Cl **146** *SC* **146.5.4.2** *P* **122** *L* **47** # 191

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **D** *PMA Electrical*

The droop measurement specified for Clause 146 and Clause 147 are different and should be aligned.

SuggestedRemedy

Change the droop measurement of Clause 146.5.4.2 to the droop measurement being specified in Clause 147.5.4.2. Change the text of 146.5.4.2 in the following way:
Transmitter output droop shall be measured using test mode 2 in combination with the test fixture shown in Figure 146-17. The magnitude of both the positive and negative droop measured with respect to the initial peak value after the zero crossing and the value 666.67 ns after the initial peak, depicted in Figure 146-xx, shall be less than 10 %. Add also figure 147-13 (with a new reference to Clause 146) to 146.5.4.2 with the 800 ns value changed to 666.67 ns (5 bit times). (10 % droop instead of the original 20 % are used, as the measurement point is now in the middle of the 10 bit times pulse and in the original measurement the span of the inner 9 bits has been used, which is aproximately double the time, thus allowing for a higher droop).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change "Transmitter output droop shall be tested using test mode 2 in combination with the test fixture shown in
Figure 146-17. The transmitter output droop shall be less than 20 % taking the inner 9 bit times of the 10 bit
times pulse duration." to "With the transmitter in test mode 2 and using the transmitter test fixture shown in Figure 146-17, the magnitude of both the positive
and negative droop shall be less than 10%, measured with respect to an initial value at 133.3 ns after the zero
crossing and a final value at 800 ns after the zero crossing." (Editor's note this is modeled after clause 97 and other PHY clauses, removing requirements on the user and specifying the initial value as AFTER the zero crossing to avoid the edge - it is suggested that clause 147 might be modeled on this).

Cl **147** *SC* **147.4.2** *P* **160** *L* **33** # 230

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **D** *PMA*

In Figure 147-11 using high impedance state the exponential decay of the signal is shown after disabling the transmitter. Nevertheless there is no time specified until the signal on the link segment or mixing segment must reach a level of "0".

SuggestedRemedy

If the differential "0" is a must in being able to detect an end of the telegram (e.g. if and ESD is not detected), then there is need to specify an additional time T4, which is smaller than T1, e.g. max. 100 ns), if there is no need to read a "0", then we could keep it like it is (or e.g. make a note, that the maximum time for the signal to reach "0" again in high impedance state is T1).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
TODO:
- Establish T4 in "Table 147-2-DME Timings" as follows: "T4 | Time from line driven state to high-Z or 0 V | - | 800 | - | ns
Note: mind the non-breaking white-spaces
- Squeeze T4 into "Figure 147-11-DME Encoding Scheme"

Cl **147** *SC* **147.5.4.1** *P* **163** *L* **30** # 236

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **D** *PMA*

Clause 147.5.2, test mode 2 describes a transmit amplitude of 1 Vpp +/- 30 %. The text in Clause 147.5.4.1 describes a transmitter output voltage of 1 V +/- 20 %.

SuggestedRemedy

Needs to be aligned. Both Clauses 1 Vpp +/- 20 % or both Clauses 1 Vpp +/- 30 % (which from discussions during the last meetings is likely, what it is intended to be used).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Already dealt with by #683

Cl **147** *SC* **147.5.4.1** *P* **163** *L* **13** # 237

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **D** *PMA*

Test probe capacitance seems to be quite high (30 pF).

SuggestedRemedy

Test probe capacitance should be below 10 pF (due to the higher signal frequency compared to 10BASE-T1L).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **147** *SC* **147.5.4.7** *P* **166** *L* **15** # 242

Graber, Steffen — Pepperl+Fuchs GmbH

Comment Type **T** *Comment Status* **D** *PMA*

A 10 kOhm impedance at 25 MHz would equal to a maximum capacitance of 0.64 pF. This value seems to be very hard to reach in combination, even with small PCB traces,a very low capacitance ESD protection and an MDI connector.

SuggestedRemedy

What is likely meant is a resistance of 10 kohms at DC. Nevertheless specification of an impedance at up to 25 MHz is important to limit the MDI return loss. Technically more realistic would likely be an impedance of 1 kohm @ 25 MHz, which would be equal to approx. 6.4 pF. So suggestion is to change the wording in the following way: In test mode 4, a transmitter supporting the multidrop mode presents to the line a minimum DC resistance of 10 kOhm and a minimum AC impedance of 1 kOhm for frequencies up to 25 MHz. Alternatively the node capacitance can be aligned to 15 pF, which would mean an impedance of 424 ohms at 25 MHz.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Already dealt with by #625

Cl **148** *SC* **148,.4.4.1.1** *P* **178** *L* **34** # 267

KIM, YONG — NIO

Comment Type **TR** *Comment Status* **D** *PLCA*

"PLCA Control state machine generates a BEACON request by way of the tx_cmd variable as specified
in 148.4.5.2". But tx_cmd in 148.4.5.2 does not specify such behavior. And refers back to 148.4.4.1.1.

SuggestedRemedy

please fix it.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Proposed resolution in Clause_148_r2p0_resolution.pdf. Changes are marked with #comment number in the right boxes.

Cl **45** *SC* **45.2.1.174a.5** *P* **37** *L* **30** # 269

KIM, YONG — NIO

Comment Type **TR** *Comment Status* **D** *Registers*

"This action mauy also initiate. in the same package" is not appropriate in so many levels. Delete

SuggestedRemedy

Delete the sentence and make changes to any related text elsewhere.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

This exact same language is found 6 different times in connection with the low power mode of other 802.3 phys in IEEE Std 802.3-2018.

Cl **45** *SC* **45.2.1.174a.5** *P* **37** *L* **32** # 270

KIM, YONG — NIO

Comment Type **TR** *Comment Status* **D** *Registers*

"The behavior of the. shjouild not be relied upon" is not appropirate. Having a control defined for a purpose , low power mode, and having no specification tells me that this is purely vendor implementation paramter.

SuggestedRemedy

Delete the sentence and make changes to any related text elsewhere.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

This exact same language is found 6 different times in connection with the low power mode of other 802.3 phys in IEEE Std 802.3-2018.

Cl **45** *SC* **45.2.1.174e** *P* **42** *L* **21** # 271

KIM, YONG NIO

Comment Type **TR** *Comment Status* **D** *Registers*

Multidrop mode is not clear. If the TX or RX characteristics change, then it may be clearer to provide control around TX or RX parameters. Multidrop mode seems to indicate MAC/RS type of layer function.

SuggestedRemedy

Please use more direct parameter name as appropiorate.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Add "(see Clause 147)" after "multidrop mode over a mixing segment network" in paragraph 45.2.1.174e.4 at P42 L52.

Cl **45** *SC* **45.2.3.58a** *P* **45** *L* **12** # 272

KIM, YONG NIO

Comment Type **TR** *Comment Status* **D** *Registers*

"10BASE-T1L PCS shall be placed." "10BASE-T1L shall accept.". are not right -- loopback ability seems optional. Also a "shall accept data" -- what does it mean to "accept data"?

SuggestedRemedy

Please correct and clarify.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The text "PCS shall be placed..." (referring to loopback modes) occurs 10 times in IEEE Std 802.3-2018 and is the normal way of referring to this operation. "shall accept data on the transmit path... And return it on the receive path" occurs 19 times to further describe loopback.

Cl **45** *SC* **45.2.3.58c** *P* **47** *L* **25** # 273

KIM, YONG NIO

Comment Type **TR** *Comment Status* **D** *PLCA*

Does the network segment work fine when nodes initialize with all defaults (in this case nodeID=255)? If so, then please explain how it works in CL147. If not, please explain why the default value matter.

SuggestedRemedy

Please reference appropirate part of CL147 that describes NodeID=255 default operation, or delete, or add other clarifications needed.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Replace "The default value of bits 3.2289.7:0 is 255." with, "The configurarion of local_nodeID is beyond the scope of this standard. When PLCA operation is disabled these values have no effect."

Cl **45** *SC* **45.2.3.58c** *P* **47** *L* **19** # 274

KIM, YONG NIO

Comment Type **TR** *Comment Status* **D** *PLCA*

If PLCA network does not work with repeaters, and a single multiple access segment cannot go beyond <nn> of nodes, why is the field much greater than necessary? It would be appropirate to set the value range to be the same as the actual segment max, and set the rest of the bits as reserved.

SuggestedRemedy

Please do so.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

PLCA does not have a maximum size specified in Clause 148.

Cl **45** *SC* **45.2.3.58d.1** *P* **47** *L* **44** # 275

KIM, YONG NIO

Comment Type **TR** *Comment Status* **D** *PLCA*

Default value of 20 bit times seems exceessive for system that initailize with the value, when E2E delay for 25 m is 1.25 BT. Adding RX latency (148.4.5.1) delta, which is not spec'ed but the worst case (one could be at 0 us and another could be at 4 us in 147.11) the value could be 41.25 us for 25 m segment. None of these equate to 20 bit times default.

SuggestedRemedy

Please spec appropriate default for system operation when systems initialize from default.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Commenter does not provide sufficient remedy. The default value for PLCA TO_TIMER was considered by the Task Force.

Cl **78** *SC* **78.2** *P* **57** *L* **41** # 279

KIM, YONG NIO

Comment Type **TR** *Comment Status* **D** *Power*

Obvious omission of 10BASE-T1S entry.. Why is it not listed? Objectives list still shjows optional EEE. 147.1 says "DME-based 10BASE-T1S is silent during idle symbols making it inherently energy efficient and without the need for a separate low-power-idle (LPI) mode, as is defined in Clause 78".

SuggestedRemedy

Please complete it. Or change the adopted objectives to reflect the draft.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Master comment 711. Resolve with 711, 432, and 280.

As per clause 147.1, 3rd paragrap "DME-based 10BASE-T1S is silent during idle symbols making it inherently energy efficient and without the need for a separate low-power-idle (LPI) mode, as is defined in Clause 78". Hence LPI signalling is not used/applicable for 10BASE-T1S.

Cl **78** *SC* **78.5** *P* **58** *L* **15** # 280

KIM, YONG NIO

Comment Type **TR** *Comment Status* **D** *Power*

Obvious omission of 10BASE-T1S entry.. Why is it not listed? Objectives list still shjows optional EEE. 147.1 says "DME-based 10BASE-T1S is silent during idle symbols making it inherently energy efficient and without the need for a separate low-power-idle (LPI) mode, as is defined in Clause 78".

SuggestedRemedy

Please complete it. Or change the adopted objectives to reflect the draft.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Master comment 711. Resolve with 711, 432, and 279.

As per clause 147.1, 3rd paragrap "DME-based 10BASE-T1S is silent during idle symbols making it inherently energy efficient and without the need for a separate low-power-idle (LPI) mode, as is defined in Clause 78". Hence LPI signalling is not used/applicable for 10BASE-T1S.

Cl **148** *SC* **148.4.1.1** *P* **175** *L* **6** # 288

KIM, YONG NIO

Comment Type **TR** *Comment Status* **D** *PLCA*

The Figure 148-2 does not belong in CL148. If it becomes desirable to have it, it should be added to CL22 and reivewed for generic model correctness. CL22.1.1 lists summary of major concepts, gRS should be consistent with that

SuggestedRemedy

Delete, or move it to CL22 with modifications to align it to CL22.1.1

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The purpose of a RS is to specify mapping between MAC PLS primitives and MII signals, so the figure belongs to C148 which is an RS. See also Figure 90-2 (TSSI).

Cl **22** *SC* **22.2.2.12** *P* **26** *L* **42** # 298

KIM, YONG NIO

Comment Type **TR** *Comment Status* **D** *PLCA*

Similar to my comment on 22.2.11. The proposed new paragraph has optional behavior that may or may not occur. This text does not belong in CL22.

SuggestedRemedy

Please remove the proposed text, or if required, put appropriate missing text WRT its relevancy (actions, signals, etc).

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Actions and signals are described in clause 148.4.4.1.3, which is referenced by 22.2.2.11 as appropriate.

Cl **45** *SC* **45.2.1.174a** *P* **36** *L* **34** # 316

KIM, YONG NIO

Comment Type **ER** *Comment Status* **D** *Registers*

Low power ability is missing perhaps, before it could be controlled?

SuggestedRemedy

Is low-power mode a mandatory requirement? If so, provide a reference.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Low power ability corresponding to the control bit at 45.2.1.174a is found at bit 1.2295.8 in Table 45-142b.

Cl **104** *SC* **104.5.6.4** *P* **77** *L* **29** # 347

Yseboodt, Lennart Signify

Comment Type **TR** *Comment Status* **D** *PoDL*

"When measuring the ripple voltages for a Type E PD as specified by Table 104â?"7 item (3b), the voltage observed at the MDI/PI with the differential probe where f 1 = 3.18 kHz Â± 1% shall be post-processed with transfer function H 2 (f) specified in Equation (104â?"3) where f 2 = 0.1 MHz Â± 1%."

This puts a post-processing requirement on whomever is making the measurement. Requirement must apply at the MDI.

SuggestedRemedy

Rewrite requirement to a measurable effect on the MDI or make informative sentence if not possible.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Language is exactly parallel to the other 3 types of PDs already in IEEE Std 802.3-2018.

Cl **148** *SC* **148.2** *P* **173** *L* **27** # 365

Matheus, Kirsten BMW AG

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

"exactly" is not right. We might want to give more than 1 transmit opportunity to every node.

SuggestedRemedy

exchange "exactly" with "minimum" or "at least" or remove the sentence

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Solved by #505

Cl **104** *SC* **104.1.3** *P* **73** *L* **10** # 374

Matheus, Kirsten BMW AG

Comment Type **E** *Comment Status* **D** *Power*

The way the paragraph it is written it reads e.g. Type B PSE can be used with Type C PD (for 1000BASE-T1). Is that so? The sentence that begins with A Type C PSD and Type C PD may be compatible with, seems to contain redundant information.

SuggestedRemedy

As I am not sure what is right, I cannot make a proposal. If Type B PSE cannot be used with Type C PD I would reword the complete paragraph such: A Type A PSD and Type A PD can be used with .. A Type B PSD and Type B PD can be used with ... A Type C PSD and ....

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Editors believe that the commenter's interpretation is correct. This is a comment on legacy, unchanged text and should be addressed through maintenance if it is an issue.

Cl **147** *SC* **147.4.2** *P* **161** *L* **9** # 378

Matheus, Kirsten BMW AG

Comment Type **E** *Comment Status* **D** *PMA*

Is 0V confusing.

SuggestedRemedy

Use whatever is correct like "Line needs to be terminated at both ends".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change this:
====
When operating in point-to-point mode, have the PMD drive a differential voltage of 0 V (BI_DA+ = BI_DA-).
====
To this:
====
When operating in point-to-point mode, the PMD drives a BI_DA+ and BI_DA- to the same voltage with 100 Ohm nominal impedance, so that their difference is 0 V.
====
Note: mind the 6 non-breaking white-spaces

Cl **78** *SC* **78.2** *P* **57** *L* **40** # 432

Wienckowski, Natalie General Motors

Comment Type **T** *Comment Status* **D** *Power*

missing row for 10BASE-T1S. This is in Table 78-1 so it needs the parameters defined for it.

SuggestedRemedy

Add row for 10BASE-T1S with appropriate values or add 10BASE-T1S in the same row as 10BASE-T1L.
The same needs to be done for table 78-4 in section 78.5.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Master comment 711. Resolve with 711, 280, 279.

As per clause 147.1, 3rd paragrap "DME-based 10BASE-T1S is silent during idle symbols making it inherently energy efficient and without the need for a separate low-power-idle (LPI) mode, as is defined in Clause 78". Hence LPI signalling is not used/applicable for 10BASE-T1S

Cl **45** *SC* **45** *P* **35** *L* **1** # 459

Jones, Peter Cisco

Comment Type **TR** *Comment Status* **D** *Registers*

Lots of missing forward references, e.g., 45.2.1.174a.5 Low-power (1.2294.11)

SuggestedRemedy

Add references into new clauses

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Commenter provides insufficient remedy. Text of referenced 45.2.1.174a.5 is nearly identical to text describing management bits of other BASE-T1 PHYs, which do not have forward links to the PHY clauses.

Cl **104** *SC* **104.1.3** *P* **73** *L* **6** # 465

Jones, Peter Cisco

Comment Type **TR** *Comment Status* **D** *Power*

PoDL is not applicable to multidrop mixing segment

SuggestedRemedy

Add clairfying statement

Proposed Response *Response Status* **W**

PROPOSED REJECT.

A link segment is defined as a point to point medium between two MDIs. Clause 104.1.3 already says this.

Cl *SC* **146.5.1** *P* **120** *L* **53** # 480

Jones, Peter Cisco

Comment Type **TR** *Comment Status* **D** *PMA Electrical*

This says "Direct Power Injection (DPI) and 150 ? emission tests for noise immunity and emission as per 146.5.1.1
and 146.5.1.2 may be used to establish a baseline for PHY EMC performance. ". Why is this a MAY? Are there other ways to do it defined in the standard? Should this trigger a PICS?

SuggestedRemedy

Review text, change is needed.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change "may" to "can"

Cl **146** *SC* **146.5.4.1** *P* **122** *L* **32** # 485

Jones, Peter Cisco

Comment Type **TR** *Comment Status* **D** *PMA Electrical*

I'd really like some overview text in 146.1 Overview explaining the need for 2 voltage levels

SuggestedRemedy

Add text to overview section explaining why we have 2 voltage levels

Proposed Response *Response Status* **W**

PROPOSED REJECT.
while text describing how to choose the voltage level might be useful, text explaining why we need it is out of scope.

Cl **148** *SC* **148.2** *P* **173** *L* **20** # 502

Jones, Peter Cisco

Comment Type **TR** *Comment Status* **D** *PLCA*

Change "its assigned unique node ID" to "its assigned unique node ID (set via management control)".

SuggestedRemedy

make suggested change

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Proposed resolution in Clause_148_r2p0_resolution.pdf. Changes are marked with #comment number in the right boxes.

Cl **148** *SC* **148.2** *P* **173** *L* **25** # 504

Jones, Peter Cisco

Comment Type **TR** *Comment Status* **D** *PLCA*

Text says "Transmit opportunities are generated in a round-robin fashion". This should be the simplest, but not the only, option. Need to enable management to tweak this to weight the shares of the media.

SuggestedRemedy

remove "round-robin fashion"

Proposed Response *Response Status* **W**

PROPOSED REJECT.
This is descriptive text that explains what the specification actually does. The commenter is basically asking for a new feature which requires functional changes to the normative parts.

Cl **148** *SC* **148.4.5.1** *P* **180** *L* **14** # 509

Jones, Peter Cisco

Comment Type **TR** *Comment Status* **D** *PLCA*

Need to add some text stating that local_nodeID must be set before setting plca_en = O

SuggestedRemedy

make suggested change

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Even if this is a very reasonable thing to do, making it normative would be vexatious.

In fact, this would prevent a user to assign IDs using an high level protocol while starting with PLCA enabled and all PHYs having the same local_nodeID.

As shown in http://www.ieee802.org/3/cg/public/adhoc/beruto_3cg_mixing_PLCA_with_non_PLCA_enabled_nodes.pdf, a network featuring a mix of PLCA-enabled and non PLCA-enabled nodes (including the case of nodes having the same ID), behaves just like a plain CSMA/CD network.

Cl **148** *SC* **148.4.5.1** *P* **181** *L* **20** # 512

Jones, Peter Cisco

Comment Type **TR** *Comment Status* **D** *PLCA*

Figure 148-4-PLCA Control state diagram (1 of 2) - Need to check local_nodeID greater than MAX_ID - plca_en = ON * local_nodeID != 0 * local_nodeID < MAX_ID

SuggestedRemedy

make suggested change

Proposed Response *Response Status* **W**

PROPOSED REJECT.
MAX_ID is not defined for nodes with local_nodeID != 0. Besides it's a variable, not a constant.

The reason for this is to have MAX_ID configured only on the PLCA coordinator node (i.e. the one with local_nodeID = 0) and just don't care on slave nodes, thus minimizing the required system configuration. State diagrams are also designed to take this into account.

Cl **148** *SC* **148.4.5.3** *P* **185** *L* **3** # 516

Jones, Peter Cisco

Comment Type **TR** *Comment Status* **D** *PLCA*

Check MAX_ID range. Both 0 and 255 don't make sense. Range should be 1 - 254

SuggestedRemedy

make suggested change

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Solved by #527

Cl **148** *SC* **148.4.6.1** *P* **187** *L* **45** # 521

Beruto, Piergiorgio Canova Tech Srl

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

Exit conditions from HOLD state in figure 148-6 are potentially ambiguous with respect to "RECV_TIMER" expression

SuggestedRemedy

In figure 148-6 append "* RECV_TIMER not done" in all the transitions from HOLD state, except the connection between the HOLD state and the "A" off-page connector.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Proposed resolution in Clause_148_r2p0_resolution.pdf. Changes are marked with #comment number in the right boxes.

Cl **148** *SC* **148.4.6.1** *P* **187** *L* **25** # 523

Beruto, Piergiorgio Canova Tech Srl

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

Exit conditions from state "RECEIVE" in figure 148-6 are potentially ambiguous

SuggestedRemedy

In figure 148-6 append condition "* plca_txen = FALSE" to the transition from "RECEIVE" to "IDLE" state

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Proposed resolution in Clause_148_r2p0_resolution.pdf. Changes are marked with #comment number in the right boxes.

Cl **147** *SC* **147.3.3.5** *P* **156** *L* **21** # 524

Beruto, Piergiorgio — Canova Tech Srl

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

In figure 147-8 the condition in the transition from "WAIT_SSD" to "FALSE_CARRIER" state is buggy. From "WAIT_SSD" state you have to make a one-time decision to go in "FALSE_CARRIER" or "PRE" state depending on whether the received symbol is the second SSD or not.

SuggestedRemedy

In figure 147-8 remove the "* Rxn ? SYNC" from the condition in the transition from "WAIT_SSD" to "FALSE_CARRIER" state.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **147** *SC* **147.5.4.4.2** *P* **164** *L* **37** # 526

Beruto, Piergiorgio — Canova Tech Srl

Comment Type **T** *Comment Status* **D** *PSD*

Lower PSD mask is too low, achieving proper SNR to keep target BER of 10^-10 is impossible under worst case noise conditions. Rising the lower PSD mask by 8db still yields 0.8Vpp of signal.

SuggestedRemedy

In equation 147-2 change "-95 + 2f" to "-87 + 2f"
In equation 147-2 change "-55 - 2f" to "-47 - 2f"
Update figure 147-15 to reflect the changes

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.3.58c.1** *P* **47** *L* **18** # 527

Beruto, Piergiorgio — Canova Tech Srl

Comment Type **T** *Comment Status* **D** *PLCA*

[MASTER] [MAX_ID] MAX_ID definition is not consistent to its usage in Clause 148

SuggestedRemedy

Replace "define the number of maximum nodes that can be handled on the PLCA network. The default value of bits 3.2289.15:8 is 8" with "define the highest node ID getting a transmit opportunity before a new BEACON is generated. The default value of bits 3.2289.15:8 is 7"

In Table 45-220c replace "8 bit field indicating the max number of nodes on the PLCA network" with "8 bit field indicating the highest node ID getting a transmit opportunity"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **30** *SC* **30.3.9.2.3** *P* **32** *L* **11** # 528

Beruto, Piergiorgio — Canova Tech Srl

Comment Type **T** *Comment Status* **D** *PLCA*

[MAX_ID] PLCAMaxID definition is not consistent to its usage in Clause 148

SuggestedRemedy

Replace "The value of aPLCAMaxID is assigned to define the maximum number of nodes that can be handled on the PLCA network" with "The value of aPLCAMaxID is assigned to define the highest node ID getting a transmit opportunity before a new BEACON is generated"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **148** *SC* **148.4.5.4** *P* **185** *L* **45** # 529

Beruto, Piergiorgio — Canova Tech Srl

Comment Type **T** *Comment Status* **D** *PLCA*

[MAX_ID] MAX_ID is not consistent to its intended usage.

SuggestedRemedy

Replace "TO_TIMER * MAX_ID" with "TO_TIMER * (MAX_ID + 1)"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **148** *SC* **148.4.6.1** *P* **186** *L* **26** # 530

Beruto, Piergiorgio — Canova Tech Srl

Comment Type **T** *Comment Status* **D** *PLCA*

[MAX_ID] MAX_ID is not consistent to its intended usage.

SuggestedRemedy

Replace "TO_TIMER * MAX_ID" with "TO_TIMER * (MAX_ID + 1)"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **148** *SC* **148.5.4.4** *P* **192** *L* **50** # 531

Beruto, Piergiorgio — Canova Tech Srl

Comment Type **T** *Comment Status* **D** *PLCA*

[MAX_ID] MAX_ID is not consistent to its intended usage.

SuggestedRemedy

Replace "TO_TIMER * MAX_ID" with "TO_TIMER * (MAX_ID + 1)"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **148** *SC* **148.4.5.2** *P* **184** *L* **52** # 532

Beruto, Piergiorgio — Canova Tech Srl

Comment Type **T** *Comment Status* **D** *PLCA*

[MAX_ID] MAX_ID description is not consistent to its usage in Clause 148

SuggestedRemedy

Replace "Indicates the maximum number of PHYs that can join the multidrop network" with "Indicates the maximum node ID getting a transmit opportunity before the node with local_nodeID = 0 generates a new BEACON"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **148** *SC* **148.4.5.1** *P* **180** *L* **11** # 570

Laubach, Mark — Broadcom

Comment Type **TR** *Comment Status* **D** *PLCA*

"PLCA control variables". Where are these? Suggest xref'ing to the appropriate subclause, e.g. 148.4.5.2. The more signficant problem is that there is I can't find the term "default" and/or "default value" for any variable in 148.4.5.2. Please indicate in 148.4.5.2 what the default value is for each variable or consider providing a table somewhere appropriate with specific variables and their corresponding appropriate default value to make this statement correct.

SuggestedRemedy

Add the appropriate default value for each variable in 148.4.5.2 as referred to by the paragraph at line 11.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
This text is not supposed to be normative, but rather a description of the normative state diagram in Fig 148-4 and 148-5.

Proposed resolution in Clause_148_r2p0_resolution.pdf. Changes are marked with #comment number in the right boxes.

Cl **01** *SC* **1.4.390a** *P* **24** *L* **23** # 596

Lapak, Jeffrey — UNH-IOL

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

Definition of PLCA is unclear, suggest improving text to add clarity.

SuggestedRemedy

Change sentence from
"A method for creating transmit opportunities at proper times in order to avoid physical collisions on the medium and improve performance of half-duplex 10BASE-T1S multidrop networks on mixing segments"

to "A method for generating round-robin transmit opportunties for 10BASE-T1S multidrop PHYs operating on mixing segments in order to avoid physical collisions on the medium and improve performance"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Replace, "A method for creating transmit opportunities at proper times in order to avoid physical collisions on the medium and improve performance of half-duplex 10BASE-T1S multidrop networks on mixing segments"

with, "A method for generating transmit opportunties for 10BASE-T1S multidrop PHYs operating on mixing segments in order to avoid physical collisions on the medium and improve performance"

Cl **148** *SC* **148.1** *P* **173** *L* **10** # 599

KIM, YONG — NIO

Comment Type **TR** *Comment Status* **D** *PLCA*

says "MII. are compatible with the gRS. ". The statement may become true if all approporate changes to CL22 are made to ensure this statement to be true. CL22 conveys PLS signals to MII. CL148 performs medium access control. So they are not compatible prior to changes.. Also not clear is what is being conveyed as "compatible".

SuggestedRemedy

Delete the sentence, and any other occurance of similar statement. If this statement is kept (against this comment), clarify what is meant to be "compatible"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Proposed resolution in Clause_148_r2p0_resolution.pdf. Changes are marked with #comment number in the right boxes.

Cl **148** *SC* **148.4.4.1.1** *P* **178** *L* **34** # 600

KIM, YONG NIO

Comment Type **T** *Comment Status* **D** *PLCA*

22.2.2.4 is green -- shouild be xref (editorial). BEACON request referenced modified in 22.2.2.4 text. This prompted me to question how best plca should be specified wrt CL22. Ideally,all PLCA related functions should be in CL148, and limit changes to CL22 to only that the necessary minimum, such that old RS reference is CL22 ("PLCA function disabled"), and PLCA RS is CL148. Changes to CL22 and CL148 are not made in such clear partition.

SuggestedRemedy

Move all CL148 related changes in CL22 into CL148, or provide convincing rationale why PLCA functions are distribtued between the two clauses.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Xref solved by #137

WRT CL22/CL148 split:
PLCA defines new MII codes (ignored when PLCA is not supported) in tables 22-1 and 22-2, which belong to CL22.
This is what have been done for EEE as well.

Cl **148** *SC* **148.4.4.1.2** *P* **178** *L* **51** # 602

KIM, YONG NIO

Comment Type **TR** *Comment Status* **D** *PLCA*

"thus request, the PHY shall asset the CRS..." has two problems. What PHY is "the PHY", and how does PHY assert CRS in accordance to CL148 state diagram

SuggestedRemedy

Please fix it. If fixable.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Solved by #603 and #649

Cl **148** *SC* **148.4.4.1.2** *P* **178** *L* **51** # 603

KIM, YONG NIO

Comment Type **TR** *Comment Status* **D** *PLCA*

"A Commit request shall not.. PHY. RX_DV.." has two problems. What PHY is "the PHY", and how does the PHY know not to assert RX_DV signal in accordance to CL148 state diagram.

SuggestedRemedy

Please fix it. If fixable.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

As stated in the same subclause "PHY specifications are free to map the COMMIT request to any suitable line coding as long as the requirement defined herein are met."

The purpose of this sentence is to ensure that whatever mapping is chosen in specific PHY clauses for the COMMIT request, this one is not interpreted as normal data (asserting RX_DV).

Suggested resolution should clarify this better.

Proposed resolution in Clause_148_r2p0_resolution.pdf. Changes are marked with #comment number in the right boxes.

NOTE: CRS assertion is not to be specified here (it's implicit in CRS definition). See resolution of #649

Cl **147** *SC* **147.5.4** *P* **162** *L* **46** # 612

Baggett, Tim Microchip

Comment Type **T** *Comment Status* **D** *PMA*

T1S defines two types of segments: point-to-point and a multi-drop mixing segment. Different tests were defined in beruto_3cg_02a_117.pdf for each segment type. The test fixtures in Clause 147 currently specify a 100 Ohm load resistance as would be seen by a point-to-point transmitter. However, due to the two 100 Ohm edge termination resistances in a mixing segment, a multi-drop transmitter will see the 50 Ohm parallel combination.

SuggestedRemedy

* Page 162, Section 147.5.4, Line 46: Replace sentence:
"Where a load is not specified, the transmitter shall meet the requirements of this section with a 100 Ohm ± 0.1 % resistive differential load connected to the transmitter output."

With:
"Where a load is not specified, the transmitter shall meet the requirements of this section with a resistive differential load connected to the transmitter output. The transmitter differential load is 100 Ohms for point-to-point segments, and 50 Ohms for mixing segments."

* Page 163, Section 147.5.4.1, Figure 147-12: Replace "100 Ohm +- 0.1%" with "Rload +- 0.1%" and add "For point-to-point segments Rload is 100 Ohms and for mixing segments Rload is 50 Ohms." to line 4.

* Page 164, Section 147.5.3, Figure 147-14: Add 100 Ohm load resistor, RL, to output of Transmitter Under Test for mixing segments. For point-to-point segments, the 100 Ohm input impedance of the balun suffices.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **148** *SC* **148.4.6.1** *P* **187** *L* **33** # 613

Baggett, Tim Microchip

Comment Type **T** *Comment Status* **D** *PLCA*

When a PLCA-enabled PHY_A transmits the ESD end-of-frame, it will deassert CRS to the MAC. However, if another PLCA-enabled PHY_B transmits a SYNC Commit in the very next TO, PHY_A will reassert CRS. The result is that PHY_A will deassert CRS for less than the InterPacketGap1 period of 64 bits. If the PHY_A MAC has more frames to transmit, it will not attempt transmission because the short InterPacketGap. This may cause the PHY_A MAC to possibly miss its next TO.

SuggestedRemedy

The PHY must not deassert CRS for less than the InterPacketGap1 period of 64 bits. This will allow every PHY MAC the ability to attempt transmission in any TO, receive a COL, and be prepared to transmit once its TO finally arrives. The result is a much more efficient transmission of packets across the PLCA PHYs.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Proposed resolution in Clause_148_r2p0_resolution.pdf. Changes are marked with #comment number in the right boxes.

Cl **147** *SC* **147.5.4** *P* **162** *L* **46** # 619

Brandt, David Rockwell Automation

Comment Type **T** *Comment Status* **D** *PMA*

A link segment and mixing segment differ in the impedance seen by the transmitter

SuggestedRemedy

Replace:
Where a load is not specified, the transmitter shall meet the requirements of this section with a 100 O ± 0.1 % resistive differential load connected to the transmitter output.

With:
Where a load is not specified and multidrop mode is supported and enabled, the transmitter shall meet the requirements of this section with a 50 O ± 0.1 % resistive differential load connected to the transmitter output. Otherwise the transmitter shall meet the requirements of this section with a 100 O ± 0.1 % resistive differential load connected to the transmitter output.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **147** *SC* **147.5.4.3** *P* **164** *L* **4** # 622

Brandt, David — Rockwell Automation

Comment Type **T** *Comment Status* **D** *PMA*

Test implies only link segment

SuggestedRemedy

Replace:
The maximum jitter at the transmitter side shall be less than ±5 ns symbol-to-symbol jitter.

With:
The maximum jitter at the transmitter side shall be less than ±5 ns symbol-to-symbol jitter, including when multidrop mode is supported and enabled.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Append the following to end of 147.5.4. "Unless otherwise specified, the specifications in 147.5.4.1 through 147.5.4.7 apply to transmitters in both point-to-point and multidrop mode, if supported."

Cl **147** *SC* **147.5.4.7** *P* **166** *L* **14** # 625

Brandt, David — Rockwell Automation

Comment Type **T** *Comment Status* **D** *PMA*

Transmitter impedance is specified elsewhere

SuggestedRemedy

Replace:
In test mode 4, a transmitter supporting the multidrop mode presents a minimum of 10 kO impedance to the
line from DC to 25 MHz.

With:
In test mode 4, a transmitter with multidrop mode supported and enabled shall present the minimum parallel impedance across the MDI attachment points as specified in 147.9.2 MDI electrical specification.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.1.174c** *P* **40** *L* **3** # 635

Thompson, Geoff — GraCaSI S.A.

Comment Type **TR** *Comment Status* **D** *Registers*

THE TEXT: "The 3 default values for each bit should be chosen so that the initial state of the device upon power up or reset is a 4 normal operational state without management intervention." is an editorial note requiring further definition of the draft. It indicates that the draft was not complete and not qualified for WG ballot.

SuggestedRemedy

Complete definition of these default values as well as other incomplete items. This constitutes a lack of completeness of the draft, restart the initial WG Ballot.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

No change to draft required.

Table 45-142c clearly shows that 0 0 0 for bits 1.2298.15:13 are Normal (non-test) operation. And 45.2.1.174c.1 clearly states, "The default value for bits 1.2298.15:13 is zero."

Cl **147** *SC* **147.5.2** *P* **162** *L* **33** # 680

Donahue, Curtis UNH-IOL

Comment Type **T** *Comment Status* **D** *Test Mode*

This paragrpah only describes the transmitter behavior when two conditions are met, i) when "multidrop option is supported", and ii) "test mode 4 is enabled". I see no language suggesting that test mode 4 is optional to implement, therefore it can be expected that a transmitted can be configured for test mode 4 even when the multidrop option is not supported.

SuggestedRemedy

Suggest modifying this text to better describe the transmitters behavior when test mode 4 is enabled.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change this:
====
When the multidrop option is supported and test mode 4 is enabled, the transmitter presents a high impedance to the line as specified in 147.4.2 for the 'I' symbol in multidrop mode.
====
to this:
====
PHYs supporting multidrop mode shall implement test mode 4. When test mode 4 is enabled and the PHY is configured for multidrop mode, the transmitter shall present a high impedance termination to the line as specified in 147.4.2 for the 'I' symbol when operating in multidrop mode.
PHYs not supporting multidrop mode are not required to implement test mode 4. When test mode 4 is enabled and the PHY is not configured for multidrop mode, the transmitter behavior is undefined and left up to the implementer.
====

Cl **147** *SC* **147.5.2** *P* **162** *L* **26** # 683

Donahue, Curtis UNH-IOL

Comment Type **T** *Comment Status* **D** *Test Mode*

The paragraph that describes the transmitter behavior in test mode 2 curiously seems to imply a conformance requirement of 1Vpp +/- 30%. However, this is not listed in 147.5.4.2 (the output droop subclause). Since this test mode is used to measure the droop over an 800ns period, a voltage requirement doesn't make much sense. Additionally, the 1Vpp +/- 30% conflicts with the 1Vpp +/- 20% defined in 147.5.4.1.

SuggestedRemedy

Remove "at 1 Vpp +/- 30% amplitude".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.1.174a** *P* **36** *L* **29** # 705

Kabra, Lokesh Synopsys Inc

Comment Type **T** *Comment Status* **D** *Registers*

Bit 1.2294.13 "Loopback" is a copy of Bit 1.0.0 (currently reserved). Suggest to map this one to 1.2294.0 to keep the bit position same in both registers. This make it similar to poisition of Reset and Low Power bits that have same offset as in register 1.0

SuggestedRemedy

Change mapping to bit "1.2294.0" globally (multiple places)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change 1.2294.13 to Reserved Value always zero, RO

Insert new bottom row of Table 45-142a for 1.2294.0 Loopback | 1 = Enable loopback mode 0= Disable loopback mode | R/W

Adjust reserved row (to 1.2294.9:1)

Move 45.2.1.174a.3 Loopback (1.2294.13) subclause after 45.2.1.174a.6 EEE functionality and make it 1.2294.0, and change references to 1.2294.13 to be 1.2294.0 (3 instances) in that paragraph.

Change MM164 and MM165 PICS (P51) to 1.2294.0

Change reference to 1.2294.13 in 146.5.7 PMA Local Loopback from 1.2294.13 to 1.2294.0 (add cross ref),

Change reference to 1.2294.13 in Table 146-4 to 1.2294.0

Change reference to 1.2294.13 in Cl 146 PICS PMAE23 (P142)

Cl **45** *SC* **45.2.1.174b** *P* **38** *L* **15** # 706

Kabra, Lokesh — Synopsys Inc

Comment Type **T** *Comment Status* **D** *Registers*

"Low Power " control bit is Bit 1.2294.11. Suggest to map "Low Power Ability" to 1.2295.11 (currently reserved) to keep the bit position same in both registers. This helps in avoiding bit shifting when software wants to mask setting of Low-Power with "Low-Power ability" read from this register

SuggestedRemedy

Change mapping to bit "1.2295.11" globally (multiple places)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Copy the content for row "1.2295.8" into the Reserved row "1.2295.11" and delete row "1.2295.8".

Replace the Reserved row "1.2295.7:3" with "1.2295.8:3".

Change "45.2.1.174b.5 Low-power ability (1.2295.8)" to 45.2.1.174b.5 Low-power ability (1.2295.11), change 2 occurances or "(1.2295.8)" in the clause to "(1.2295.11)" and move to after 45.2.1.174b.2 2.4 Vpp operating mode ability (1.2295.12).

Cl **45** *SC* **45.2.1.174d** *P* **40** *L* **39** # 708

Kabra, Lokesh — Synopsys Inc

Comment Type **T** *Comment Status* **D** *Registers*

Bit 1.2299.13 "Loopback" is a copy of Bit 1.0.0 (currently reserved). Suggest to map this one to 1.2294.0 to keep the bit position same in both registers. This make it similar to poisition of Reset and Low Power bits that have same offset as in register 1.0

SuggestedRemedy

Change mapping to bit "1.2299.0" globally (multiple places)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change 1.2299.13 to Reserved Value always zero, RO

Insert new bottom row of Table 45-142d for 1.2290.0 Loopback | 1 = Enable loopback mode 0= Disable loopback mode | R/W

Adjust reserved row (to 1.2299.9:1)

Move 45.2.1.174d.3 Loopback (1.2299.13) subclause after 45.2.1.174d.5 Multidrop mode and make it 1.2290.0, and change references to 1.2299.13 to be 1.2299.0 (3 instances) in that paragraph.

Change MM187, MM188, MM189, and MM PICS (page 53) to 1.2299.0

Change reference to 1.2299.13 in 147.5.4.6 Alien crosstalk noise rejection (page 165, line 50) from 1.2299.13 to 1.2299.0 (add cross ref)

Cl **45** *SC* **45.2.1.174e** *P* **42** *L* **17** # 709

Kabra, Lokesh — Synopsys Inc

Comment Type **T** *Comment Status* **D** *Registers*

"Low Power " control bit is Bit 1.2299.11. Suggest to map "Low Power Ability" to 1.2230.11 (currently reserved) to keep the bit position same in both registers. This helps in avoiding bit shifting when software wants to mask setting of Low-Power with "Low-Power ability" read from this register

SuggestedRemedy

Change mapping to bit "1.2300.11" globally (multiple places)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

This remedy assumes that the resolution to #710 has been implemented.

Delete row for Bit 1.2299.11 from Table 45-142d and replace reserved row bits "1.2299.9:0" with "1.2299.11:0".

Insert row for
1.2300.11 Low-power
1 = Low-power mode
0 = Normal operation
R/W

into Table 45-142e and replace reserved row bits "1.2300.12:10" with 1.2300.12".

Move 45.2.1.174d.4 Low-power (1.2299.11) subclause after 45.2.1.174e.1 10BASE-T1S loopback ability (1.2300.13) and change references to 1.2299.11 to be 1.2300.11 (3 instances) in that paragraph and change reference to 1.2299.11 to be 1.2300.11 in the clause header.

Replace, " 1.2299.11" with "1.2300.11" on page 42, line 48.

Cl **78** *SC* **78.1.3.3.1** *P* **57** *L* **22** # 711

Kabra, Lokesh — Synopsys Inc

Comment Type **E** *Comment Status* **D** *Power*

In Table 78-1, delete row corresponding to 10BASE-T1S; As per clause 147.1, 3rd paragrap "DME-based 10BASE-T1S is silent during idle symbols making it inherently energy efficient and without the need for a separate low-power-idle (LPI) mode, as is defined in Clause 78". Hence LPI signalling is not used/applicable for 10BASE-T1S

SuggestedRemedy

Delete row "10BASE-T1S"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Master comment 711. Resolve with 432, 280, 279.

Cl **148** *SC* **148.4.2** *P* **175** *L* **32** # 715

Kabra, Lokesh — Synopsys Inc

Comment Type **T** *Comment Status* **D** *PLCA*

As per Clause 90.1, paragraphy 2, "The TSSI is defined for the full-duplex mode of operation only". PLCA is defined/active for half-duplex only. Hence they are not operating simultaneously.

SuggestedRemedy

Delete "Interaction with optional Clause 90 (Ethernet support for time synchronization protocols) is also depicted."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Proposed resolution in Clause_148_r2p0_resolution.pdf. Changes are marked with #comment number in the right boxes.

Cl **148** *SC* **148** *P* **176** *L* **33** # 716

Kabra, Lokesh — Synopsys Inc

Comment Type **T** *Comment Status* **D** *PLCA*

Same reasons as above

SuggestedRemedy

Delete 148.4.2.1, Correct Fig 148-3 to remove optional "SFD Detect TX" block

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Proposed resolution in Clause_148_r2p0_resolution.pdf. Changes are marked with #comment number in the right boxes.