
to "Receive watchdog state diagram stays in the RECEIVE state."

*Cl* **146** *SC* **146.3.4.1.4** *P* **143** *L* **1** # r02-69

Graber, Steffen Pepperl+Fuchs AG

*Comment Type* **T** *Comment Status* **A** *Later*

The signals clocked on MII RX CLK need to have a minimum setup time of 10 ns. Therefore it is important to add synchronization with the MII RX CLK, where it is missing in the PCS receive state diagram. Additionally "receive_overrun_detected" variable at the input condition of WAIT SCRAMBLER state can never be TRUE, while receiving is FALSE, thus this can be removed to prevent a possible ambiguity. In state LINK FAILED, RX_DV is set to TRUE. As this state may also be entered out of BAD SSD of BAD ESD states in case of a receive overrun (or also the SSD decoding states in case the link status or local receiver status gets bad), where RX_DV is FALSE in these states, RX_DV assignment in LINK FAILED state should be removed to prevent an accidental indication of an error in data reception (in this case in LINK FAILED state the former status of RX_DV will be returned).

*SuggestedRemedy*

P143, L2: Change input condition of WAIT SCRAMBLER state from: "pcs_reset + ((!receiving) * ((loc_rcvr_status = NOT_OK) + (link_status = FAIL) + rcv_overrun_detected))" to: "pcs_reset + (RSTCD * (!receiving) * ((loc_rcvr_status = NOT_OK) + (link_status = FAIL)))".

P143, L3: Change input condition of LINK FAILED state from: "receiving * ((loc_rcvr_status = NOT_OK) + (link_status = FAIL) + rcv_overrun_detected)" to: "RSTCD * receiving * ((loc_rcvr_status = NOT_OK) + (link_status = FAIL) + rcv_overrun_detected)".

P143, L10: Remove "RX_DV <= TRUE" from LINK FAILED state.

P143, L49: Change exit conditions of BAD SSD and BAD ESD states from: "check_idle" to: "RSTCD * check_idle".

*Response* *Response Status* **C**

ACCEPT.

*Cl* **146** *SC* **146.4.4.2** *P* **152** *L* **9** # r02-68

Graber, Steffen Pepperl+Fuchs AG

*Comment Type* **E** *Comment Status* **A** *Later*

In the NOTE on page 152 the DISABLE TRANSMITTER state is referenced. After a change in the PHY Control state diagram, from D2.0 having some intermediate steps to D3.2, this now needs to reference the SILENT state.

*SuggestedRemedy*

Change in the NOTE's text "DISABLE TRANSMITTER" state to "SILENT" state.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **146** *SC* **146.4.4.3** *P* **153** *L* **24** # r02-17

Graber, Steffen Pepperl+Fuchs AG

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

Arc from TRAINING state to SILENT state for condition "maxtraining_timer_done + (mintraining_timer_done * (!slave_clock_locked) * (config = SLAVE))" is missing (the condition is there, but the arc itself is missing). This is only editorial and no technical change, as this arc got accidently missed from D3.1 to D3.2.

*SuggestedRemedy*

Add the required arc from TRAINING state to SILENT state for condition "maxtraining_timer_done + (mintraining_timer_done * (!slave_clock_locked) * (config = SLAVE))".

*Response* *Response Status* **C**

ACCEPT.

*Cl* **146** *SC* **146.5.5.1** *P* **163** *L* **18** # r02-11

Anslow, Peter Ciena

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

Comment r01-48 was ACCEPT with suggested remedy:
"Delete "1x"
make the minus sign an en-dash"
The second part has been done, but the first part has not.
The number should just be 10^-6 as per 10^-9 on the line above

*SuggestedRemedy*

Delete "1 x "

*Response* *Response Status* **C**

ACCEPT.

*Cl* **146** *SC* **146.7.1.3** *P* **1169** *L* **30** # r02-16

Schicketanz, Dieter — University of Applied Science Reutlingen

*Comment Type* **E** *Comment Status* **R** *Link Segment*

in line 30 there is a reference to equation (80-1) in green. The reference could not be found in the document.
In former drafts 'n' was written NVP without explaining it.

*SuggestedRemedy*

It is recomended to fix this editorially by changing line 30
from:
ment length of 1589 m given in Table 146B-1 using Equation (80-1) with an 'n' of 0.6
to:
ment length of 1589 m given in Table 146B-1 using a nominal velocity of propagation of 0.6.

*Response* *Response Status* **C**

REJECT.
The CRG disagrees with the commenter.
Equation 80-1 is in green and not in the draft because it is an external cross reference to the equation for propagation time in nanoseconds per meter of medium. This is the way other clauses in 802.3 (since clause 80) have specified delay of the medium.

*Cl* **146** *SC* **146.8.1** *P* **171** *L* **46** # r02-25

Maguire, Valerie — The Siemon Company

*Comment Type* **T** *Comment Status* **R** *Big Ticket Item MDI*

The commenter wishes to emphasize that a speedy path to publication of the P802.3cg amendment is best for industry adoption of single-pair Ethernet. The commenter is concerned that going from 2 MDI connectors to 0 MDI connectors to 1 MDI connector (or back to 2 MDI connectors) at this stage in the SA ballot cycle raises uncertainty about the stability of the single-pair Ethernet amendment. The commenter is also concerned that re-introduction of MDI connector information will delay publication through the generation of new negative votes. There is significant justification not to make further changes, including:

1. There is no precedent to identify an MDI interface for any single-pair Ethernet project. The market will determine the interface.

2. The success of single-pair applications today is not based on plug-and-play at the MDI. Virtually all of the MDI connections are screw terminals and that has not hindered adoption. The single-pair connector is a channel deployment differentiator, not an MDI feature.

3. A preference for the IEC 63171-1 connector or the IEC C 63171-1-6 connector or any other connector to be used in all "E" environments has never been made in a peer reviewed manner. Neither experts at TIA and ISO/IEC nor within the IEEE 802.3 community have not made such a determination based on an agreed-upon set of desired features and functionality. More problematic, the U.S., China, Mexico, and several other countries didn't even select either the -1 or the -6 connector as the preferred connector in E1/E2 environments.

4. Adding guidance out of alignment with TIA and ISO/IEC recommendations at a historically poorly attended interim meeting with limited PHY vendor representation puts P802.3cg at great risk of recommending the wrong connector. The commenter does not want a repeat of past history, as with the MT-RJ interface.

5. Neither the -1 connector nor the -6 connector is a good choice for multidrop implementations.

*SuggestedRemedy*

Do not add information related to specific IEC 63171 MDI interfaces into the amendment.

*Response* *Response Status* **C**

REJECT.
The CRG disagrees with the commenter.
Comment was discussed with comment r02-14.
Response to comment r02-14 is:

ACCEPT IN PRINCIPLE.
---
add Annex A (Bibliography) into the draft, with the editing instruction:

Insert the following references and associated editor's notes in alphanumeric order as

follows:

Editor's Note (to be removed prior to publication):
IEC 63171-1 is in the FDIS stage. The publication date for IEC 63171-1 will need to be inserted prior to publication of IEEE Std 802.3cg.

IEC 63171-1 Ed.1:20xx, Connectors for Electrical and Electronic Equipment -
Part 1: Detail specification for 2-way, shielded or unshielded, free and fixed connectors: mechanical mating information, pin assignment and additional requirements for TYPE 1 / Copper LC Style

Editor's Note (to be removed prior to publication):
IEC 63171-6 is in the FDIS stage. The publication date for IEC 63171-6 will need to be inserted prior to publication of IEEE Std 802.3cg.

IEC 63171-6 Ed.1:20xx Connectors for Electrical and Electronic Equipment -
Detail specification for 2-way and 4-way (data/power), shielded, free and fixed connectors for power and data transmission with frequencies up to 600 MHz
---

146.8.1 MDI connectors –Page 171, Line 52 add new paragraph;
Connectors meeting the mechanical requirements of IEC 63171-1 or IEC 63171-6 may be used as the mechanical interface to the balanced cabling. The plug connector is used on the balanced cabling and the MDI jack connector on the PHY. The IEC 63171-1 plug and jack are depicted (for informational use only) in Figure 146–29 and Figure 146–30 respectively, and the mating interface is depicted in Figure 146–31. The IEC 63171-6 plug and jack are depicted (for informational use only) in Figure 146–32 and Figure 146–33 respectively, and the mating interface is depicted in Figure 146–34. These connectors should support link segment DCR characteristics for 1.02 mm (18 AWG) to 0.40 mm (26 AWG) in Table 146B–1.

Re-instate IEC 63171-1 plug and jack figures from D3.1 as Figures 146-29, 146-30, and 146-31.
Re-instate IEC 63171-6 plug and jack figures from D3.1 as Figures 146-32, 146-33, and 146-34.

147.9.1 MDI connectors –Page 220, Line 52 add new paragraph;
Connectors meeting the mechanical requirements of IEC 63171-1 or IEC 63171-6 may be used as the mechanical interface to the balanced cabling. The plug connector is used on the balanced cabling and the MDI jack connector on the PHY. The IEC 63171-1 plug and jack are depicted (for informational use only) in Figure 147–21 and Figure 147–22 respectively, and the mating interface is depicted in Figure 147–23. The IEC 63171-6 plug and jack are depicted (for informational use only) in Figure 147–24 and Figure 147–25 respectively, and the mating interface is depicted in Figure 147–26. These connectors should support link segment DCR characteristics for 1.02 mm (18 AWG) to 0.40 mm (26 AWG) in Table 146B–1.

Re-instate IEC 63171-1 plug and jack figures from D3.1 as Figures 147-21, 147-22, and 147-23.
Re-instate IEC 63171-6 plug and jack figures from D3.1 as as Figures 147-24, 147-25, and 147-26.

Editorial license to revise figure numbers as needed.
====
Discussion alternatives:

Alternative "A" (above): ACCEPT IN PRINCIPLE (commenter's suggested remedy with correction for missing text, implementing "-1" connector with "may use")
----
Alternative B: ACCEPT IN PRINCIPLE - Same text as "A", but with -6 as well. (Return to the draft 3.0 text, with references corrected)
----
Alternative C: Remain as is (no connector in the draft), (REJECT - No consensus to change).
----
Alternative D: ACCEPT IN PRINCIPLE - Same text as "A", but "shall" instead of "may".
----
Alternative E: ACCEPT IN PRINCIPLE - text as in "A", but with the following first paragraph subtituted. (paragraph to the figures remains the same) "Connectors meeting the mechanical specifications of IEC 63171-1 shall be used as the compatibility interface between the PMA and the medium. The use of other types of connectors, if any, within a PMA or within the medium, although not precluded, is outside the scope of this standard."
----

Motion #5:
Move to respond to comment r02-14 with Alternative B: (see straw polls, ACCEPT IN PRINCIPLE - Same text as "A", but with -6 as well. (Return to the draft 3.0 text, with references corrected))
M: Chris Diminico
S: Ron Nordin
(Technical >= 75%)
Y:13 N: 4 A: 7
Motion Passes

*Cl* **146** *SC* **146.8.1** *P* **179** *L* **1** # r02-14

Diminico, Christopher Panduit Corp.

*Comment Type* **TR** *Comment Status* **A** *Big Ticket Item MDI*

*** Comment submitted with the file 101659700003-diminico_3cg_01_0819.pdf attached ***

The continued success of BASE-T technology is largely predicated on leveraging the cost-effectiveness and plug-and-play simplicity ensured by compatibility at the MDI. We need to be forward thinking in developing a compatible user interface for BASE-T1. The MDI is to specify mechanical compatibility and electrical specifications not EMC conformance.

*SuggestedRemedy*

146.8.1 MDI connectors -Page 179, Line 1 add text;
Connectors meeting the mechanical requirements of IEC 63171-1 may be used as the mechanical interface to the balanced cabling. The plug connector is used on the balanced cabling and the MDI jack connector on the PHY.

Re-instate IEC 63171-1 plug and jack figures from D3.1. with text below.
Editorial license to revise figure numbers as needed.
The IEC 63171-1 plug and jack are depicted (for informational use only) in Figure 146-29 and Figure 146-30 respectively, and the mating interface is depicted in Figure 146-31.
The assignment of PMA signals to connector contacts for PHYs are given in Table 146-8.

147.9.1 MDI connectors -Page 227, Line 1 add text;
Connectors meeting the mechanical requirements of IEC 63171-1 may be used as the mechanical interface to the balanced cabling. The plug connector is used on the balanced cabling and the MDI jack connector on the PHY.

Re-instate IEC 63171-1 plug and jack figures from D3.1. with text below. Editorial license to revise figure numbers as needed.

The IEC 63171-1 plug and jack are depicted (for informational use only) in Figure 147-21 and Figure 147-22 respectively and the mating interface is depicted in Figure 147-23. The assignment of PMA signals to connector contacts for PHYs are given in Table 147-3. These connectors should support link segment DCR characteristics for 1.02 mm (18 AWG) to 0.40 mm (26 AWG) in Table 146B-1.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
---

add Annex A (Bibliography) into the draft, with the editing instruction:

Insert the following references and associated editor's notes in alphanumeric order as follows:

Editor's Note (to be removed prior to publication):
IEC 63171-1 is in the FDIS stage. The publication date for IEC 63171-1 will need to be inserted prior to publication of IEEE Std 802.3cg.

IEC 63171-1 Ed.1:20xx, Connectors for Electrical and Electronic Equipment - Part 1: Detail specification for 2-way, shielded or unshielded, free and fixed connectors: mechanical mating information, pin assignment and additional requirements for TYPE 1 / Copper LC Style

Editor's Note (to be removed prior to publication):
IEC 63171-6 is in the FDIS stage. The publication date for IEC 63171-6 will need to be inserted prior to publication of IEEE Std 802.3cg.

IEC 63171-6 Ed.1:20xx Connectors for Electrical and Electronic Equipment - Detail specification for 2-way and 4-way (data/power), shielded, free and fixed connectors for power and data transmission with frequencies up to 600 MHz
---

146.8.1 MDI connectors –Page 171, Line 52 add new paragraph;
Connectors meeting the mechanical requirements of IEC 63171-1 or IEC 63171-6 may be used as the mechanical interface to the balanced cabling. The plug connector is used on the balanced cabling and the MDI jack connector on the PHY. The IEC 63171-1 plug and jack are depicted (for informational use only) in Figure 146–29 and Figure 146–30 respectively, and the mating interface is depicted in Figure 146–31. The IEC 63171-6 plug and jack are depicted (for informational use only) in Figure 146–32 and Figure 146–33 respectively, and the mating interface is depicted in Figure 146–34. These connectors should support link segment DCR characteristics for 1.02 mm (18 AWG) to 0.40 mm (26 AWG) in Table 146B–1.

Re-instate IEC 63171-1 plug and jack figures from D3.1 as Figures 146-29, 146-30, and 146-31.
Re-instate IEC 63171-6 plug and jack figures from D3.1 as Figures 146-32, 146-33, and 146-34.

147.9.1 MDI connectors –Page 220, Line 52 add new paragraph;
Connectors meeting the mechanical requirements of IEC 63171-1 or IEC 63171-6 may be used as the mechanical interface to the balanced cabling. The plug connector is used on the balanced cabling and the MDI jack connector on the PHY. The IEC 63171-1 plug and jack are depicted (for informational use only) in Figure 147–21 and Figure 147–22 respectively, and the mating interface is depicted in Figure 147–23. The IEC 63171-6 plug and jack are depicted (for informational use only) in Figure 147–24 and Figure 147–25 respectively, and the mating interface is depicted in Figure 147–26. These connectors should support link segment DCR characteristics for 1.02 mm (18 AWG) to 0.40 mm (26

AWG) in Table 146B–1.

Re-instate IEC 63171-1 plug and jack figures from D3.1 as Figures 147-21, 147-22, and 147-23.
Re-instate IEC 63171-6 plug and jack figures from D3.1 as as Figures 147-24, 147-25, and 147-26.

Editorial license to revise figure numbers as needed.
====
Discussion alternatives:

Alternative "A" (above): ACCEPT IN PRINCIPLE (commenter's suggested remedy with correction for missing text, implementing "-1" connector with "may use")
---
Alternative B: ACCEPT IN PRINCIPLE - Same text as "A", but with -6 as well. (Return to the draft 3.0 text, with references corrected)
---
Alternative C: Remain as is (no connector in the draft), (REJECT - No consensus to change).
---
Alternative D: ACCEPT IN PRINCIPLE - Same text as "A", but "shall" instead of "may".
---
Alternative E: ACCEPT IN PRINCIPLE - text as in "A", but with the following first paragraph subtituted. (paragraph to the figures remains the same) "Connectors meeting the mechanical specifications of IEC 63171-1 shall be used as the compatibility interface between the PMA and the medium. The use of other types of connectors, if any, within a PMA or within the medium, although not precluded, is outside the scope of this standard."
---

Motion #5:
Move to respond to comment r02-14 with Alternative B: (see straw polls, ACCEPT IN PRINCIPLE - Same text as “A”, but with -6 as well. (Return to the draft 3.0 text, with references corrected))
M: Chris Diminico
S: Ron Nordin
(Technical >= 75%)
Y:13 N: 4 A: 7
Motion Passes

---

*Cl* **146** *SC* **146.11.4.2.2** *P* **181** *L* **43** # r02-18

Graber, Steffen — Pepperl+Fuchs AG

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

Output voltage tolerance in 146.5.4.1 has been changed in D3.2, needs to be reflected in PICS.

*SuggestedRemedy*

Change "2.4 V +/- 5%" to "2.4 V + 5%/- 15%" and change "1.0 V +/- 5%" to "1.0 V + 5%/- 15%"

*Response* *Response Status* **C**

ACCEPT.

---

*Cl* **147** *SC* **147.1** *P* **186** *L* **22** # r02-55

Brandt, David — Rockwell Automation

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

PLCA is not an option in a Clause 147 PHY, but of Clause 148.

*SuggestedRemedy*

Change from:
10BASE-T1S PHYs optionally support PHY Level Collision Avoidance (PLCA), described in Clause 148.

To:
10BASE-T1S PHYs support optional Clause 148 PHY Level Collision Avoidance (PLCA).

*Response* *Response Status* **C**

REJECT.
Comment is out of scope of the recirculation on unchanged text.
CRG has no consensus to change the draft.

Straw Poll #1
I support (pick one)
A: Rejecting Comment r02-55 as out of scope with no consensus to change.
B: resolving Comment r02-55 with: "Accept in Principle". Adjusting the text as necessary.
A: 10 B: 4

*Cl* **147** *SC* **147.3.2.6** *P* **196** *L* **18** # r02-71

Graber, Steffen — Pepperl+Fuchs AG

*Comment Type* **E** *Comment Status* **A** *Later*

TX_TCLK should be "TX_CLK".

*SuggestedRemedy*

Change "TX_CLK (see 22.2.2.1) shall be generated from symb_timer with the rising edge of TX_TCLK generated synchronously with symb_timer_done."

to "TX_CLK (see 22.2.2.1) shall be generated from symb_timer with the rising edge of TX_TCLK generated synchronously with symb_timer_done."

In Figure 147-15 change "TX_TCLK" with "TX_CLK"

At page 214 line 42 replace "To allow an easy synchronization of the measurement equipment, the PHY shall provide access to the symbol rate clock TX_TCLK, which times the transmitted symbols."
with "To allow an easy synchronization of the measurement equipment, the PHY shall provide access to the 5B symbol rate clock TX_CLK."

At page 230, line 44 replace "TX_TCLK" with "TX_CLK"

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "TX_CLK (see 22.2.2.1) shall be generated from symb_timer with the rising edge of TX_TCLK generated synchronously with symb_timer_done."

to "TX_CLK (see 22.2.2.1) shall be generated from symb_timer with the rising edge of TX_CLK generated synchronously with symb_timer_done."

In Figure 147-15 change "TX_TCLK" with "TX_CLK"

At page 214 line 42 replace "To allow an easy synchronization of the measurement equipment, the PHY shall provide access to the symbol rate clock TX_TCLK, which times the transmitted symbols."
with "To allow an easy synchronization of the measurement equipment, the PHY shall provide access to TX_CLK."

At page 230, line 44 (PICS PMAE8) replace "TX_TCLK" with "TX_CLK" in "Feature", and change description to "PHY to provide access to TX_CLK"

Also change in clause 148:
148.4.6.4 page 238 line 35 change "TX_TCLK" to "TX_CLK"

*Cl* **147** *SC* **147.3.3.7** *P* **202** *L* **44** # r02-20

Beruto, Piergiorgio — Canova Tech S.r.l.

*Comment Type* **E** *Comment Status* **A** *State Diagrams*

The relative order of execution of the IF and precnt increment statements within the PRE state in Figure 147-7 may be misinterpreted.

*SuggestedRemedy*

[1] In figure 147-7, in the PRE state, remove the IF statement and its embodied instructions.
[2] In figure 147-7, in the PRE state, change the condition of the recirculating arc from "RSCD * (precnt != 9)" to "RSCD * (precnt != 4)"
[3] In figure 147-7, in the PRE state, delete the transition to the "A" connector
[4] In figure 147-7, add a new state "SCRAMBLER" containing the following statements: "
precnt <= precnt + 1
DECODE(RXn-3)
"
[5] In figure 147-7, add a transition between the PRE state and the SCRAMBLER state with the following condition: "RSCD * (precnt = 4)"
[6] In figure 147-7, in the SCRAMBLER state, add a recirculating arc with the following condition: "RSCD * (precnt = 9)"
[7] In figure 147-7, add a transition between the SCRAMBLER state and the "A" connector with the following condition: "RSCD * (precnt = 9)"

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
In Figure 147-7, in the PRE state, change:
"precnt <= precnt + 1
IF precnt > 3 THEN
DECODE(RXn-3)
END"

to:
"IF precnt > 3 THEN
precnt <= precnt + 1
DECODE(RXn-3)
ELSE
precnt <= precnt + 1
END"

*Cl* **147** *SC* **147.3.7** *P* **205** *L* **10** # r02-57

Kim, Yongbum NIO

*Comment Type* **TR** *Comment Status* **R** *State Diagrams*

HB function has been justified to be entirely related to auto-negotation, and the deleted text "Otherwise all the HB functions shall be disabled" has been appropirate. The deletion (changed text) should be reversed and kept.

*SuggestedRemedy*

Reverse the change, i.e. undo deleted text.

*Response* *Response Status* **U**

REJECT.
CRG Disagrees with the commenter.
The reason that the statement was deleted was because it is a "duplicate shall" on the functionality described in the state diagram, and is unnecessary. The functionality described is captured in the Heartbeat transmit state diagram by the open arc into the INIT state, and in the Heartbeat receive state diagram by the open arc into the INACTIVE state.

*Cl* **147** *SC* **147.5.5.1** *P* **216** *L* **51** # r02-12

Anslow, Peter Ciena

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

"7.8 x 10^-7" has been changed to "1 x 10^-7".
However, the number should just be 10^-7 as per 10^-10 on the line above

*SuggestedRemedy*

Delete "1 x "

*Response* *Response Status* **C**

ACCEPT.

*Cl* **147** *SC* **147.8** *P* **219** *L* **2** # r02-58

Kim, Yongbum NIO

*Comment Type* **TR** *Comment Status* **R** *Mixing Segment*

[Related to unresolved disapprove comment]
Shared medium with 10 cm stubs (at least 8 and 25 meters in reach) references 147.7, which specifies a single link (with no stubs) up to 15 meters. So this specification basically says 40% longer reach with at least 8 x 10 cm unterminated stubs must meet the same transmission medium characteristics of a single terminated link. And this requirement is stated without any guidance on how one could met them. In an installation where one stub is added, the specificatoin states that any to any stub must meet the same requirement -- requiring the number of measurement of 1 + .. + (n-1).
The comment response (unsatified) states that there are methods that could be used WITHOUT stating what method could be used. If one exists, it should be stated and without which the standard is incomplete.
As an example, think coax (10BASE5) has very specific rules and methods on how each tap must be constructed (i.e. formal specifcation for the MDI) and how the medium must be marked so that reflections from the tap could be minimized (reduce chance of false collection deteect from all worst case reflections adding up at any particular point). Thin coax (10BASE2) also as formal MDI specification and coax segment installation requirments. These are examples of how standard includes details to assure interoperability and ease of installation. This clause on mixing segment characteristics states to meet a set of requirements (SHALL statements), but WITHOUT any details on how one could construct, preferrably incrementally, network segments that are assured to meet the requirements. This cluase just refers to simpler, shorter, terminated link segment and say do the same. Interoperability requirement only. No details that provide confidence one could be constructed in interoperable fashion. This mixing segment characteristics clause is grossly incomplete.

*SuggestedRemedy*

Specify how mixing segment characteristics could be met via specificatoin, methodology, or other means. Proposed change is that -- complete the draft.

*Response* *Response Status* **U**

REJECT.
The proposed change in the comment does not contain sufficient detail so that the CRG can understand the specific changes that satisfy the commenter.

Further, the CRG disagrees with the commenter.
While the draft describes physical length and topology, those are not the requirements. The draft does not specify the physical length, gauge, twist pitch, loss per meter, or similar physical construction parameters of the medium, consistent with practice in IEEE Std 802.3. The main specifications related to the mixing segment length and stub topology are insertion loss (147.8.1) and MDI impedance limits (Table 147-4) (for full-duplex echo cancelled transmission, delay is relevant, but it is not relevant here). Analysis and measurements have been presented to the Task Force validating that mixing segments with the described 10 cm stubs, 8 nodes, and 25 meters in length can be constructed which meet the insertion loss specified for mixing segments. See, e.g., http://www.ieee802.org/3/cg/public/Sept2017/kaindl_matheus_3cg_01c_09_2017.pdf

, and
http://www.ieee802.org/3/cg/public/Jan2018/Caliskan_3cg_01a_0118.pdf.

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*Cl* **147** *SC* **147.12.3** *P* **226** *L* **11** # r02-54

Brandt, David — Rockwell Automation

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

None of the PICS are conditioned on the conditional PICS Item *PLCA.

*SuggestedRemedy*

Remove the "147.12.3 Major capabilities/options" row for Item *PLCA.

*Response* *Response Status* **C**

ACCEPT.

---

*Cl* **147** *SC* **147.12.3** *P* **226** *L* **26** # r02-53

Brandt, David — Rockwell Automation

*Comment Type* **T** *Comment Status* **A** *PICS*

As shown in Figure 147-1, the MEDIUM is outside of the PHYSICAL layer. The PICS for "147.12.4.7 Point-to-point link Segment characteristics" and "147.12.4.8 Mixing Segment characteristics" do not directly apply to the physical layer.

As a correct example, "146.11.3 Major capabilities/options" creates an Item "*INS" that is further used to qualify "146.11.4.4 Link Segment characteristics". INS indicates the PICS apply to "installation practice and cabling specifications". Clause 147 should have similar qualifications.

*SuggestedRemedy*

Append the following row to the end of the table "147.12.3 Major capabilities/options":
*INS; Installation / cabling; 147.7, 147.8; Items marked with INS include installation practices and cabling specifications not applicable to a PHY manufacturer.; O; Yes [ ] No [ ]

Replace for all rows (Items PPLS1-5) of "147.12.4.7 Point-to-point link Segment characteristics" the Status of "M" with the Status of "INS:M"

Replace for all rows (Items MXS1-3) of "147.12.4.8 Mixing Segment characteristics" the Status of "M" with the Status of "INS:M"

*Response* *Response Status* **C**

ACCEPT.

---

*Cl* **148** *SC* **148** *P* **250** *L* **1** # r02-34

Beruto, Piergiorgio — Canova Tech S.r.l.

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

The PLCA Data State Diagram should be put into a dedicated subclause, as for the state Diagram in the rest of the draft.

*SuggestedRemedy*

Place Figure 148-4 into its own subclause "State Diagrams" 148.4.6.7.
Do the same for Figure 148-3 on page 244.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **148** *SC* **148** *P* **250** *L* **17** # r02-52

Beruto, Piergiorgio Canova Tech S.r.l.

*Comment Type* **T** *Comment Status* **D** *State Diagrams*

When the PLCA Data State Diagram is done sending data via the MII (that is, it leaves the TRANSMIT/FLUSH states), the CRS signal may still be asserted by the PHY because of its own latency.
In this case, the PLCA Data State Diagram enters the RECEIVE state, even if there is no real data to receive.
From a functional perspective, this is not an issue, but it is confusing and may create difficulties during system validation.

*SuggestedRemedy*

In Figure 148-4 to the following:
[1] add a new state box called "WAIT_CRS" with the following content: "
IF CRS THEN
  CARRIER_STATUS <= CARRIER_ON
ELSE
  CARRIER_STATUS <= CARRIER_OFF
END

TX_ER <= ENCODE_TXER(tx_cmd)
TXD <= ENCODE_TXD(tx_cmd)
TX_EN <= FALSE
"

[2] Move the input "C" connector so that it points to the newly added WAIT_CRS state instead of the IDLE state.
[3] Add a transition from the WAIT_CRS state to the IDLE state with the following condition: "
  (!CRS) + (tx_cmd != NONE)
"

[4] Add a recirculating arc to the WAIT_CRS state with "ELSE" as a condition

*Proposed Response* *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

*Cl* **148** *SC* **148** *P* **250** *L* **38** # r02-33

Beruto, Piergiorgio Canova Tech S.r.l.

*Comment Type* **T** *Comment Status* **A** *State Diagrams*

When the PLCA Data State Diagram is in the HOLD state, the PLCA Control State Diagram may indicate to send a BEACON. At that point, the BEACON is not sent as it should be because TXD is forced to 0000 in the Data State Diagram.
This is a regression caused by the resolution of comment i-373 on D3.0.
The intention of comment i-373 was to align with the IEEE State Diagram rules and guidelines without actually changing the behavior of the functionality.
The suggested remedy to this comment is to restore D3.0 behavior keeping current representation, thus fulfilling i-373 original intention.

*SuggestedRemedy*

In Figure 148-4, in the HOLD state, replace "
TX_ER <= plca_txer
TXD <= 0000
"
with "
IF plca_txer THEN
  TX_ER <= TRUE
  TXD <= 0000
ELSE
  TX_ER <= ENCODE_TXER(tx_cmd)
  TXD <= ENCODE_TXD(tx_cmd)
END
"

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement changes shown in http://www.ieee802.org/3/cg/public/Aug2019/r02-33 Proposed Response.pdf with editorial license to resolve differences between the written instructions below and the figures in the referenced file at the url, and combine with other comment responses (e.g., r02-01 and r02-24).)

[1] In Figure 148-4, in the HOLD state, replace "
  TX_ER <= plca_txer
  TXD <= 0000
"
with "
  TX_ER <= ENCODE_TXER(tx_cmd_sync)
  TXD <= ENCODE_TXD(tx_cmd_sync)
"

[2] In Figure 148-4, in the ABORT state, replace "
  TX_ER <= plca_txer
  TXD <= 0000
"
with "

TX_ER <= ENCODE_TXER(tx_cmd_sync)
TXD <= ENCODE_TXD(tx_cmd_sync)
"

[3] In Figure 148-4, in both the COLLIDE and DELAY_PENDING states add the following: "
TX_ER <= ENCODE_TXER(tx_cmd_sync)
TXD <= ENCODE_TXD(tx_cmd_sync)
"

[4] In Figure 148-4, add a recirculating arc with an "ELSE" condition to the following state boxes: WAIT_MAC, PENDING, DELAY_PENDING, COLLIDE and ABORT.

[5] In Figure 148-4, in the transition from WAIT_MAC to TRANSMIT state, change the condition from "plca_txen" to "MCD * plca_txen"

[6] At page 244 in Figure 148-3, in the transition from the RESYNC state to the SEND_BEACON state change the condition from: "
local_nodeID = 0
"
to: "
MCD * (local_nodeID = 0)
"

Add subclause "148.4.5.5 Abbreviations" with the following content: "
MCD See 148.4.6.5
"

[7] At page 244 in Figure 148-3, in the transition from the RECOVER state to the SEND_BEACON state change the condition from: "
(!CRS) * recv_beacon_timer_done
"
to: "
MCD * (!CRS) * recv_beacon_timer_done
"

[8] At page 248, line 8 remove the duplicate MCD declaration (the correct definition is at line 50 in the Abbreviations section).

[9] At page 248, line 34 change "A continuous free-running timer that shall expire synchronously with the rising edge of TX_TCLK."
with "A continuous free-running timer that shall expire synchronously with the rising edge of the MII TX_CLK"

[10] Add the following variable definition in 148.4.6.2: "
tx_cmd_sync
The value of the tx_cmd variable sampled on the falling edge of the MII TX_CLK.
Values: see tx_cmd in 148.4.5.2
"

[11] In Figure 148-4, replace all occurrences of "ENCODE_TXD(tx_cmd)" with "ENCODE_TXD(tx_cmd_sync)"

[12] In Figure 148-4, replace all occurrences of "ENCODE_TXER(tx_cmd)" with "ENCODE_TXER(tx_cmd_sync)"

[13] Change the condition on the open-ended transition to NORMAL of “Figure 148–4—PLCA Data state diagram” from “
plca_reset + (!plca_en) * (!plca_status)
”
to “
plca_reset + (!plca_en) + (plca_status != OK)
“

[14] Change the condition on the NORMAL->IDLE transition of “Figure 148–4—PLCA Data state diagram” from “
plca_en * (!plca_reset) * plca_status
”
to “
plca_en * (!plca_reset) * (plca_status = OK)
”

[15] Update the PLCA Control state diagram as follows:
1. Within the EARLY_RECEIVE state, add the action “start beacon_det_timer”.
2. Create a transition from the EARLY_RECEIVE state to a connector, D, with the following exit condition:
(local_nodeID != 0) * (!receiving) *
((rx_cmd = BEACON) + ((!CRS) * beacon_det_timer_not_done))
3. Change the exit transition from EARLY_RECEIVE to connector B from:
(local_nodeID != 0) * ((rx_cmd = BEACON) + recv_timer_done) * (!receiving)
to:
(local_nodeID != 0) * recv_timer_done * (!receiving)
4. Delete the transition from RESYNC to SYNCING including its exit condition.
5. Add a connector, D, with arrow to SYNCING.
6. Within the SYNCING state, add the action:
IF (local_nodeID != 0) * (rx_cmd != BEACON) THEN
start invalid_beacon_timer
END
7. For the SYNCING exit condition to connector A, replace the condition from:
rx_cmd != BEACON
to:
!CRS
8. Add an open arrow global transition to RESYNC with the condition “invalid_beacon_timer_done”.
9. Add an exit transition from RESYNC to new connector, E, with the condition “(local_nodeID != 0) * (CRS)”
10. Add a connector, E, with arrow to EARLY_RECEIVE.
11. Change the exit condition from EARLY_RECEIVE to RECEIVE from:
(!recv_timer_done) * receiving
to:

recv_timer_not_done * receiving

[16] In section 148.4.5.4, page 242 Line 46 (before burst_timer) add the following timers:

beacon_det_timer
Timer for detecting received BEACONs.
Duration: 22 bit times.
Tolerance: +/- 1 bit time.

invalid_beacon_timer
Timer used for BEACON validation. This timer is stopped any time rx_cmd = BEACON.
Duration: 4000 ns
Tolerance: +/- 400 ns

[17] In clause 30.16.1.1.5 “aPLCATransmitOpportunityTimer”, Page 43, Line 15, Change “The default value is 24.” to “The default value is 32.”

[18] Change equation 148-2 on Page 243, Line 17, from “
to_timer > 2 x max(t<propdelay>) +
max(TX_EN sampled to MDI output) +
max(MDI input to CRS asserted) +
max(MDI input to CRS deasserted) –
min(MDI input to CRS deasserted)
“
to “
to_timer > 2 x max(t<propdelay>) +
max(TX_EN sampled to MDI output) +
max(MDI input to CRS asserted) +
max(MDI input to CRS deasserted) –
min(MDI input to CRS deasserted) +
max(MII propagation delay)
“

[19] Delete lines 10 through 20 of page 240. This removes the text beginning with "After syncing is done ..." through "... appearing at the MDI to CRS asserted."

[20] Make changes in Table 147-6 on page 224 in the following order:
1. Remove row with Event "TX_EN sampled to CRS asserted"
2. Remove row with Event "TX_EN sampled to CRS deasserted"
3. Change all occurances of "TX_EN" to "TX_EN / TX_ER"
4. Change all occurances of "RX_DV" to "RX_DV / RX_ER"

---

*Cl* **148** *SC* **148.1** *P* **234** *L* **9** # r02-30

Kabra, Lokesh — Synopsys, Inc.

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

As per r01-127, agreement that the RS should be referenced as "Reconciliation Sublayer" (with capital letter)

*SuggestedRemedy*

Replace "reconciliation sublayer" with "Reconciliation Sublayer"

*Response* *Response Status* **C**

ACCEPT.

*Cl* **148** *SC* **148.2** *P* **235** *L* **1** # r02-60

Kim, Yongbum NIO

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

This added sentence adds little value and addresses existing unsat concern incompletely. "If the node with ID = 0 fails, the network is still operational with the same performance level of a CSMA/CD network without PLCA." The set of unsatisfied concerns (from 802.3WG ballot and on SA ballot cycles) are:
a) how node_id=0 is chosen, handling when node_id=0 fails, b) does not exist at all, c) multiple node_id=0 node exists, etc .. all the chosen central controller complexities that are handled in IEEE 802.4 token bus or other similar systems. Simply stating node_id=0 failure = still operational sound more like marketing and provides little overall benefit to the system in regard to fault handling, completeness of specification, etc.

*SuggestedRemedy*

Delete this new sentence added in D3.2 in its entirety.

*Response* *Response Status* **U**

REJECT.
The CRG disagrees with the commenter.
The sentence was not added relative to a concern from this commenter.
The referenced sentence was added in response to "Must be satisfied" comment r01-223 (from a different commenter) and resulted in the commenter indicating satisfaction.
Consensus of the CRG is that the sentence provides a useful description of what to expect from operation when Node ID = 0 fails or disappears.
---
Comment r01-223 was: "Overview does not even give a hint as to what sort of recovery procedure there is if Node ID = 0 fails or disappears."
Response to comment r01-223 was:
"ACCEPT IN PRINCIPLE.
<Explanatory note - not to be incorporated in the draft>
When Node ID = 0 fails or disappears the network behaves like a non-PLCA enabled CSMA/CD network. Such behavior has been intentionally defined in the PLCA Control State Diagram. However, there is one missing corner case where the mentioned state diagram could get stuck if the Node with ID = 0 fails immediately after PLCA has been enabled, before the first BEACON is transmitted.
<end explanatory note>
(changes to draft follow):
[1] At page 234, append the following sentence to the end of the new last paragraph for 148.2 added by comment r01-222:
"If the node with ID = 0 fails, the network is still operational with the same performance level of a CSMA/CD network without PLCA."
[2] In Figure 148-3 in the transition from NEXT_TX_OPPORTUNITY to the B connector, replace the condition "(local_nodeID = 0) * (curID >= plca_node_count)" with "(local_nodeID = 0) * (curID >= plca_node_count) + curID = 255".
[3] In Figure 148-4 in the global transition to the NORMAL state, change the condition "plca_reset + (!plca_en)" to "plca_reset + (!plca_en) + (!plca_status)".
[4] In Figure 148-4 in the transition from the NORMAL state to the IDLE state replace "plca_en" with "plca_en * (!plca_reset) * plca_status"
[5] In Figure 148-4 in the TRANSMIT state box replace "
IF COL THEN
SIGNAL_STATUS <= SIGNAL_ERROR
ELSE"
with "
IF COL THEN
SIGNAL_STATUS <= SIGNAL_ERROR
a <= 0
ELSE
"
[6] At page 249, line 3 append the following:
"
plca_status
see 148.4.7.2
"

*Cl* **148** *SC* **148.2** *P* **235** *L* **11** # r02-59

Kim, Yongbum NIO

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

This added paragraph is adds little value to the draft and frankly appears more like marketing statement than Ethernet specification. Mixed PLCA+CSMA/CD and CSMA/CD operation. configuration, etc are not specified, so this paragraph does not serve any material purpose (except, perhaps as marketing statement).
"PLCA-enabled nodes may be used in the same CSMA/CD collision domain as non-PLCA enabled nodes.
As the percentage of non-PLCA enabled nodes increases, performance advantages also decrease. If the node
with ID = 0 fails, the network is still operational with the same performance level of a CSMA/CD network
without PLCA."

*SuggestedRemedy*

Delete this new paragraph added in D3.2 in its entirety.

*Response* *Response Status* **U**

REJECT.
The CRG disagrees with the commenter.
The paragraph was not added relative to a concern from this commenter.
The referenced paragraph was added in response to "Must be satisfied" comment r01-222 (from a different commenter) and resulted in the commenter indicating satisfaction.
Consensus of the CRG is that the sentence provides a useful description of what to expect from operation of a network comprising a mixture of nodes with PLCA enabled and nodes without PLCA.

Comment r01-222 is:
"Overview does not even give a hint as to what happens in a mixed network or the impact of such on network performance."
Response to comment r01-222 was:
Add new sixth (final) paragraph to 148.2, "PLCA-enabled nodes may be used in the same CSMA/CD collision domain as non-PLCA enabled nodes. As the percentage of non-PLCA enabled nodes increases, performance advantages also decrease."

*Cl* **148** *SC* **148.4** *P* **250** *L* **42** # r02-24

Koczwara, Wojciech Rockwell Automation

*Comment Type* **T** *Comment Status* **A** *State Diagrams*

There is an ambiguity in Figure 148-4, when leaving the HOLD state:
1. HOLD can exit either to ABORT or COLLIDE when (a == delay_line_length * plca_txer * recv_timer_not_done *MCD * !commited * !receiving)
2. HOLD can exit either to TRANSMIT or COLLIDE when (a == delay_line_length * MCD * committed *!receiving * recv_timer_not_done).
Additionally, reaction to plca_txer should be a priority in the HOLD state.

*SuggestedRemedy*

1. Change the transition condition from HOLD state to A: from [recv_timer_done + receiving + (a >= delay_line_length)], to [!plca_txer * (recv_timer_done + receiving + (a >= delay_line_length))]

2. Change the transition condition from HOLD state to B: from [MCD * committed * (!receiving) * recv_timer_not_done], to [!plca_txer * MCD * committed * (!receiving) * recv_timer_not_done * (a < delay_line_length)]

3. Change the transition condition from HOLD state to ABORT state: from [recv_timer_not_done * MCD * (!commited) * plca_txer * (!receiving)], to [plca_txer * MCD]

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
1. Change the transition condition from HOLD state to A: from [recv_timer_done + receiving + (a >= delay_line_length)], to [(!plca_txer) * (recv_timer_done + receiving + (a >= delay_line_length))]

2. Change the transition condition from HOLD state to B: from [MCD * committed * (!receiving) * recv_timer_not_done], to [(!plca_txer) * MCD * committed * (!receiving) * recv_timer_not_done * (a < delay_line_length)]

3. Change the transition condition from HOLD state to ABORT state: from [recv_timer_not_done * MCD * (!commited) * plca_txer * (!receiving)], to [plca_txer * MCD]

*Cl* **148** *SC* **148.4.1** *P* **236** *L* **5** # r02-61

Kim, Yongbum NIO

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

This new statement is factually not correct. "This subclause specifies services provided by the PLCA RS as an extension to the RS specified in Clause 22." PLCA RS optionally *REPLACES* Clause 22 RS. The previous sentence "This subclause specifies services provided by the PLCA RS as an extension to the MII specified in Clause 22." may not be desirable but more correcct than the new sentence in D3.2.

*SuggestedRemedy*

Suggest replacing the referred sentence with the following one.
"This subclause specifies services provided by the PLCA RS and replaces RS specified in Clause 22."

*Response* *Response Status* **U**

REJECT.
Comment is arguably out of scope with respect to the recirculation. While this introductory sentence and subclause was changed, it was touched in a way that made delete a single word. The comment does not touch on the change that was made.

CRG disagrees with the commenter. The referenced subclause (148.4.1) does not replace the Clause 22 RS, but defines how the extensions, e.g., in the various primitive descriptions, fit with the Clause 22 definitions by making extensive references to where the specifications of the Clause 22 RS apply unchanged.

*Cl* **148** *SC* **148.4.5.1** *P* **240** *L* **10** # r02-36

Law, David Hewlett Packard Enterprise

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

Suggest that 'After syncing is done, the ...' is changed to read 'After synchronisation is complete, the ...'.

*SuggestedRemedy*

See comment.

*Proposed Response* *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

(Text has been removed in response to comment r02-33, shown, in-part, below:
[19] Delete lines 10 through 20 of page 240. This removes the text beginning with "After syncing is done ..." through "... appearing at the MDI to CRS asserted." )

*Cl* **148** *SC* **148.4.5.1** *P* **240** *L* **15** # r02-37

Law, David Hewlett Packard Enterprise

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

Shouldn't RXlat be RX<SUB>lat</SUB> based on delta RX<SUB>lat</SUB> above?

*SuggestedRemedy*

See comment.

*Proposed Response* *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

(Text has been removed in response to comment r02-33, shown, in-part, below:
[19] Delete lines 10 through 20 of page 240. This removes the text beginning with "After syncing is done ..." through "... appearing at the MDI to CRS asserted." )

*Cl* **148** *SC* **148.4.5.1** *P* **240** *L* **25** # r02-38

Law, David Hewlett Packard Enterprise

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

Suggest that '... node owns now a transmit opportunity ...' should read '... node now owns a transmit opportunity ...'.

*SuggestedRemedy*

See comment.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "owns now" to "now owns" on P240 L25
Note that the comment is out of scope of the recirculation on text unchanged from the previous draft, but is a nonsubstantive editorial change which improves clarity.

*Cl* **148** *SC* **148.4.5.1** *P* **240** *L* **27** # r02-39

Law, David Hewlett Packard Enterprise

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

Suggest that '... node owns now a transmit opportunity ...' should read '... node now owns a transmit opportunity ...'.

*SuggestedRemedy*

See comment.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "owns now" to "now owns" on P240 L27
Note that the comment is out of scope of the recirculation on text unchanged from the previous draft, but is a nonsubstantive editorial change which improves clarity.

*Cl* **148** *SC* **148.4.5.1** *P* **240** *L* **34** # r02-40

Law, David Hewlett Packard Enterprise

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

Suggest that 'In EARLY_RECEIVE state, PLCA is waiting ...' should be changed to read 'In EARLY_RECEIVE state, the PLCA Control state diagram is waiting ...' since this subclause is describing the PLCA Control state diagram, and the EARLY_RECEIVE state is a state of that state diagram, not of the PLCA as a whole.

*SuggestedRemedy*

See comment.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.

On P240 L34 change "PLCA is waiting" to "the PLCA Control state diagram is waiting".

Note that the comment is out of scope of the recirculation on text unchanged from the previous draft, but nonsubstantively corrects an ambiguity which could be misinterpreted to mean both the PLCA Control and the PLCA Data state diagrams which improves clarity.

*Cl* **148** *SC* **148.4.5.1** *P* **240** *L* **36** # r02-41

Law, David Hewlett Packard Enterprise

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

Suggest that 'RECEIVE state is then kept until ...' should be changed to read 'The PLCA Control state diagram then remains in the RECEIVE state until ...'.

*SuggestedRemedy*

See comment.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **148** *SC* **148.4.5.1** *P* **240** *L* **41** # r02-42

Law, David Hewlett Packard Enterprise

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

Suggest that '... might be out of sync.' be changed to read '... might be out of synchronisation.'.

*SuggestedRemedy*

See comment.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "out of sync," to "out of synchronization,"
(note this is a nonsubstantial change)

*Cl* **148** *SC* **148.4.5.1** *P* **240** *L* **45** # r02-43

Law, David Hewlett Packard Enterprise

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

Suggest that '... might be out of sync, ...' be changed to read '... might be out of synchronisation, ...'.

*SuggestedRemedy*

See comment.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "out of sync," to "out of synchronization,"
(note this is a nonsubstantial change)

*Cl* **148** *SC* **148.4.5.1** *P* **245** *L* **51** # r02-1

Huszak, Gergely Kone

*Comment Type* **T** *Comment Status* **A** *State Diagrams*

Condition on NEXT_TX_OPPORTUNITY->RESYNC assumes a certain operator precedence and associativity that is not spelled out, creating ambiguity

*SuggestedRemedy*

Change "(local_nodeID = 0) * (curID >= plca_node_count) + (curID = 255)" to "((local_nodeID = 0) * (curID >= plca_node_count)) + (curID = 255)"

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Editorial license to add parenthesis to maintain precedence, including the following:
P245 L51: Change "(local_nodeID = 0) * (curID >= plca_node_count) + (curID = 255)" to "((local_nodeID = 0) * (curID >= plca_node_count)) + (curID = 255)"

P202, L33: Change "RSCD * ((RXn = ESD) + (RXn != SSD) * (RXn != SYNC) * (!fc_supported))" to "RSCD * ((RXn = ESD) + ((RXn != SSD) * (RXn != SYNC) * (!fc_supported)))

P203, L28-47: All the exit conditions on the lower half ("C" and "D") of Figure 147-8 need parenthesis: Add brackets around “Rxn != HB”, “Rxn = HB”, “Rxn != BEACON”, and “Rxn = BEACON” conditions (!= is the non equal symbol).

*Cl* **148** *SC* **148.4.5.2** *P* **241** *L* **14** # r02-31

Kabra, Lokesh Synopsys, Inc.

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

Incorrect reference to managed object

*SuggestedRemedy*

Replace "aPLCAReset" with "acPLCAReset"

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accomodated by comment r02-13.
Response to comment r02-13 is:
ACCEPT.

Suggested Remedy of r02-13 is:
Replace, "aPLCAReset" with "acPLCAReset" in two locations in line 14.

*Cl* **148** *SC* **148.4.5.2** *P* **241** *L* **14** # r02-13

Maguire, Valerie The Siemon Company

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

This is an action. See Table 30-11

*SuggestedRemedy*

Replace, "aPLCAReset" with "acPLCAReset" in two locations in line 14.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **148** *SC* **148.4.5.2** *P* **241** *L* **20** # r02-32

Kabra, Lokesh Synopsys, Inc.

*Comment Type* **E** *Comment Status* **R** *Management*

Incorrect reference to managed object; plca_en is controlled by acPLCAAdminControl as per definition in 30.16.1.2.1

*SuggestedRemedy*

Replace "aPLCAAdminState" with "acPLCAAdminControl"

*Response* *Response Status* **C**

REJECT.
Comment is out of scope of the recirculation on unchanged text.
CRG disagrees with the commenter.
While the action acPLCAAdminControl changes the state of the attribute, aPLCAAdminState, the variable plca_en reflects the state of the attribute.

*Cl* **148** *SC* **148.4.5.4** *P* **245** *L* **50** # r02-19

Graber, Steffen Pepperl+Fuchs AG

*Comment Type* **E** *Comment Status* **A** *State Diagrams*

Brackets in exit condition of NEXT_TX_OPPORTUNITY state are missing.

*SuggestedRemedy*

Change "(local_nodeID = 0) * (curID >= plca_node_count) + (curID = 255)" to "((local_nodeID = 0) * (curID >= plca_node_count)) + (curID = 255)".

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accomodated by comment r02-1
Response to comment r02-1 is:
ACCEPT IN PRINCIPLE.
Editorial license to add parenthesis to maintain precedence, including the following:
P245 L51: Change "(local_nodeID = 0) * (curID >= plca_node_count) + (curID = 255)" to "((local_nodeID = 0) * (curID >= plca_node_count)) + (curID = 255)"

P202, L33: Change "RSCD * ((RXn = ESD) + (RXn != SSD) * (RXn != SYNC) * (!fc_supported))" to
"RSCD * ((RXn = ESD) + ((RXn != SSD) * (RXn != SYNC) * (!fc_supported)))

P203, L28-47: All the exit conditions on the lower half ("C" and "D") of Figure 147-8 need parenthesis: Add brackets around “Rxn != HB”, “Rxn = HB”, “Rxn != BEACON”, and “Rxn = BEACON” conditions (!= is the non equal symbol).

*Cl* **148** *SC* **148.4.5.4** *P* **245** *L* **51** # r02-44

Law, David — Hewlett Packard Enterprise

*Comment Type* **T** *Comment Status* **A** *State Diagrams*

Since the precedence of operators isn't defined in 21.5, or locally in Clause 148, it isn't clear if the equation (local_nodeID = 0) * (curID => plca_node_count) + (curID = 255) means perform the AND then the OR, or as I believe is intended, perform the OR then the AND.

*SuggestedRemedy*

Suggest that '(local_nodeID = 0) * (curID => plca_node_count) + (curID = 255)' be changed to read '(local_nodeID = 0) * ((curID => plca_node_count) + (curID = 255))'.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accomodated by comment r02-1
Response to comment r02-1 is:
ACCEPT IN PRINCIPLE.
Editorial license to add parenthesis to maintain precedence, including the following:
P245 L51: Change "(local_nodeID = 0) * (curID >= plca_node_count) + (curID = 255)" to "((local_nodeID = 0) * (curID >= plca_node_count)) + (curID = 255)"

P202, L33: Change "RSCD * ((RXn = ESD) + (RXn != SSD) * (RXn != SYNC) * (!fc_supported))" to
"RSCD * ((RXn = ESD) + ((RXn != SSD) * (RXn != SYNC) * (!fc_supported)))

P203, L28-47: All the exit conditions on the lower half ("C" and "D") of Figure 147-8 need parenthesis: Add brackets around “Rxn != HB”, “Rxn = HB”, “Rxn != BEACON”, and “Rxn = BEACON” conditions (!= is the non equal symbol).

*Cl* **148** *SC* **148.4.6.1** *P* **246** *L* **25** # r02-45

Law, David — Hewlett Packard Enterprise

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

We don't normally use inverted commas around variable names, states or variable values in Clause 148. Suggest that the inverted commas be removed in the few instances where they are used.

*SuggestedRemedy*

Subclause 148.4.6.1, page 246, line 25
Suggest that '... the "committed" variable ...' be changed to read '... the committed variable ...'.

Subclause 148.4.7.1, page 252, line 9
Suggest that '... enters "INACTIVE" state ...' be changed to read '... enters the INACTIVE state ...'.

Subclause 148.4.7.1, page 252, line 10
Suggest that '... plca_status as "FAIL".' be changed to read '... plca_status as FAIL.'.

Subclause 148.4.7.1, page 252, line 12
Suggest that '... plca_status as "OK".' be changed to read '... plca_status as OK.'.

Subclause 148.4.7.1, page 252, line 14
Suggest that 'From "ACTIVE" state ...' be changed to read 'From the ACTIVE state ...'.

Subclause 148.4.7.1, page 252, line 15
Suggest that '... enters "HYSTERESIS" state ...' be changed to read '... enters the HYSTERESIS state ...'.
Suggest that '... as "OK" and ...' be changed to read '... as OK and ...'.

Subclause 148.4.7.1, page 252, line 17
Suggest that '... to "ACTIVE" state ...' be changed to read '... to the ACTIVE state ...'.

Subclause 148.4.7.1, page 252, line 19
Suggest that '... to "INACTIVE" state, reporting plca_status as "FAIL"' be changed to '... to the INACTIVE state, reporting plca_status as FAIL.' (note also the addition of this missing full stop to the end of this sentence).

*Response* *Response Status* **C**

ACCEPT.

*Cl* **148** *SC* **148.4.6.2** *P* **247** *L* **7** # r02-46

Law, David Hewlett Packard Enterprise

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

The subclause title seems to have become detached from the subclause number, separated by an editor's note box.

*SuggestedRemedy*

Delete the text 'PLCA Data variables' from before the editor's note box and change the '148.4.6.2' to read '148.4.6.2 Variables'.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **148** *SC* **148.4.6.3** *P* **248** *L* **16** # r02-47

Law, David Hewlett Packard Enterprise

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

Missing cross reference.

*SuggestedRemedy*

Change 'Otherwise it returns the value of the plca_txer variable, defined in .' to read 'Otherwise it returns the value of the plca_txer variable, defined in 148.4.6.2.'.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **148** *SC* **148.4.6.6** *P* **249** *L* **4** # r02-67

Beruto, Piergiorgio

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

The delay_line_length constant should count nibbles instead of bits, according to the way it is used in the State Diagrams.

*SuggestedRemedy*

Change "This constant is implementation dependent and specifies the maximum length of the PLCA RS variable delay line depicted in Figure 148-2.
Value: up to 396 bit times."
to
"This constant is implementation dependent and specifies the maximum number of nibbles that the PLCA RS variable delay line can hold.
Value: up to 99"

*Response* *Response Status* **C**

ACCEPT.

*Cl* **148** *SC* **148.4.6.6** *P* **250** *L* **38** # r02-48

Law, David Hewlett Packard Enterprise

*Comment Type* **TR** *Comment Status* **A** *State Diagrams*

Under heavy load, it appears that node 0 ceases transmission of BEACONs. After the completion of a transmission, the node 0 PLCA Data state diagram enters the IDLE state once the looped back CRS ends. At the same time, the node 0 PLCA Control state diagram enters the WAIT_TO state. After an IPG, the plca_txen for node 0 is then asserted and as a result the node 0 PLCA Data state diagram entering the HOLD.

The problem seems to be that when the node 0 PLCA Control state diagram enters the SEND_BEACON state, and tx_cmd is set to BEACON, the PLCA Data state diagram doesn't send a BEACON. This is because TX_ER is mapped to plca_txer and TXD is set to 0000 in the HOLD state. As a result, the curID counters in the other stations don't get set to zero, and therefore these stations don't get their transmit opportunities.

*SuggestedRemedy*

Change the Figure 148-4 PLCA Data state diagram to send a BEACON while in the HOLD state when tx_cmd is set to BEACON.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accommodated by resolution of comment #r02-33.

Resolution of comment #33 is:
ACCEPT IN PRINCIPLE.
Implement changes shown in http://www.ieee802.org/3/cg/public/Aug2019/r02-33 Proposed Response.pdf with editorial license to resolve differences between the written instructions below and the figures in the referenced file at the url, and combine with other comment responses (e.g., r02-01 and r02-24).)

[1] In Figure 148-4, in the HOLD state, replace "
TX_ER <= plca_txer
TXD <= 0000
"
with "
TX_ER <= ENCODE_TXER(tx_cmd_sync)
TXD <= ENCODE_TXD(tx_cmd_sync)
"

[2] In Figure 148-4, in the ABORT state, replace "
TX_ER <= plca_txer
TXD <= 0000
"
with "
TX_ER <= ENCODE_TXER(tx_cmd_sync)
TXD <= ENCODE_TXD(tx_cmd_sync)
"

[3] In Figure 148-4, in both the COLLIDE and DELAY_PENDING states add the following: "
TX_ER <= ENCODE_TXER(tx_cmd_sync)
TXD <= ENCODE_TXD(tx_cmd_sync)
"

[4] In Figure 148-4, add a recirculating arc with an "ELSE" condition to the following state boxes: WAIT_MAC, PENDING, DELAY_PENDING, COLLIDE and ABORT.

[5] In Figure 148-4, in the transition from WAIT_MAC to TRANSMIT state, change the condition from "plca_txen" to "MCD * plca_txen"

[6] At page 244 in Figure 148-3, in the transition from the RESYNC state to the SEND_BEACON state change the condition from: "
local_nodeID = 0
"
to: "
MCD * (local_nodeID = 0)
"

Add subclause "148.4.5.5 Abbreviations" with the following content: "
MCD See 148.4.6.5
"

[7] At page 244 in Figure 148-3, in the transition from the RECOVER state to the SEND_BEACON state change the condition from: "
(!CRS) * recv_beacon_timer_done
"
to: "
MCD * (!CRS) * recv_beacon_timer_done
"

[8] At page 248, line 8 remove the duplicate MCD declaration (the correct definition is at line 50 in the Abbreviations section).

[9] At page 248, line 34 change "A continuous free-running timer that shall expire synchronously with the rising edge of TX_TCLK."
with "A continuous free-running timer that shall expire synchronously with the rising edge of the MII TX_CLK"

[10] Add the following variable definition in 148.4.6.2: "
tx_cmd_sync
The value of the tx_cmd variable sampled on the falling edge of the MII TX_CLK.
Values: see tx_cmd in 148.4.5.2
"

[11] In Figure 148-4, replace all occurrences of "ENCODE_TXD(tx_cmd)" with "ENCODE_TXD(tx_cmd_sync)"

[12] In Figure 148-4, replace all occurrences of "ENCODE_TXER(tx_cmd)" with "ENCODE_TXER(tx_cmd_sync)"

[13] Change the condition on the open-ended transition to NORMAL of “Figure 148–4—PLCA Data state diagram” from “
plca_reset + (!plca_en) * (!plca_status)
”
to “
plca_reset + (!plca_en) + (plca_status != OK)
“

[14] Change the condition on the NORMAL->IDLE transition of “Figure 148–4—PLCA Data state diagram” from “
plca_en * (!plca_reset) * plca_status
”
to “
plca_en * (!plca_reset) * (plca_status = OK)
”

[15] Update the PLCA Control state diagram as follows:
1. Within the EARLY_RECEIVE state, add the action “start beacon_det_timer”.
2. Create a transition from the EARLY_RECEIVE state to a connector, D, with the following exit condition:
(local_nodeID != 0) * (!receiving) *
((rx_cmd = BEACON) + ((!CRS) * beacon_det_timer_not_done))
3. Change the exit transition from EARLY_RECEIVE to connector B from:
(local_nodeID != 0) * ((rx_cmd = BEACON) + recv_timer_done) * (!receiving)
to:
(local_nodeID != 0) * recv_timer_done * (!receiving)
4. Delete the transition from RESYNC to SYNCING including its exit condition.
5. Add a connector, D, with arrow to SYNCING.
6. Within the SYNCING state, add the action:
IF (local_nodeID != 0) * (rx_cmd != BEACON) THEN
start invalid_beacon_timer
END
7. For the SYNCING exit condition to connector A, replace the condition from:
rx_cmd != BEACON
to:
!CRS
8. Add an open arrow global transition to RESYNC with the condition “invalid_beacon_timer_done”.
9. Add an exit transition from RESYNC to new connector, E, with the condition “(local_nodeID != 0) * (CRS)”
10. Add a connector, E, with arrow to EARLY_RECEIVE.
11. Change the exit condition from EARLY_RECEIVE to RECEIVE from:
(!recv_timer_done) * receiving
to:
recv_timer_not_done * receiving

[16] In section 148.4.5.4, page 242 Line 46 (before burst_timer) add the following timers:

beacon_det_timer
Timer for detecting received BEACONs.
Duration: 22 bit times.
Tolerance: +/- 1 bit time.

invalid_beacon_timer
Timer used for BEACON validation. This timer is stopped any time rx_cmd = BEACON.
Duration: 4000 ns
Tolerance: +/- 400 ns

[17] In clause 30.16.1.1.5 “aPLCATransmitOpportunityTimer”, Page 43, Line 15, Change “The default value is 24.” to “The default value is 32.”

[18] Change equation 148-2 on Page 243, Line 17, from “
to_timer > 2 x max(t<propdelay>) +
max(TX_EN sampled to MDI output) +
max(MDI input to CRS asserted) +
max(MDI input to CRS deasserted) –
min(MDI input to CRS deasserted)
“
to “
to_timer > 2 x max(t<propdelay>) +
max(TX_EN sampled to MDI output) +
max(MDI input to CRS asserted) +
max(MDI input to CRS deasserted) –
min(MDI input to CRS deasserted) +
max(MII propagation delay)
“

[19] Delete lines 10 through 20 of page 240. This removes the text beginning with "After syncing is done ..." through "... appearing at the MDI to CRS asserted."

[20] Make changes in Table 147-6 on page 224 in the following order:
1. Remove row with Event "TX_EN sampled to CRS asserted"
2. Remove row with Event "TX_EN sampled to CRS deasserted"
3. Change all occurances of "TX_EN" to "TX_EN / TX_ER"
4. Change all occurances of "RX_DV" to "RX_DV / RX_ER"

---

*Cl* **148** *SC* **148.4.6.6** *P* **250** *L* **41** # r02-49

Law, David — Hewlett Packard Enterprise

*Comment Type* **T** *Comment Status* **A** *MII*

IEEE Std 802.3-2018 Table 22-1 'Permissible encodings of TXD<3:0>, TX_EN, and TX_ER' defines TX_EN = 0, TX_ER = 1 and TXD = 0000 as Reserved. This however will be the encoding presented on the MII if the Figure 148-4 'PLCA Data state diagram' enters the HOLD or ABORT states and plca_txer is asserted.

*SuggestedRemedy*

Change the actions in the HOLD or ABORT states to issue a defined encoding on the MII when plca_txer is asserted.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Accommodated by resolution of comment #33.

Resolution of comment #33 is:
ACCEPT IN PRINCIPLE.
Implement changes shown in http://www.ieee802.org/3/cg/public/Aug2019/r02-33 Proposed Response.pdf with editorial license to resolve differences between the written instructions below and the figures in the referenced file at the url, and combine with other comment responses (e.g., r02-01 and r02-24).)

[1] In Figure 148-4, in the HOLD state, replace "
TX_ER <= plca_txer
TXD <= 0000
"
with "
TX_ER <= ENCODE_TXER(tx_cmd_sync)
TXD <= ENCODE_TXD(tx_cmd_sync)
"

[2] In Figure 148-4, in the ABORT state, replace "
TX_ER <= plca_txer
TXD <= 0000
"
with "
TX_ER <= ENCODE_TXER(tx_cmd_sync)
TXD <= ENCODE_TXD(tx_cmd_sync)
"

[3] In Figure 148-4, in both the COLLIDE and DELAY_PENDING states add the following: "
TX_ER <= ENCODE_TXER(tx_cmd_sync)
TXD <= ENCODE_TXD(tx_cmd_sync)
"

[4] In Figure 148-4, add a recirculating arc with an "ELSE" condition to the following state boxes: WAIT_MAC, PENDING, DELAY_PENDING, COLLIDE and ABORT.

[5] In Figure 148-4, in the transition from WAIT_MAC to TRANSMIT state, change the condition from "plca_txen" to "MCD * plca_txen"

[6] At page 244 in Figure 148-3, in the transition from the RESYNC state to the SEND_BEACON state change the condition from: "
local_nodeID = 0
"
to: "
MCD * (local_nodeID = 0)
"

Add subclause "148.4.5.5 Abbreviations" with the following content: "
MCD See 148.4.6.5
"

[7] At page 244 in Figure 148-3, in the transition from the RECOVER state to the SEND_BEACON state change the condition from: "
(!CRS) * recv_beacon_timer_done
"
to: "
MCD * (!CRS) * recv_beacon_timer_done
"

[8] At page 248, line 8 remove the duplicate MCD declaration (the correct definition is at line 50 in the Abbreviations section).

[9] At page 248, line 34 change "A continuous free-running timer that shall expire synchronously with the rising edge of TX_TCLK."
with "A continuous free-running timer that shall expire synchronously with the rising edge of the MII TX_CLK"

[10] Add the following variable definition in 148.4.6.2: "
tx_cmd_sync
The value of the tx_cmd variable sampled on the falling edge of the MII TX_CLK.
Values: see tx_cmd in 148.4.5.2
"

[11] In Figure 148-4, replace all occurrences of "ENCODE_TXD(tx_cmd)" with "ENCODE_TXD(tx_cmd_sync)"

[12] In Figure 148-4, replace all occurrences of "ENCODE_TXER(tx_cmd)" with "ENCODE_TXER(tx_cmd_sync)"

[13] Change the condition on the open-ended transition to NORMAL of “Figure 148–4—PLCA Data state diagram” from “
plca_reset + (!plca_en) * (!plca_status)
”
to “
plca_reset + (!plca_en) + (plca_status != OK)
“

[14] Change the condition on the NORMAL->IDLE transition of “Figure 148–4—PLCA Data state diagram” from “
plca_en * (!plca_reset) * plca_status
”
to “
plca_en * (!plca_reset) * (plca_status = OK)
”

[15] Update the PLCA Control state diagram as follows:
1. Within the EARLY_RECEIVE state, add the action “start beacon_det_timer”.
2. Create a transition from the EARLY_RECEIVE state to a connector, D, with the following exit condition:
(local_nodeID != 0) * (!receiving) *
((rx_cmd = BEACON) + ((!CRS) * beacon_det_timer_not_done))
3. Change the exit transition from EARLY_RECEIVE to connector B from:
(local_nodeID != 0) * ((rx_cmd = BEACON) + recv_timer_done) * (!receiving)
to:
(local_nodeID != 0) * recv_timer_done * (!receiving)
4. Delete the transition from RESYNC to SYNCING including its exit condition.
5. Add a connector, D, with arrow to SYNCING.
6. Within the SYNCING state, add the action:
IF (local_nodeID != 0) * (rx_cmd != BEACON) THEN
start invalid_beacon_timer
END
7. For the SYNCING exit condition to connector A, replace the condition from:
rx_cmd != BEACON
to:
!CRS
8. Add an open arrow global transition to RESYNC with the condition “invalid_beacon_timer_done”.
9. Add an exit transition from RESYNC to new connector, E, with the condition “(local_nodeID != 0) * (CRS)”
10. Add a connector, E, with arrow to EARLY_RECEIVE.
11. Change the exit condition from EARLY_RECEIVE to RECEIVE from:
(!recv_timer_done) * receiving
to:
recv_timer_not_done * receiving

[16] In section 148.4.5.4, page 242 Line 46 (before burst_timer) add the following timers:

beacon_det_timer
Timer for detecting received BEACONs.
Duration: 22 bit times.
Tolerance: +/- 1 bit time.

invalid_beacon_timer
Timer used for BEACON validation. This timer is stopped any time rx_cmd = BEACON.

Duration: 4000 ns
Tolerance: +/- 400 ns

[17] In clause 30.16.1.1.5 “aPLCATransmitOpportunityTimer”, Page 43, Line 15, Change “The default value is 24.” to “The default value is 32.”

[18] Change equation 148-2 on Page 243, Line 17, from “
to_timer > 2 x max(t<propdelay>) +
max(TX_EN sampled to MDI output) +
max(MDI input to CRS asserted) +
max(MDI input to CRS deasserted) –
min(MDI input to CRS deasserted)
“
to “
to_timer > 2 x max(t<propdelay>) +
max(TX_EN sampled to MDI output) +
max(MDI input to CRS asserted) +
max(MDI input to CRS deasserted) –
min(MDI input to CRS deasserted) +
max(MII propagation delay)
“

[19] Delete lines 10 through 20 of page 240. This removes the text beginning with "After syncing is done ..." through "... appearing at the MDI to CRS asserted."

[20] Make changes in Table 147-6 on page 224 in the following order:
1. Remove row with Event "TX_EN sampled to CRS asserted"
2. Remove row with Event "TX_EN sampled to CRS deasserted"
3. Change all occurances of "TX_EN" to "TX_EN / TX_ER"
4. Change all occurances of "RX_DV" to "RX_DV / RX_ER"

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*Cl* **148** *SC* **148.4.6.6** *P* **250** *L* **48** # r02-50

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

The arrow seems to have become detached from the connection to a state on another page labelled 'B'.

*SuggestedRemedy*

Reconnect the arrow with the connection labelled 'B'.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **148** *SC* **148.4.6.6** *P* **251** *L* **32** # r02-51

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*Comment Type* **T** *Comment Status* **A** *State Diagrams*

The subscript notation n-a used in relation to plca_txd<SUB>n-a</SUB> doesn't seem to be defined.

*SuggestedRemedy*

Suggest that the text "The 'n-a' subscript indicates the plca_txd conveyed 'a' mii_clock_timer expirations before the most recent one." be added to the end of the plca_txd<3:0> variable definition in subclause 148.4.6.2.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add the following sentence to the end of the plca_txd<3:0> variable definition in subclause 148.4.6.2:
The addition of a subscript 'n-a', i.e., plca_txd<sub>n-a<\sub>, indicates the plca_txd conveyed 'a' mii_clock_timer expirations before the most recent one." be added to the end of the plca_txd<3:0> variable definition in subclause 148.4.6.2.