Cl **30** *SC* **30.5.1.1.16** *P* *L* # 247

Murray, Brian Analog Devices

Comment Type **T** *Comment Status* **A** *RS-FEC*

The aFECmode attribute should be updated to add 100BASE-T1L.

SuggestedRemedy

In the BEHAVIOUR DEFINED AS section of 30.5.1.1.15:

Modify the first paragraphs as follows:

"A read-write value for a PHY that supports an optional FEC sublayer or ability that indicates the mode of operation of the FEC sublayer or ability for forward error correction across the MDI (see 65.2, Clause 74, Clause 91, and Clause 108 and Clause 190)."

Add a new paragraph after the third paragraph as follows:

"For a 100BASE-T1L PHY, a SET operation is not allowed, and for a GET operation the condition where the RS-FEC is enabled for the link, maps to the enumeration "enabled", and the condition where RS-FEC is not enabled for the link maps to the enumeration "disabled"."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

(minor rewording and correction that this is to change section 30.5.1.1.16)

In the BEHAVIOUR DEFINED AS section of 30.5.1.1.16:Modify the first paragraphs as follows:
"A read-write value for a PHY that supports an optional FEC sublayer or ability that indicates the mode of operation of the FEC sublayer or ability for forward error correction across the MDI (see 65.2, Clause 74, Clause 91, Clause 108, and Clause 190)."

Add a new paragraph after the third paragraph as follows:"A SET operation is not allowed for a 100BASE-T1L PHY. When RS-FEC is enabled for a 100BASE-T1L link, a GET operation maps to the enumeration "enabled". When RS-FEC is not enabled for a 100BASE-T1L link, a GET operation maps to the enumeration "disabled"."

Cl **30** *SC* **30.5.1.1.10** *P* *L* # 245

Murray, Brian Analog Devices

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

The aFalseCarriers MAU attribute should be updated to add 100BASE-T1L.

SuggestedRemedy

Change the BEHAVIOUR DEFINED AS section of 30.5.1.1.10 as follows:

"A count for the number of false carrier events during IDLE in 100BASE-X, 100BASE-T1L and 1000BASE-X links. This counter does not increment at the symbol rate. For 100BASE-X and 100BASE-T1L, it can increment after a valid carrier completion at a maximum rate of once per 100 ms until the nextCarrierEvent"

Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.5.1.1.15** *P* *L* # 246

Murray, Brian Analog Devices

Comment Type **T** *Comment Status* **A** *RS-FEC*

The aFECAbility attribute should be updated to add 100BASE-T1L.

SuggestedRemedy

Change the BEHAVIOUR DEFINED AS section of 30.5.1.1.15 as follows:

"A read-only value that indicates if the PHY supports an optional FEC sublayer or ability for forward error correction across the MDI (see 65.2, Clause 74, Clause 91, and Clause 108 and Clause 190).

If a Clause 45 MDIO Interface is present, then this attribute maps to the FEC capability register
(see 45.2.10.2 or, 45.2.1.107 or 45.2.3.75b).;"

Response *Response Status* **C**

ACCEPT.

Cl **FM** *SC* **FM** *P* **1** *L* **33** # 57

Ran, Adee Cisco Systems

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

"This adds"

SuggestedRemedy

Change to "This amendment adds"

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.8.2.1** *P* **12** *L* **7** # 205

Graber, Steffen — Pepperl+Fuchs SE

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

The MDI RL Specification is requiring 16 dB up to 40 MHz and then rolling off with 20 dB per decade for higher frequencies. This MDI RL specification has been derived from 1000BASE-T, where the existing 1000BASE-T transformers meet this specification and typically the PHY chip and also the transformers are mounted very close to the RJ45 connector (or the transformers are even integrated), so that PCB capacitances are low. Also the powering is applied as common mode powering to the data pairs. For 100BASE-T1L the powering is applied differentially on the data pair, using a separate power feeding inductor, which has additional inter- and intrawinding capacitances. For higher power ports, these inductors, but also a typically needed common mode choke have a significantly larger size typically also causing additional capacitive load. Due to the differentially applied supply voltage also the EMC protection circuits, which need to be able to withstand higher voltages, typically provide a higher capacitance than low voltage ESD clamping diodes designed for 1000BASE-T.

SuggestedRemedy

Due to the higher needed capacitance in a practical circut, it is suggested, to move the start the roll-off of the MDI RL at the high frequency side from 40 MHz to 20 MHz (leading to a similar MDI RL at Nyquist (10 dB @ 40 MHz) than for 10BASE-T1L (10.4 dB @ 3.75 MHz)). This would result in higher signal reflections and thus a lower signal energy at the receiver (about 10 %), nevertheless for powered systems it seems to be necessary to be able to do a practical circuit design. If accepted, please change the second line in the formula 190-19 from "16 2 <= f < 40" to "16 2 <= f < 20" and the third line in the formula from "10 - 20 * log10(f/80) 40 <= f <= 100" to "16 - 20 * log10(f/20) 20 <= f <= 100" (at least for powered systems). Needs also discussion, if there is need to distinguish powered and non-powered systems related to the maximum possible link segment length/IL (due to the higher signal losses and additional reflections caused by the powering circuit).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert Editor's note at P125 L2 (190.8.2.1) stating:Editor's Note (to be removed prior to D 2.2 circulation) - The MDI return loss is left open for comment. Experts are encouraged to evaluate PHY and MDI passive component tradeoffs to see whether there is a better balance than the specification in D2.0. See presentation https://www.ieee802.org/3/dg/public/May_2025/graber_3dg_01_09092025.pdf .

Cl **00** *SC* **0** *P* **12** *L* **21** # 254

McClellan, Brett — Marvell

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

change 'Clause TBD' to 'Clause 168'

SuggestedRemedy

change 'Clause TBD' to 'Clause 168'

Response *Response Status* **C**

ACCEPT.

Cl **FM** *SC* **FM** *P* **12** *L* **21** # 156

Zimmerman, George — CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

Fill in clause TBD on 802.3dk abstract.

SuggestedRemedy

Replace "TBD" with "168".

Response *Response Status* **C**

ACCEPT.

Cl **FM** *SC* **FM** *P* **12** *L* **21** # 206

Wienckowski, Natalie — IVN Solutions LLC

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

P802.3dk is not in SA ballot. It adds Clause 168.

SuggestedRemedy

Change "TBD" to 168.

Response *Response Status* **C**

ACCEPT.

Cl **FM** *SC* **FM** *P* **12** *L* **26** # 15

Brown, Matt — Alphawave Semi

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

The abstract for 802.3dj was updated in D2.0.

SuggestedRemedy

Update 802.3dj abstract with text from D2.0.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace 802.3dj abstract with: This amendment includes changes to IEEE Std 802.3-2022, and adds Clause 174 through Clause 187 and Annex 174A through Annex 186A. This amendment includes Physical Layer specifications and management parameters for 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s operation.

Editor to check 802.3dj D2.1 comment resolution for any additional change to the abstract.

Cl **FM** *SC* **FM** *P* **12** *L* **28** # 207

Wienckowski, Natalie — IVN Solutions LLC

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

P802.3dj is in WG ballot, v 2.1, and has finalized the Annexes.

SuggestedRemedy

Change "<annexes>" to Annex 174A through Annex 186A.

Response *Response Status* **C**

ACCEPT.

Cl **1** *SC* **1.3** *P* **21** *L* **4** # 193

Huber, Thomas — Nokia

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

If there are no new normative references, this clause should not be present.

SuggestedRemedy

Delete clause 1.3

Response *Response Status* **C**

ACCEPT.

Cl **1** *SC* **1.3** *P* **21** *L* **4** # 148

Maguire, Valerie — Copperopolis; aff'l w/ CME Consulting and Cisco

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

There are no normative references.

SuggestedRemedy

Delete clause 1.3 header and contents.

Response *Response Status* **C**

ACCEPT.

Cl **1** *SC* **1.3** *P* **21** *L* **4** # 208

Wienckowski, Natalie — IVN Solutions LLC

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

Delete empty subclause

SuggestedRemedy

Delete 1.3 heading and editing instructions.

Response *Response Status* **C**

ACCEPT.

Cl **1** *SC* **1.3** *P* **21** *L* **7** # 58

Ran, Adee — Cisco Systems

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

There are no new normative references, so no change required in 1.3.

SuggestedRemedy

Remove subclause 1.3 from the amendment.

Response *Response Status* **C**

ACCEPT.

Cl **1** *SC* **1.4.206** *P* **21** *L* **22** # 157

Zimmerman, George — CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

The font sizes for 96, 97, 146, and 147 appear to be smaller than the text.
It appears systematic, and also occurs on line 36, and P22 line 22, but only seems to show up in clause 1.

SuggestedRemedy

Make font size consistent for external "Clause #" references on P21 L22 and P22 L22

Response *Response Status* **C**

ACCEPT.

Cl **1** *SC* **1.4.341a** *P* **21** *L* **40** # 194

Huber, Thomas — Nokia

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

The new definition in this subclause is for follower, so it should probably point to the old definition for slave

SuggestedRemedy

Change 1.4.389 to 1.4.535

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accomodated by comment 59

Cl **1** *SC* **1.4.341a** *P* **21** *L* **40** # 59

Ran, Adee — Cisco Systems

Comment Type **TR** *Comment Status* **A** *Editorial*

The new definition FOLLOWER PHY incorrectly refers to 1.4.389 (which is "master") instead of 1.4.535 ("slave").
Also, the referenced definition says nothing about what "follower" is; the reader needs to read Annex K (which is informative) to find what this new term means.
Also, existing definitions in 1.4 do not refer to other definitions by number but rather by name. For example, "1.4.204 Base Page: See: Base link codeword."

In this case the new term is synonymous to "Slave Physical Layer Device". in similar cases, the abbreviation "Syn:" is used (see 1.4.359 in-band signaling, 1.4.468 Physical Layer entity, 1.4.544 switch).

Similarly for 1.4.371a "LEADER PHY" (where the reference isn't wrong, but the rest of the comment still applies).

SuggestedRemedy

Change the definition in 1.4.341a to
"syn: Slave Physical Layer Device. See also Annex K."
Change the definition in 1.4.371a to
"syn: Master Physical Layer Device. See also Annex K."

Response *Response Status* **W**

ACCEPT.

Cl **1** *SC* **1.4.341a** *P* **21** *L* **40** # 16

Brown, Matt — Alphawave Semi

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

These definitions are merged into the master IEEE definitions list. As written, this definition would not be resolvable. This definition should be self-standing and, if referencing clauses, subclauses, or annexes in 802.3, then the references should be prefaced with "IEEE Std 802.3". As written it is rather unclear what the defintion is supposed to be.

SuggestedRemedy

Update the definition per comment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accomodated by comment 59

Cl **1** *SC* **1.4.371a** *P* **21** *L* **44** # 17

Brown, Matt — Alphawave Semi

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

These definitions are merged into the master IEEE definitions list. As written, this definition would not be resolvable. This definition should be self-standing and, if referencing clauses, subclauses, or annexes in 802.3, then the references should be prefaced with "IEEE Std 802.3". As written it is rather unclear what the defintion is supposed to be.

SuggestedRemedy

Update the definition per comment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accomodated by comment 59

Cl **22** *SC* **22.2** *P* **22** *L* **3** # 209

Wienckowski, Natalie — IVN Solutions LLC

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

Delete unchanged content of subclause

SuggestedRemedy

Delete paragraph below 22.2 heading as there are no changes. Keep the heading.

Response *Response Status* **C**

ACCEPT.

Cl **1** *SC* **1.5** *P* **22** *L* **29** # 195

Huber, Thomas — Nokia

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

If there are no new abbreviations, this clause should not be present.

SuggestedRemedy

Delete clause 1.5

Response *Response Status* **C**

ACCEPT.

Cl **1** *SC* **1.5** *P* **22** *L* **30** # 149

Maguire, Valerie — Copperopolis; aff'l w/ CME Consulting and Cisco

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

There are no abbreviations.

SuggestedRemedy

Delete clause 1.5 header and contents.

Response *Response Status* **C**

ACCEPT.

Cl **1** *SC* **1.5** *P* **22** *L* **33** # 158

Zimmerman, George — CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

There are no new abbreviations in 802.3dg. The contents of 1.5 are a placeholder

SuggestedRemedy

Remove 1.5 and "ABBR" from the draft.

Response *Response Status* **C**

ACCEPT.

Cl **1** *SC* **1.5** *P* **22** *L* **33** # 60

Ran, Adee — Cisco Systems

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

There are no abbreviations, so no change required in 1.5.

SuggestedRemedy

Remove subclause 1.5 from the amendment.

Response *Response Status* **C**

ACCEPT.

Cl **1** *SC* **1.5** *P* **22** *L* **34** # 44

Slavick, Jeff — Broadcom

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

A new abbreviation "ABBR" is being added but I don't see it being used anywhere

SuggestedRemedy

Remove it

Response *Response Status* **W**

ACCEPT.

Cl **22** *SC* **22.2** *P* **23** *L* **5** # 61

Ran, Adee Cisco Systems

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

The text of subclause 22.2 is included but there is no editorial instruction. I assume it is intended to be changed.

SuggestedRemedy

Delete the text of 22.2.

Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.5.1.1.4** *P* **24** *L* **35** # 196

Huber, Thomas Nokia

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

The proposed change appears to be correct, but the quoted text of the sentence has a typo - the existing text of the sentence in question in 802.3-2022 is: 'For 10BASE-T1L and 100BASE-T1, a link_status of OK maps to the enumeration ¶available÷.' The text in this amendment says: 'For 10BASE-T1L, 100BASE-T1L, and 1000BASE-T1, a link_status of OK maps to the enumeration ¶available÷.'

SuggestedRemedy

Change 1000BASE-T1 to 100BASE-T1, aligning with the existing text in 802.3-2022, so the amendment text reads: 'For 10BASE-T1L, 100BASE-T1L, and 100BASE-T1, a link_status of OK maps to the enumeration ¶available÷.'

Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.5.1.1.4** *P* **24** *L* **36** # 248

Murray, Brian Analog Devices

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

The proposed text update for the aMediaAvailable attribtte "For 10BASE-T1L, 100BASE-T1L, and 1000BASE-T1, a link_status of OK maps to the enumeration "available"." is incorect (1000BASE-T1 should be 100BASE-T1) and may not be appropriate or enough for 100BASE-T1L which supports link fault indication.

SuggestedRemedy

Add the following sentence after the fifth sentence of the third paragraph of the BEHAVIOUR DEFINED AS section of 30.5.1.1.4:

"For 100BASE-T1L, the RX Assert remote fault encoding maps to the enumeration "remote fault" and the RX Assert local fault encoding maps to the enumeration "not available". Other encodings map to the enumeration "available"."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
At P24 L36 change text to align with the base standard (changing 1000BASE-T1 to 100BASE-T1) Add the following sentence after the fifth sentence of the third paragraph of the BEHAVIOUR DEFINED AS section of 30.5.1.1.4:
"For 100BASE-T1L, the RX Assert remote fault encoding maps to the enumeration "remote fault" and the RX Assert local fault encoding maps to the enumeration "not available". Other encodings map to the enumeration "available"."

Cl **30** *SC* **30.5.1.1.15** *P* **24** *L* **54** # 42

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **A** *RS-FEC*

aFECAbiilty and aFECmode I think should be used rather than aRSFECBypassAbility and aRSFCBypassEnable to indicate in management objects if RS-FEC mode is enabled.

SuggestedRemedy

Bring in 30.5.1.1.15 and add ¶(or mode of operation)÷ after optional FEC sublayer in the first paragraph of the behavior and add Clause 190 to the list. Insert MDIO register 45.2.3.75b in the list of capability registers.

Bring in 30.5.1.1.16 and add ¶(or mode of operation)÷ after optional FEC sublayer in the first paragraph of the behavior and add Clause 190 to list. Insert MDIO register 45.2.3.75c to list of FEC operating mode registers.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Accomodated by comments 246 & 247.

Cl **30** *SC* **30.5.1.1.17** *P* **24** *L* **54** # 43

Slavick, Jeff — Broadcom

Comment Type **TR** *Comment Status* **R** *RS-FEC*

aFECUncorrectableBlocks and aFECCorrectedBlocks needs mapping

SuggestedRemedy

Insert and increment rate of 120 000 for 100 Mb/s implementations into the SYNTAX descriptions and add 100BASE-T1L to the list of PHYs in both 30.5.1.1.17 and 30.5.1.1.18

Response *Response Status* **W**

REJECT.

CRG Disagrees with the commenter.
RS-FEC specifications integral to the PCS of BASE-T1 PHYs are different from those in high-speed PHYs where RS-FEC has been defined as a separate sublayer. Performance of FEC is integrated into the receiver with more simplified monitoring. This has a long history with 1000BASE-T, MultiGBASE-T, and has continued in 1000BASE-T1 and MultiGBASE-T1 PHYs. Separate specification from the receiver performance is not required because the sublayer cannot be separated from the PHY.

Cl **45** *SC* **45.2.1** *P* **25** *L* **17** # 62

Ran, Adee — Cisco Systems

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

The rows in the table seem to be new but are not underlined (except for the register address).

SuggestedRemedy

Format all new cells with underline.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1** *P* **25** *L* **18** # 192

Marris, Arthur — Cadence Design Systems

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

Missing underlining of inserted text in Table 45-3

SuggestedRemedy

Underline the inserted register names and subclause numbers. Make similar change to Table 45'233 on page 30.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.7.4** *P* **25** *L* **32** # 159

Zimmerman, George — CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

Editing instruction should reference that table 45-9 was modified by amendments.

SuggestedRemedy

Change editing instruction to read: "Insert a new row in Table 45'9 (as modified by IEEE Std 802.3db-2022, IEEE Std 802.3ck-2022, IEEE Std 802.3cy-2023, IEEE Std 802.3df-2024, and IEEE Std 802.3dk-202x) after the row for 100BASE_T1 as follows (unchanged rows not shown):"

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.7.5** *P* **26** *L* **3** # 160

Zimmerman, George — CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

Editing instruction should reference that table 45-10 was modified by amendments.

SuggestedRemedy

Change editing instruction to read: "Insert a new row in Table 45'10 (as modified by IEEE Std 802.3db-2022, IEEE Std 802.3ck-2022, IEEE 802.3df-2024, and IEEE 802.3dk-202x) after the row for 100BASE_T1 as follows (unchanged rows not shown):"

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.16.1aaa** *P* **26** *L* **35** # 197

Huber, Thomas — Nokia

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

The editing instruction is not aligned with the syle guide. A new subclause that replaces the existing X.Y.Z.1 is inserserted as X.Y.Z.a. In this case, 802.3cy-2023 inserted 45.2.1.16.a between 45.2.1.16 and 45.2.1.16.1. 802.3da will add 45.2.1.16.aa between 45.2.1.16 and 45.2.1.16.a (as inserted by 802.3cy-2023). As such, 802.3dg needs to insert 45.2.1.16.aaa between 45.2.1.16 and 45.2.1.16.aa (as inserted by 802.3da-20xx).

SuggestedRemedy

Change the instruction to read:
Insert new subclause 45.2.1.16.aaa between 45.2.1.16 and 45.2.1.16.aa (as inserted by 802.3da-20xx) as follows:

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.16.1aaa** *P* **26** *L* **35** # 161

Zimmerman, George — CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

Editing instruction is in error in several ways - first, a typo - 42.1.16.1 should read 45.2.1.16.1, second, 802.3cy and 802.3da did not modify the 45.2.1.16.1). 802.3cy inserted 45.2.1.16a, to describe bit 7. Draft 3.0 of 802.3da omits 45.2.1.16aa describing the added bit 8. so there is currently no 45.2.1.16.aa. The resolution assumes that this error will be fixed in initial SA ballot where a parallel comment is being filed.

SuggestedRemedy

Change editing instruction to read: "Insert new subclause 45.2.1.16.1aaa before 45.2.1.16aaa (inserted by IEEE Std 802.3da-202x) as follows:

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.236a** *P* **27** *L* **35** # 249

Murray, Brian — Analog Devices

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

The text "The control and management interface shall be restored to operation ..." is ambiguous.

Also, the time of 0.5 s that is specified is much too long for industrial applications and is inconsistent with the time of 10 ms that is specified for bit 3.2295.15.

SuggestedRemedy

Change the following text:

"The control and management interface shall be restored to operation within 0.5 s from the setting of bit 1.2300.15."

to:

"The MDIO interface or its equivalent for accessing control and status bits shall be restored to operation within 10 ms from the setting of bit 1.2300.15."

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.236a.1** *P* **27** *L* **40** # 63

Ran, Adee — Cisco Systems

Comment Type **T** *Comment Status* **X** *Editorial*

"NOTE¨This operation may interrupt data communication"
"may" is equivalent to "is allowed to"; but this sentence is within a NOTE so it should not allow or disallow anything. As an informative statement, you can say that a PMA reset _can_ interrupt data communication (or alternatively, _interrupts_ data communication).
Also in the second instance of "may" in this NOTE.
Also in the similar NOTEs in 45.2.1.236a.3 and 45.2.3.75a.1.

SuggestedRemedy

Change "may" to "can", all instances in this NOTE and the ones in 45.2.1.236a.3 and 45.2.3.75a.1.

Proposed Response *Response Status* **C**

REJECT.

CRG disagrees with commenter.
Usage of may is proper here. Note reads correctly with "is allowed to" and is parallel to similar notes in IEEE Std 802.3. There are numerous similar or identical notes in IEEE Std 802.3-2022, and usage in this draft is consistent with style.

Cl **45** *SC* **45.2.1.236a.1** *P* **27** *L* **43** # 250

Murray, Brian — Analog Devices

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

Bit 1.2300.15 is defined to be a copy of 1.0.15, but there is really no need to. In general it does not seem a great idea to make management bits copies of other management bits.

SuggestedRemedy

Remove the last paragraph in clause 45.2.1.236a.1:

"Bit 1.2300.15 is a copy of bit 1.0.15, and setting or clearing either bit shall set or clear the other bit. Setting either bit shall reset the 100BASE-T1L PMA."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove the last paragraph in clause 45.2.1.236a.1: "Bit 1.2300.15 is a copy of bit 1.0.15, and setting or clearing either bit shall set or clear the other bit. Setting either bit shall reset the 100BASE-T1L PMA."

Add a new final paragraph to the 190.6:"For 100BASE-T1L, setting or clearing 1.0.15 also sets and clears 1.2300.15. Where the requirements relating to 1.0.15 differ from those relating to 1.2300.15, the requirements of 1.2300.15 take precedence."

Cl **45** *SC* **45.2.1.236a.3** *P* **28** *L* **3** # 64

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **R** *Management*

"low-power ability" is not referenced anywhere in Clause 190 (although there is one instance of "low power mode", without a hyphen, in 190.4.1). Is it the same as "low-power idle" (part of EEE)?

SuggestedRemedy

If it is a separate function, it should be stated clearly to avoid confusion, and a specification of the behavior in this mode should be added in clause 190. If it is the LPI of EEE, please rename it or clarify in some other way.

Response *Response Status* **W**

REJECT.

This mode is described in nearly every PHY in 802.3 (over 100 instances in IEEE Std 802.3). It is a low-power non-operational state (e.g., software power down - Clause 45 bit 1.1.1). A change would make the reader question whether it was something different.

Cl **45** *SC* **45.2.1.236a.3** *P* **28** *L* **13** # 251

Murray, Brian Analog Devices

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

Bit 1.2300.11 is defined to be a copy of 1.0.11, but it does not have to be. In general it does not seem a great idea to make management bits copies of other management bits.

SuggestedRemedy

Remove the last paragraph in clause 45.2.1.236a.3:

"Bit 1.2300.11 is a copy of bit 1.0.11, and setting or clearing either bit shall set or clear the other bit. Setting either bit shall put the 100BASE-T1L PMA in low-power mode."

Register 1.2300.11 and 1.0.11 should be added to Table 190-12

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove the last paragraph in clause 45.2.1.236a.3:"Bit 1.2300.11 is a copy of bit 1.0.11, and setting or clearing either bit shall set or clear the other bit. Setting either bit shall put the 100BASE-T1L PMA in low-power mode."

Add a new final paragraph to the 190.6:"For 100BASE-T1L, setting or clearing 1.0.11 also sets and clears 1.2300.11. Where the requirements relating to 1.0.11 differ from those relating to 1.2300.11, the requirements of 1.2300.11 take precedence."

Cl **45** *SC* **45.2.1.236b.4** *P* **29** *L* **15** # 65

Ran, Adee Cisco Systems

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

The definition of the Receive link status bit is inconsistent: when read as 0 it matches a "latching low" definition, but when read as 1 it just says "receive link is up". What if it is up now but was previously down?

SuggestedRemedy

Change from
"receive link is up"
to
"receive link is up continuously since the register was last read".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace the content of 45.2.1.236b.4 withThe behavior of bit 1.2301.0 is identical to that of bit 1.1.2 Receive link status. See 45.2.1.2.4.

Cl **45** *SC* **45.2.3** *P* **30** *L* **22** # 66

Ran, Adee Cisco Systems

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

The rows in the table seem to be new but are not underlined.

SuggestedRemedy

Format all new cells with underline.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.75a** *P* **30** *L* **42** # 198

Huber, Thomas Nokia

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

The table that is currently in 45.2.3.75 is Table 45-301 rather than table 45-297.

SuggestedRemedy

Change Table 45-297a to Table 45-301a. Make similar changes to Tables 45-297b, 45-297c, 45-297d

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

There are two misnumberings here:Change the editing instruction at P30 L32 from reading "after 45.2.1.75" to "after 45.2.3.75"Change Table 45-297a to Table 45-301a (crossrefs and subsequent tables should renumber)

Cl **45** *SC* **45.2.3.75a.1** *P* **31** *L* **12** # 162

Zimmerman, George — CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

It seems the note on the PCS reset should be parallel to the PMA reset, since it would reset the PHY control state diagram. See 45.2.1.236a.1.

SuggestedRemedy

Change Note to read: "NOTE¨This operation may interrupt data communication. The data path of the 100BASE-T1L PHY, depending on
implementation, may take many seconds to run at optimum error ratio after exiting from reset."

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.75a.1** *P* **31** *L* **15** # 252

Murray, Brian — Analog Devices

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

Bit 3.2295.15 is defined to be a copy of 3.0.15, but it does not have to be. In general it does not seem a great idea to make managment bits copies of other management bits.

SuggestedRemedy

Remove the last paragraph in clause 45.2.3.75a.1:

"Bit 3.2295.15 is a copy of 3.0.15, and setting or clearing either bit shall set or clear the other bit. Setting either bit shall reset the 100BASE-T1L PCS."

Register 2.2295.15 and 3.0.15 should be added to a new table similar to Table 190-12.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove the last paragraph in clause 45.2.3.75a.1:"Bit 3.2295.15 is a copy of bit 3.0.15, and setting or clearing either bit shall set or clear the other bit. Setting either bit shall reset the 100BASE-T1L PCS." Add a new final paragraph to the 190.6:"For 100BASE-T1L, setting or clearing 3.0.15 also sets and clears 3.2295.15. Where the requirements relating to 3.0.15 differ from those relating to 3.2295.15, the requirements of 3.2295.15 take precedence."

Add to 190.3.1, new final paragraph:PCS reset is mapped to bit 3.2295.15 or an equivalent function if MDIO is not implemented.

Cl **45** *SC* **45.2.3.75b.2** *P* **32** *L* **3** # 67

Ran, Adee — Cisco Systems

Comment Type **E** *Comment Status* **A** *RS-FEC*

"RS-FEC" is an overloaded term in 802.3. A reference to the specific subclause (as done in 45.2.3.75b.3) would be beneficial for the reader.
Also in 45.2.3.75b.1, although "EEE" is more general.

SuggestedRemedy

Add a reference to 190.3.2 in 45.2.3.75b.2, and to 190.1.3.3 in 45.2.3.75b.1.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accomodated by comments 37 and 40.

Cl **45** *SC* **45.2.3.75b.2** *P* **32** *L* **3** # 199

Huber, Thomas — Nokia

Comment Type **T** *Comment Status* **X** *RS-FEC*

Since there are many RS FECs specified in 802.3, it would be usefult to clarify which one is the subject of bit 3.2296.14

SuggestedRemedy

Change the first line of the Description for bit 3.2296.14 to say:
1 = PCS has RS-FEC ability per clause 190.3.2.7

Proposed Response *Response Status* **C**

REJECT.

CRG disagrees with comment. This is a bit in a register specific to 100BASE-T1L. It is clear which RS-FEC ability the bit is referring to - there is only one in 100BASE-T1L

Cl **45** *SC* **45.2.3.75c** *P* **32** *L* **13** # 68

Ran, Adee Cisco Systems

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

A reference to the specific subclause that defines training for 10-BASE-TL1 would be beneficial for the reader.
Also in 45.2.3.75d.

SuggestedRemedy

Add references to 190.3.4 in both subclauses.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add new final sentence to 45.2.3.75c (P32 L16) : "This register controls the PHY capability bits advertised in the infofield during 100BASE-T1L training (See 190.3.4.2.4)."

Add new final sentence to 45.2.3.75d (P32 L48): "This register contains the values from the link partner advertised in the received infofield during 100BASE-T1L training (See 190.3.4.2.4)."

Cl **78** *SC* **78.1.4** *P* **34** *L* **7** # 163

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

Tables 78-1, 78-2, and 78-4 were modified by 802.3cy

SuggestedRemedy

Change editing instruction at P34 L8 to read, "Insert new row in Table 78-1 as modified by IEEE Std 802.3cy-2023 after 10BASE-T1L as follows (unchanged rows not shown):"
Change editing instruction at P34 L22 to read, "Insert new row in Table 78-2 as modified by IEEE Std 802.3cy-2023 after 10BASE-T1L as follows (unchanged rows not shown):"
Change editing instruction at P35 L1 to read, "Insert new row in Table 78-4 as modified by IEEE Std 802.3cy-2023 after 10BASE-T1L as follows (unchanged rows not shown):"

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.2** *P* **34** *L* **20** # 200

Huber, Thomas Nokia

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

Typo in the clause title

SuggestedRemedy

Change 'descrption' to 'description'

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.2.1** *P* **36** *L* **14** # 150

Maguire, Valerie Copperopolis; aff'l w/ CME Consulting and Cisco

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

Missing underline for added space

SuggestedRemedy

Extend underline to include the space after "or 100BASE-T1L,".

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.2.1** *P* **36** *L* **15** # 151

Maguire, Valerie Copperopolis; aff'l w/ CME Consulting and Cisco

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

Missing underline for added space

SuggestedRemedy

Extend underline to include the space after "and 100BASE-T1L".

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.5.1** *P* **36** *L* **30** # 152

Maguire, Valerie Copperopolis; aff'l w/ CME Consulting and Cisco

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

Existing space marked with underline

SuggestedRemedy

Remove the underline after, "register bit 1.2300.11,".

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.5.2** *P* **36** *L* **36** # 153

Maguire, Valerie Copperopolis; aff'l w/ CME Consulting and Cisco

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

Missing underline for added space

SuggestedRemedy

Extend underline to include the space after "GOOD CHECK state.".

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.5.2** *P* **36** *L* **45** # 210

Wienckowski, Natalie IVN Solutions LLC

Comment Type **T** *Comment Status* **X** *Editorial*

Why is 100BASE-T1L between 10BASE-T1L and 10BASE-T1S.

SuggestedRemedy

Move 100BASE-T1L to be before 10BASE-T1L to be consistent with the ordering of the PHY types.

Proposed Response *Response Status* **C**

REJECT.

BASE-T1L PHYs are grouped together because they are more likely to be contained in a multi-speed PHY.

Cl **98** *SC* **98.5.2** *P* **36** *L* **49** # 1

Lusted, Kent Synopsys

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

The timer for the 100BASE-T1L PHY is set to a very specific value of 85ms, without any allowance for variation in clock rates between partners. Also, an exact value of 85.00000000000000 ms would be difficult to meet in design. Allowing a narrow range would simplify the design and still follow the spirit of the timeout value.

SuggestedRemedy

Change "85 ms" to "85 ms to 86 ms" in the text as well as the PICS item SD21

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Accomodated by comment 253.

Cl **98** *SC* **98.5.2** *P* **36** *L* **49** # 253

Murray, Brian Analog Devices

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

For all technolgies except 100BASE-T1L the expiration time of the link_fail_inhibit_timer_[HCD] is specified in the form of a range. For 100BASE-T1L the exact value 85 ms is specified. This potentially creates a compliance condition that cannot be satisfied.

SuggestedRemedy

Change the following text:

"For a 100BASE-T1L PHY, this timer shall expire 85 ms after entering the AN GOOD CHECK state."

to:

"For a 100BASE-T1L PHY, this timer shall expire 84 ms to 85 ms after entering the AN GOOD CHECK state."

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.6.9** *P* **37** *L* **18** # 164

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

Editing instruction should just insert the new PICS item. Renumber happens on fold into the revision

SuggestedRemedy

Change the editing instruction to, "Change row for SD19 and insert new row 20a State diagram and variable definitions PICS table as shown (unchanged rows not shown)""
Replace "..." row under SD19 with (existing, unchanged, no underline) row SD20 to the table after SD19:
SD20 | link_fail_inhibit_timer_[HCD] for 10BASE-T1L PHY | 98.5.2 | Expires 3030 ms to 3090 ms after entering the AN LINK GOOD CHECK state" | 10T1L:M | Yes[] N/A[]

Change "SD21" to "SD20a" on next row.

Delete renumbered rows SD22 through SD30 from the draft.

Response *Response Status* **C**

ACCEPT.

Cl **98** *SC* **98.6.9** *P* **37** *L* **30** # 223

Murray, Brian Analog Devices

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

For all technolgies except 100BASE-T1L the expiration time of the link_fail_inhibit_timer_[HCD] is specified in the form of a range. For 100BASE-T1L the exact value 85 ms is specified. This potentially creates a compliance condition that cannot be satisfied.

SuggestedRemedy

Change the Value/Comment text of Item SD21:

"Expires 85 ms after entering the AN GOOD CHECK state"

to:

"Expires 84 ms to 85 ms after entering the AN GOOD CHECK state"

Response *Response Status* **C**

ACCEPT.

Cl **104** *SC* **104** *P* **38** *L* **1** # 219

Brychta, Michal Analog Devices

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

May we consider any features from the 802.3da clause 189 as optional for power over 100BASE-T1L?

SuggestedRemedy

Open question that would require further work and consensus. I am not power expert, but willing to participate if such option is to be considered.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add new final paragraph to 190.1 Overview:"100BASE-T1L PHYs can be used with power delivered over the signal conductors, such as Clause 104, or other power schemes specifically designed to be compatible with this standard. Care should be taken to comply with the transmission and general safety requirements found in Clause 190."

Cl **104** *SC* **104** *P* **38** *L* **1** # 143

Graber, Steffen Pepperl+Fuchs SE

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

A common PoDL Power Type for 10BASE-T1L and 100BASE-T1L is suggested, to allow the operation of both PHYs using the same PoDL powering type (similar as Power Type C for 100BASE-T1 and 1000BASE-T1). See document "Clause 104 Changes for Type H PSE or PD.pdf" for suggested text to add a Type H PSE/PD.

SuggestedRemedy

If agreed, add text as suggested by comment. If not agreed, add at least the changes marked in blue in the referenced document related to Power Type G, which have been missed by previous text provided for Clause 104 and are needed for consistency: "Modify entry of the Powered Device (PD) table in Clause 104.9.4.3 in line PD24" and "Modify entry COMEL2 in table in Clause 104.9.4.4" for Type G.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Make the changes in Clause 104 Changes for Type H PSE or PD.pdf which are marked in blue, or are explicit edits (e.g., Add...).Do not make changes that are in orange/yellow.

Cl **104** *SC* **104.1.3** *P* **38** *L* **14** # 165

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

Text of 104.1.3 modified by 802.3cy was not included.

SuggestedRemedy

Change Editing instruction at P38 L8 to read "Change second paragraph of 104.1.3 as modified by IEEE Std 802.3cy-2023 as shown:"
Change line 14 (second to last sentence) to read "A Type F PSE and Type F PD are compatible with 2.5GBASE-T1, 5GBASE-T1, 10GBASE-T1, and 25GBASE-T1 PHYs."

Response *Response Status* **C**

ACCEPT.

Cl **104** *SC* **104.1.3** *P* **38** *L* **38** # 154

Maguire, Valerie Copperopolis; aff'l w/ CME Consulting and Cisco

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

Missing underline for added space

SuggestedRemedy

Extend underline to include the space before " A Type G PSE".

Response *Response Status* **C**

ACCEPT.

Cl **104** *SC* **104.5.7.4** *P* **39** *L* **33** # 69

Ran, Adee Cisco Systems

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

"or Type G" seems to be newly inserted, but is only partially underlined.

SuggestedRemedy

Underline as necessary.

Response *Response Status* **C**

ACCEPT.

Cl **104** *SC* **104.5.7.4** *P* **39** *L* **33** # 201

Huber, Thomas Nokia

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

"Type G" is new text, so it should be underlined.

SuggestedRemedy

Underline "Type G".

Response *Response Status* **C**

ACCEPT.

Cl **104** *SC* **104.6.2** *P* **40** *L* **8** # 70

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **A** *Editorial*

The last sentence in the amended paragraph mentions only PDs, but the existing text in 104.6.2 says "The PI for Type E PSEs and PDs". I assume PSEs for Type E are out of scope of this amendment, so they should still be included; I assume also for type G, but this may be intentional?

SuggestedRemedy

Correct the text as necessary to address PSEs.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

(this text was amended by 802.3dd - the editing instruction neglects that. PSE's were excluded by 802.3dd

insert "(as amended by IEEE Std 802.3dd-2022)" in editing instruction, to read:
Change the first paragraph of 104.6.2 (as amended by IEEE Std 802.3dd-2022) as shown:

Cl **104** *SC* **104.6.2** *P* **40** *L* **8** # 155

Maguire, Valerie Copperopolis; aff'l w/ CME Consulting and Cisco

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

Missing underline for added space

SuggestedRemedy

Extend underline to include the space after " Type G ".

Response *Response Status* **C**

ACCEPT.

Cl **104** *SC* **104.9.4.3** *P* **42** *L* **20** # 166

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

New PICS item should be inserted as PD20a, without renumbering PICS in amendment.

SuggestedRemedy

Change PD20 to PD20a,
Revert PD22 to PD21 (but keep change on spacing in Value/Comment)
Change Editing instruction (line 14) to reference Type F PD item PD21, not PD22Ó

Delete rows below (now) PD21, as they aren't renumbered in the amendment.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.1** *P* **44** *L* **28** # 7

Schicketanz, Dieter Reutlingen University

Comment Type **T** *Comment Status* **X** *RS-FEC*

RS-FEC is optional and mentioned in varios clauses. Explanation is given at line 28. Is this sufficient fort planers of cabling?

SuggestedRemedy

enhanced burst noise protection is not helpful in a standard. How many dB or other tecnical value Is needed.

Proposed Response *Response Status* **C**

REJECT.

CRG disagrees with commenter.

The standard specifies interoperability and capabilities. It is not a tutorial for use. Use of the RS-FEC capability may be varied among applications. "Enhanced burst noise protection" conveys the discussions in the Task Force which motivated the inclusion of the RS-FEC.

Cl **190** *SC* **190.1** *P* **44** *L* **28** # 37

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **A** *RS-FEC*

Is the RS-FEC an optional to use or optional to implement?

SuggestedRemedy

If it's optional to implement, then add an RS-FEC Ability variable, mapping it to a MDIO register and in 190.3.2.7 and 190.3.3 qualify RS-FEC descriptions with that variable being TRUE for the encode and decode proceses.

If it's mandatory to implement but optional to use, then change this sentence in 190.1 to be "This clause specifies a Reed-Solomon forward error correction (RS-FEC) capability that may be enabled or disabled. The RS-FEC provides enhanced burst noise protection at the expense of increased latency."

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

There is an MDIO register variable at 3.2296.14, which is read only that indicates the capability - which is optional to implement. Use is negotiated in startup. Additional information seems to be needed in the overview to clarify this.

Add the following new second sentence to the 4th paragraph of 190.1 (P44 L28), "RS-FEC PHY capability is indicated using MDIO register bit 3.2296.14 or equivalent means if MDIO is not implemented. The request to use the RS-FEC capability is negotiated during startup. PHYs implementing RS-FEC request use of the capability by setting MDIO register bit 3.2297.14 to one.

Cl **190** *SC* **190.1.1** *P* **44** *L* **36** # 71

Ran, Adee Cisco Systems

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

This subclause is titled "nomenclature" but it mostly talks about modes of operation, and does not seem to define a nomenclature, except for the constant N.
These modes are initially described as modes of the PHY, but the last sentence says the PMA and MDI specifications are not affected; So it seems that these are modes of the PCS, not of the PHY.
Also, the text describes encoding of TXD, TX_EN, and TX_ER, but does not mention the decoding and the RX signals.
Also, the description of the modes is repeated in 190.1.3, and the meaning of N (and its two values) is repeated in 190.3.2.1. Everything seems to be written again in 190.3.2.3 (in a more complete form). This duplication is not helpful.

SuggestedRemedy

Either delete this subclause, or move this subclause to the PCS section, or merge its content into one of the other subclauses where the same information appears.

If this subclause is retained, focus it on the nomenclature and values of N, clarify that it pertains specifically to the PCS, and delete the last sentence about PMA and MDI specifications

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete subclause 190.1.1 in its entiretyInsert the following (from 190.1.1) in (old numbering) 190.1.3 P45 L26 as a new third paragraph:
The 16B/17B and 64B/65B encoding rules are unified by specifying them in the form of (8N)B/(8N + 1)B encoding rules where N = 2 (16B/17B) when RS-FEC is disabled and N = 8 (64B/65B) when RS-FEC is enabled.

(with editorial license on text inserted)

Cl **190** *SC* **190.1.1** *P* **44** *L* **38** # 46

Slavick, Jeff Broadcom

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

First sentence only lists one of the two modes.

SuggestedRemedy

Add "or disabled" to the end of the first sentence.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accomodated by comment 71 - which removed the text.

Cl **190** *SC* **190.1.1** *P* **44** *L* **44** # 47

Slavick, Jeff Broadcom

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

The PMA/MDI specifications apply for both modes.

SuggestedRemedy

Change the last sentence from:
The same PMA and MDI specifications apply regardless of whether RS-FEC is enabled.

To:
The same PMA and MDI specifications apply to both encoding methods.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.1.2** *P* **45** *L* **6** # 72

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **R** *Editorial*

Clause 4 specifies a CSMA-CD MAC (half duplex) but this PHY operates in full-duplex (as stated in 190.1.3).
Shouldn't it be Annex 4A instead?

SuggestedRemedy

Change to Annex 4A and the appropriate title.

Response *Response Status* **W**

REJECT.

CRG disagrees with the commenter.
The Clause 4 MAC supports full duplex operation. Annex 4A is the simplified full duplex MAC.

Cl **190** *SC* **190.1.3** *P* **45** *L* **12** # 45

Slavick, Jeff Broadcom

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

were derived to is not necessary, 190.7 sepcifies segments that support that channel topology.

SuggestedRemedy

Remove "were derived to"

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.1.3** *P* **45** *L* **21** # 202

Huber, Thomas Nokia

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

Singular/plural disagreement in "An auxiliary bit is added to each 15 16B/17B block to create a PCS frameÓ"

SuggestedRemedy

Change to read "An auxiliary bit is added to each group of 15 16B/17B blocks to create a PCS frameÓ"
Make a similar change in the next paragraph at line 24 as well.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accomodated by comment 224.

Cl **190** *SC* **190.1.3** *P* **45** *L* **21** # 224

Murray, Brian Analog Devices

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

The text "An auxiliary bit is added to each 15 16B/17B block ..." is confusing since "block" is singular.

SuggestedRemedy

Change the following text:

"An auxiliary bit is added to each 15 16B/17B block ..."

to:

"One auxiliary bit is added to every 15 16B/17B blocks ..."

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.1.3** *P* **45** *L* **24** # 225

Murray, Brian Analog Devices

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

The text "An auxiliary bit is added to each 15 64B/65B block ..." is confusing since "block" is singular.

SuggestedRemedy

Change the following text:

"An auxiliary bit is added to each 15 64B/65B block ..."

to:

"One auxiliary bit is added to every 15 64B/65B blocks ..."

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.1.3** *P* **45** *L* **36** # 211

Wienckowski, Natalie IVN Solutions LLC

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

100BASE-T1L is breaking across the line. Use a nonbreaking hyphen in the middle of a PHY name.

SuggestedRemedy

Use a nonbreaking hyphen in the middle of a PHY name. Esc hyphen h

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.1.3** *P* **45** *L* **38** # 188

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

Duplicate shall: the requirement that all PHYs are capable of operating as a LEADER or FOLLOWER is correctly placed in 190.6.1. Here, in the overview, it should be descriptive.

SuggestedRemedy

Change "A 100BASE-T1L PHY shall be capable of operating as a LEADER or FOLLOWER." to "100BASE-T1L PHYs are mandated to be capable of operating as a LEADER or FOLLOWER (see 190.6.1)."

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.1.3** *P* **45** *L* **48** # 73

Ran, Adee Cisco Systems

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

"Each PHY advertises the RS-FEC capability during training" is redundant, having been stated in the previous paragraph.
Similarly for "Each PHY advertises the EEE capability during training" in the next paragraph.

SuggestedRemedy

Remove the redundancy.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.1.3** *P* **45** *L* **49** # 74

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **A** *RS-FEC*

"RS-FEC is enabled only if both PHYs advertise it"
"Only if" suggests that it a necessary (but not required) condition. I assume if both advertise it, then it is enabled without other conditions (if not, it should be written clearly).

Similarly for "EEE is enabled only if both PHYs advertise it" in the next paragraph.

SuggestedRemedy

Change the quoted sentence to
"If both PHYs advertise RS-FEC, it is enabled"
Similarly in the next paragraph.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accomodated by comment 38.

Cl **190** *SC* **190.1.3** *P* **45** *L* **51** # 75

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **A** *Editorial*

"RS-FEC is not compatible with all applications since it results in a significant increase in latency"
This is not a normative statement, and it goes without saying (this PHY as a whole, or any PHY, or anything, isn't compatible with _all_ applications).

Similarly for the statement "EEE is not compatible with all applications since it may result in a significant increase in latency and in latency variability" in the next paragraph.

SuggestedRemedy

Move these sentences into an informative NOTE, or delete them altogether.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Change "RS-FEC is not compatible with all applications since it results in a significant increase in latency" to
"RS-FEC results in a significant increase in latency."

and change "EEE is not compatible with all applications since it may result in a significant increase in latency and in latency variability" to
"EEE can result in a significant increase in latency and latency variability." in the next paragraph.

Cl **190** *SC* **190.1.3** *P* **46** *L* **34** # 76

Ran, Adee Cisco Systems

Comment Type **T** *Comment Status* **X** *Editorial*

"NOTE 2¨Auto-Negotiation is mandatory "
Can't have a normative requirement in a NOTE. Also, a sublayer stack diagram is not the place to state that something is mandatory - everything is mandatory unless defined otherwise.

SuggestedRemedy

Delete NOTE 2.

Proposed Response *Response Status* **C**

REJECT.

CRG disagrees with the commenter.
The NOTE is a statement of fact. The requirement is in 190.6.1

Cl **190** *SC* **190.2.1.2.3** *P* **49** *L* **38** # 3

Martino, Kjersti Inneos

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

Typo in Heading "Effect or receipt"

SuggestedRemedy

Change to "Effect of receipt"

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.2.2** *P* **51** *L* **8** # 288

Law, David HPE

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

The Clause 22 MII TX_CLK is sourced by the PHY (see IEEE Std 802.3 subclause 22.2.2.1). Consequently, the arrow on TX_CLK in Figure 190'2 is incorrectly oriented.

SuggestedRemedy

Correct the direction of the TX_CLK arrow.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.2.2.5.1** *P* **54** *L* **6** # 77

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **A** *PMA*

For PMA_UNITDATA.indication, the possible values of rx_symb are not provided (unlike PMA_UNITDATA.request in 190.2.2.4.1). Are these the same set (ternary symbols)? Or is it a soft input for the PCS to decode?

SuggestedRemedy

Please clarify.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Insert :The rx_symb parameter takes on one of the following values:{-1, +1} when the PHY is in training mode{-1, 0, +1} when the PHY is in idle mode or in normal operation

Cl **190** *SC* **190.2.2.13.1** *P* **57** *L* **44** # 87

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **A** *Editorial*

Is "control character" (here, also used in 190.3.2.2 and 190.3.2.3) identical to "control octet" (used in 190.3.2.4, 11 times)? Neither of these terms seems to be defined.

SuggestedRemedy

If the terms are identical, please use one term consistently. If not, please add text to clarify the difference.
Preferably, add a definition or a reference to an existing one.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Replace "control octet" with "control character" globally (and control octets with control characters)

Cl **190** *SC* **190.2.2.15** *P* **58** *L* **29** # 289

Law, David HPE

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

Subclause 190.2.2.15 'PMA_PCS_RX_LPI_STATUS.request' says '... this primitive is generated by the PCS Receive function ...' and that '... PMA_PCS_RX_LPI_STATUS.request conveys to the PCS Transmit and PMA Receive functions ...'. Since the PMA_PCS_RX_LPI_STATUS.request primitive is part of the PMA service interface between the PCS and PMA, and since both the PCS Transmit function and PCS Receive function are above the PMA service interface, I don't believe that the '... PMA_PCS_RX_LPI_STATUS.request conveys to the PCS Transmit ...'. Instead, if the rx_lpi_active variable is used by the PCS Transmit function, the rx_lpi_active variable generated in the PCS Receive function by the PCS Receive state diagram can be connected directly to the PCS Transmit function.

However, upon reviewing the PCS Transmit function and its associated state diagrams, I don't believe the rx_lpi_active variable is utilised by the PCS Transmit function. As a result, reference to the PCS Transmit function should be removed. In addition, PMA_PCS_RX_LPI_STATUS.request is a primitive, not a parameter.

SuggestedRemedy

Suggest that 'The parameter PMA_PCS_RX_LPI_STATUS.request conveys to the PCS Transmit and PMA Receive functions information regarding whether the PCS Receive function is in the LPI receive mode.' is changed to read 'The PMA_PCS_RX_LPI_STATUS.request primitive conveys whether the PCS Receive function is in the LPI receive mode to the PMA Receive function.'.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.2.2.15.3** *P* **58** *L* **47** # 4

Martino, Kjersti Inneos

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

Typo in Heading "Effect or receipt"

SuggestedRemedy

Change to "Effect of receipt"

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.2.2.16.3** *P* **59** *L* **22** # 5

Martino, Kjersti Inneos

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

Typo in Heading "Effect or receipt"

SuggestedRemedy

Change to "Effect of receipt"

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.** *P* **60** *L* **1** # 121

Ran, Adee Cisco Systems

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

The title of 190.3 is " Physical Coding Sublayer (PCS)".
The title of 190.4 is "Physical Medium Attachment (PMA) sublayer".
The acronyms PMA and PCS have already been expanded in their first appearance in this clause (in 190.1), and need not be expanded again.

SuggestedRemedy

Change the titles to "PCS specifications" and "PMA specifications".

Response *Response Status* **C**

REJECT.

Structure of clause 190 aligns with all other BASE-T and BASE-T1 clauses in the existing titles.
PCS and PMA are the commonly used names for these sublayers, spelling them out and abbreviating them here adds clarity.

Cl **190** *SC* **190.3** *P* **60** *L* **36** # 226

Murray, Brian Analog Devices

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

The link_status parameter is missing in Figure 190-3.

SuggestedRemedy

Add and arrow going into the bottom of the PCS RECEIVE block labeled link_status

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3** *P* **60** *L* **38** # 144

Maguire, Valerie Copperopolis; aff'l w/ CME Consulting and Cisco

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

Cramped text.

SuggestedRemedy

Increase the distance between "PMA SERVICE" and "INTERFACE" to align with "MEDIA INDEPENDENT INTERFACE (MII)" at the top of the figure.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.1** *P* **60** *L* **50** # 266

Law, David HPE

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

Subclause 190.3.1 'PCS Reset function' defines when pcs_reset = TRUE but not when pcs_reset = FALSE.

SuggestedRemedy

For completeness, suggest that '... while any of the above reset conditions holds true.' should be changed to read '... while any of the above reset conditions holds true, and set pcs_reset = FALSE' otherwise.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.1** *P* **60** *L* **50** # 212

Wienckowski, Natalie IVN Solutions LLC

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

It is defined when PCS Reset is set to "TRUE", but not false.

SuggestedRemedy

Between the first and third sentences of the second paragraph add the sentence: It is set FALSE otherwise.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accomodated by comment 266.

Cl **190** *SC* **190.3.2** *P* **60** *L* **54** # 267

Law, David HPE

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

I could not find a specification of the TX_CLK and RX_CLK clocks generated by the PCS transmit and receive functions, respectively, illustrated in Figure 190-3. Suggest that similar text to that found in the second paragraph of IEEE Std 802.3-2022 subclause 24.2.2.3 'Data delay' is included, with a reference to 190.4.2 for TX_CLK.

SuggestedRemedy

Suggest inserting a new subclause as follows:

190.3.2 PCS Clock function

The PCS shall generate the TX_CLK (see 190.4.2) and RX_CLK in accordance with Clause 22.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert new subclause 190.3.2 PCS Clock function with text:
When the MII is present as an exposed interface, the PCS shall generate the TX_CLK and RX_CLK in accordance with Clause 22.

Cl **190** *SC* **190.3.2** *P* **61** *L* **31** # 78

Ran, Adee Cisco Systems

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

"PCS Transmit shall pass a vector of zeros at each symbol period to the PMA" PMA_UNITDATA.request sends a single symbol on each transfer, not a vector. Based on the possible values of tx_symb in 190.2.2.4.1, the value "0" should be sent.

SuggestedRemedy

Change "a vector of zero" to "a value of 0".

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2** *P* **61** *L* **44** # 80

Ran, Adee Cisco Systems

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

"Normal Inter-Frame" is used before it is defined, and the term is not self-explanatory. The reference to 190.3.2.4 isn't helpful because the term is not used there. I had to search the document to find that it is a symbol code (in 190.3.2.5.2) that has the mnemonic /I/, and then realize that /I/ is indeed used in 190.3.2.5.2 (in Table 190'3).
Please make it easier for the reader.

SuggestedRemedy

Change "Normal Inter-Frame" to "/I/ symbols (see Table 190'3)". Or clarify in some other way.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "PCS Transmit shall use Ó 190.3.2.4 to represent normal inter-frame (see Table 22-1)."

Cl **190** *SC* **190.3.2** *P* **61** *L* **44** # 213

Wienckowski, Natalie IVN Solutions LLC

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

Inconsistent capitalization of "Normal Inter-Frame".

SuggestedRemedy

Make consistent.
P61L44: Normal Inter-Frame
P66L34: Normal Inter-Frame
P69L18: Normal Inter-Frame
P90L13: Normal inter-frame
P110L28: normal inter-frame
P110L33: normal inter-frame

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

With editor's license to check and update all Normal Inter-Frame to "Normal Inter-Frame".

Cl **190** *SC* **190.3.2** *P* **61** *L* **46** # 79

Ran, Adee Cisco Systems

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

"adaptative" is never used in 802.3 (although it is apparently a dictionary word).

SuggestedRemedy

change "adaptative" to "adaptive".

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2.1** *P* **62** *L* **7** # 50

Slavick, Jeff Broadcom

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

We don't use "," as a thousand seperator.

SuggestedRemedy

Change "1,024" to "1024"

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2.2** *P* **63** *L* **4** # 140

Graber, Steffen — Pepperl+Fuchs SE

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

"(2N)th transfer" needs to be placed on top of the right nibble block (the left block where the text is actually placed would be the "(2N - 1)th transfer")

SuggestedRemedy

Place "(2N)th transfer" on top of the right nibble block.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2.2** *P* **63** *L* **6** # 268

Law, David — HPE

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

Figure 190'4 'PCS Transmit bit ordering' labels the initial transfer TXD<0> to TXD<3> bits across the MII as the 1st transfer, the following MII transfer as the 2nd and then the penultimate MII transfer as the (2N)th transfer, since it appears to be above the leftmost 4 bits of the 8 bits shown. Isn't the penultimate MII transfer (leftmost 4 bits of the 8 bits) the (2N -1) transfer, and the final MII transfer (rightmost 4 bits of the 8 bits) should be the (2N)th transfer?

SuggestedRemedy

Suggest that:

[1] The text '(2N)th transfer' should be changed to read '(2N -1)th transfer' and centred over the middle of the leftmost 4 bits of the 8 bits.
[2] The text '(2N)th transfer' should be added above the middle of the rightmost 4 bits of the 8 bits.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2.2** *P* **63** *L* **11** # 269

Law, David — HPE

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

Figure 190'4 'PCS Transmit bit ordering' shows tx_coded as the 'Output of block encoder'. Isn't, however, tx_coded the output of the Figure 190'11 'PCS (8N)B/(8N+1)B Transmit state diagram', and the block encoding, defined in subclause 190.3.2.4, performed by the ENCODE(tx_mii) function in the 'PCS (8N)B/(8N+1)B Transmit state diagram'. Furthermore, aren't there cases when block coding of tx_mii isn't performed, for example, after reset, before tx_mode is set to SEND_N, tx_code is set to RBLOCK_T.

SuggestedRemedy

Suggest that 'Output of block encoder' should be changed to read 'Output of PCS (8N)B/(8N+1)B Transmit state diagram'.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2** *P* **63** *L* **21** # 52

He, Xiang — Huawei Technologies

Comment Type **TR** *Comment Status* **A** *RS-FEC*

"Used when N=8, bypassed when N=2" on top of the dashed box seems odd. In 190.3.2.1, line 5 of page 62, it clearly says "When RS-FEC is disabled, N is 2Ó... When RS-FEC is enabled, N is 8 Ó". The actual thing determining which path is used is "RS-FEC enable". The number N is not an input, but a result.

SuggestedRemedy

Suggest to change the sentence on top of the dashed box as "Used when RS-FEC is enabled, bypassed when RS-FEC is disabled".

Response *Response Status* **W**

ACCEPT.

Cl **190** *SC* **190.3.2** *P* **63** *L* **30** # 51

He, Xiang — Huawei Technologies

Comment Type **TR** *Comment Status* **A** *Editorial*

In Figure 190-4. The "Low-latency/RS-FEC select" is never mentioned anywhere in the document, and the mux/switch box is not an accurate illustration in the figure.
When RS-FEC is enabled, the RS-FEC encoder in the dashed box is used, and this mux has to be switched to the upper path. When RS-FEC is disabled, the RS-FEC in the dashed box is not used and the mux has to be switched to the lower path.

SuggestedRemedy

Suggest to rename "Low-latency/RS-FEC select" to "RS-FEC enable". Clearly mark 1 on the upper path, and 0 on the bottom path.

Response *Response Status* **W**

ACCEPT.

Cl **190** *SC* **190.3.2.2** *P* **63** *L* **44** # 81

Ran, Adee — Cisco Systems

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

The commas in the NOTE are inconsistent.
Also, NOTE in a figure should be formatted in sans serif font like all other content, to distinguish it from a NOTE in the clause text. This applies to some additional figures (e.g. Figure 190-11)

SuggestedRemedy

Delete the comma after "or a 64B/65B block".
Change the NOTE to use sans serif font, in this figure and others.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2.2** *P* **64** *L* **11** # 142

Graber, Steffen — Pepperl+Fuchs SE

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

Font size differs between "Output of" and "block encoder".

SuggestedRemedy

Align font size.

Response *Response Status* **C**

ACCEPT.
(Ed note- It should be on p63)

Cl **190** *SC* **190.3.2.3** *P* **64** *L* **14** # 256

Jonsson, Ragnar — Infineon

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

It is not clear what is referred to as subject in the sentence "Contents of block type fields, data octets, and control characters are shown as hexadecimal values". Furthermore, this is not true if it refers to the following text, because it also uses binary and decimal representation.

SuggestedRemedy

"Hexadesimal values are prefixed with "0x" in the following text"

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2.3** *P* **64** *L* **16** # 84

Ran, Adee — Cisco Systems

Comment Type **TR** *Comment Status* **A** *PCS*

"The bits of a transmitted or received block are labeled tx_coded<0:2N> and rx_coded<0:2N>"
The notations tx_coded<0:2N> and rx_coded<0:2N> do not appear anywhere other than in this subclause.
In 190.3.2.6 tx_coded has two indices, e.g., tx_coded<i><j>, where j is from 0 to 8N, so apparently tx_coded is an array of blocks; the size is different and the bit order is reversed, tx_coded<i><8N:0>.
In 190.3.6.1.2 it is tx_coded<0:8N> (same order here but different size).

I assume the size is 8N+1, and the order should be consistent; MSB on the left is more common.

Note that rx_coded doesn't appear anywhere else. Should it be rx_mii?

SuggestedRemedy

Change to tx_coded<8N:0> and rx_coded<8N:0>. Make the bit order consistent across the clause.

Change rx_coded to whatever it should be.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Change tx_coded<0:2N> to tx_coded<0:8N> (the block has 8N+1 bits). delete "and rx_coded<0:2N>" and "and rx_coded<0>" and delete "or received" at P64 L16 (there is no reference to rx_coded).In 190.3.2.6.1, (P70 L18) change "tx_coded<i><8N:0> is the i-th (8N)B/(8N+1)B block" to "tx_coded<i><0:8N> is the i-th (8N)B/(8N+1)B block"

Cl **190** *SC* **190.3.2.4** *P* **64** *L* **30** # 85

Ran, Adee Cisco Systems

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

"The first step converts two MII transfers at a time into a control symbol indication, TS, and an octet, TOCT"
The mnemonic "TOCT" can be understood to mean "transmitted octet" (and there is a corresponding ROCT in Table 190¹6). But "TS" does not seem to convey the meaning of this value; "CS" (for "control symbol") or "CSI" ("indicator") would be easier to understand.

SuggestedRemedy

Rename "TS" to "CS" (or "CSI") across the clause, including its variants in the Python code.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change mneumonic TS to CSI globally. Editorial license.

Cl **190** *SC* **190.3.2.2** *P* **64** *L* **32** # 141

Graber, Steffen Pepperl+Fuchs SE

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

Joint dot between the two arrows for the signal "PAM2/PAM3 select" is missing, related to the linebreak in "PAM2/PAM3 select" text the "/" should be at the end of "PAM2" and not the beginning of "PAM3".

SuggestedRemedy

Add joint dot and change position of "/" as per comment.

Response *Response Status* **C**

ACCEPT.
(Ed note- It should be on p63)

Cl **190** *SC* **190.3.2.4** *P* **65** *L* **1** # 227

Murray, Brian Analog Devices

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

The text in the first sentence of the fist paragraph of page 65 states: "Any MII transfer in Table 190¹1 for which TX_EN is 0, including Assert LPI and Assert remote fault, is categorized as IDL". However, only Assert remote fault is shown in Table 190-1; Assert LPI is not explicitly shown, because it is not required in Table 190-2 below.

SuggestedRemedy

Remove "Assert LPI" from that sentece, changing the text to:

"Any MII transfer in Table 190¹1 for which TX_EN is 0, including Assert remote fault, is categorized as IDL"

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2.4** *P* **65** *L* **2** # 257

Jonsson, Ragnar Infineon

Comment Type **E** *Comment Status* **R** *PCS*

The use of ARF is ambiguous, since "Assert Remote fault" it it a special case of IDL

SuggestedRemedy

Change the text "For example, Assert remote fault belongs to the categories ARF and IDL." to something like "ARF is a special case of IDL"

Response *Response Status* **C**

REJECT.

The text is clear - ARF is both IDL and it's own category, and the text is providing an example of this. The meaning is that when an ARF is encoded, you consider IDL AND ARF at the same time. The only time ARF is not the same as just getting an IDL is when you get the sequence IDL ARF ARF.

Cl **190** *SC* **190.3.2.4** *P* **65** *L* **10** # 258

Jonsson, Ragnar Infineon

Comment Type **TR** *Comment Status* **R** *PCS*

Table 190-2 does not have any case for "IDL DAT DAT"

SuggestedRemedy

Add code for "IDL DAT DAT" or add note if this is not a possible case.

Response *Response Status* **W**

REJECT.

!ERR can be DAT. Therefore, IDL DAT DAT is the same as IDL DAT !ERR - this is the first line in the table

Cl **190** *SC* **190.3.2.4** *P* **65** *L* **19** # 82

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **A** *Editorial*

The value "-" for "previous transfer" in the 4th and 5th rows is not one of the categories defined in Table 190¹1.

SuggestedRemedy

Clarify or correct if necessary.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Add at the bottom of the table, "NOTE - and em-dash indicates that any value quaifies."

Cl **190** *SC* **190.3.2.4** *P* **66** *L* **15** # 259

Jonsson, Ragnar Infineon

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

The description states that TS and TOCT are set according to table 190-2, but "Next dly_enc" is also set according to this table.

SuggestedRemedy

Change "Ó TS and TOCT are set in accordance with Ó" to "Ó TS, TOCT, and "Next dly_enc" are set in accordance with Ó".

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2.4** *P* **66** *L* **23** # 228

Murray, Brian Analog Devices

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

The text states "Table 190¹2 shows the TOCT values for control symbols using symbolic representations for clarity. The mapping from these symbolic representations to the associated numerical values is shown in Table 190¹3.". Table 190-3 shows additional symbols, /Ix/ and /LI/ which are not defined in Table 190-2, but are used in the PCS.

SuggestedRemedy

Change the text to:

"Table 190¹2 shows the TOCT values for control symbols using symbolic representations for clarity. The mapping from these symbolic representations, to the associated numerical values is shown in Table 190¹3. The table also shows the /Ix/ (see Clause 190.3.2.5.1.) and /LI/ (see Clause 190.3.2.5.3) symbolic representations which are used in the PCS state diagrams (see Clause 190.3.6).

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2.4** *P* **67** *L* **31** # 83

Ran, Adee Cisco Systems

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

"The control code indicates the type of the control symbol"
Earlier in the same paragraph there is "control octet".
"control symbol" appears twice, here and in the subsequent paragraph (line 41), while "control octet" appears 7 times.
I assume the terms "control symbol" and "control octet" mean the same thing? if not, more clarification is required instead of the suggested remedy.

SuggestedRemedy

Change "control symbol" to "control octet", twice.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

At P67 L31 change "control symbol" to "control character"

Cl **190** *SC* **190.3.2.5** *P* **69** *L* **3** # 86

Ran, Adee Cisco Systems

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

"A subset of control characters defined at the MII is supported by the 100BASE-T1L PCS" Which control characters are defined at the MII? Which subset is supported? And what about the other characters?

Assuming there are only a few non-supported characters, stating it as "The 100BASE-T1L PCS supports all characters defined at the MII (See <reference>) except for <list of unsupported characters>" would be more readable.

SuggestedRemedy

Add a reference to the "control characters defined at the MII", and list the ones that are not supported.
Consider rephrasing as suggested in the comment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "A subset of control characters defined at the MII is supported by the 100BASE-T1L PCS." to

"The 100BASE-T1L PCS supports the following encodings defined at the MII Transmit (see 22.2.2 and Table 22-1 for MII definitions): Normal inter-frame, Assert LPI, Assert remote fault, Normal data transmission and Transmit error propagation. Other encodings are replaced by Normal inter-frame for the 100BASE-T1L PCS (See Table 190-1)."

Cl **190** *SC* **190.3.2.5** *P* **69** *L* **7** # 88

Ran, Adee Cisco Systems

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

"may be inferred"
This is not just permitted behavior.

SuggestedRemedy

Change to "is inferred".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "may be inferred" to "can be inferred' (note it is not always inferred)

Cl **190** *SC* **190.3.2.5.3** *P* **69** *L* **24** # 229

Murray, Brian Analog Devices

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

The symbolic representation of the Assert LPI symbol is incorrectly written as /L/ instead of /LI/.

SuggestedRemedy

Change the following text:

"Ó conveys an Assert LPI symbol (/L/) ..."

to:

"Ó conveys an Assert LPI symbol (/LI/) ..."

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2.5.7** *P* **69** *L* **49** # 89

Ran, Adee Cisco Systems

Comment Type **T** *Comment Status* **X** *Editorial*

There are two instances of "may" in this subclause, but it does not seem to be just permitted behavior (at least for the second one).

SuggestedRemedy

Change the second instance "the RS may request" to "the RS requests".
Consider changing the first instance to "the RS can require".

Proposed Response *Response Status* **C**

REJECT
.Text is correct - the RS is permitted to require that the PHY deliberately corrupt a frame, AND, in this case, the RS is permitted to request Transmit Error Propagation.

Cl **190** *SC* **190.3.2.6** *P* **70** *L* **7** # 270

Law, David HPE

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

The terminology 'auxiliary bit' (page 70, line 7, 'aux' (page 70, line 13) and 'aux bit' (page 70, line 24) is used interchangeably. Further, 'auxiliary bit' is defined as 'aux' (page 61, line 17) and then 'aux' is defined as 'the auxiliary bit' (page 70, line 21). If 'aux' is defined as the 'auxiliary bit', wouldn't the expansion for 'aux bit' (page 70, line 24) 'auxiliary bit bit'?

SuggestedRemedy

Since 'aux bit' is only used three times, suggest it is expanded to 'auxiliary bit' and that '... an auxiliary bit (aux) to ...' on page 61, line 17 is changed to read '... an auxiliary bit to ...'.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2.6** *P* **70** *L* **30** # 24

Slavick, Jeff Broadcom

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

We don't use "," as a thousand seperator.

SuggestedRemedy

Change "1,024" to "1024"

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2.6** *P* **70** *L* **31** # 41

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **A** *Editorial*

If the 190.3.2.6 is to describe all the steps taken from the MII to PMA service interface without all the details, then the flow should be a list of steps with references to the sub-clauses that contain the details.

SuggestedRemedy

Make lines 6 through 25 a new sub-clause titled ¶Transmit group encoding÷ that comes before the RS-FEC encoder sub-clause.

Insert this text after the first paragraph of 190.3.2.6:
MII transfers are encoded into 8N + 1 bit blocks to create a group of 15N + 2 octets per <the newly created sub-clause>

Add ¶(see 190.3.2.7)÷ after ¶6 parity octets÷ on line 30

Add ¶(see 190.3.2.8 through 190.3.2.10)÷ after Sdn[7:0] on line 33

Add ¶(see 190.3.2.11)÷ after 8B6T encoding on line 34

Make 190.3.2.7 through 190.3.2.11 plus the new sub-clause a sub-heading of 190.3.2.6. (Headings in suggested remedy based on D2.0 heading numbers)

Response *Response Status* **W**

ACCEPT.

Cl **190** *SC* **190.3.2.6** *P* **70** *L* **32** # 260

Jonsson, Ragnar Infineon

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

The overall encoding process is described at a high level in the paragraph starting in line 32. The description would be better if it provided reference to the detailed description of each step.

SuggestedRemedy

Change the paragraph starting at line 32 to "An octet, Txbn[7:0], is taken from the PCS frame every 6 transmit clock cycles. The octet is scrambled using a 33-bit scrambler (see Clause 190.3.2.8-11) and the 8 scrambled bits, Sdn[7:0], are converted to a code-group consisting of 6 PAM3 symbols using 8B6T encoding (see Clause 190.3.2.11) that keeps the running sum of the transmitted PAM3 symbols within bounds. It takes 6 PMA_UNITDATA transfers to send each code-group."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accomodated by comment 41

Cl **190** *SC* **190.3.2.7** *P* **70** *L* **39** # 189

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

Comment Type **TR** *Comment Status* **A** *RS-FEC*

Somewhere along the way we seem to have missed stating the requirement for the RS-FEC encoder.

SuggestedRemedy

at P70 L39, change "When RS-FEC is enabled for the link, the group of 122 octets contained in the vector tx_group are encodedÓ" to "When RS-FEC is implemented and enabled for the link, the group of 122 octets contained in the vector tx_group shall be encoded..."
Add PICS item to PCS Transmit. Feature: RS-FEC encoder | Subclause 190.3.2.7 | Description: See 190.3.2.7 | Status: FEC:M | Support: Yes[] N/A []

Response *Response Status* **W**

ACCEPT.

Cl **190** *SC* **190.3.2.7** *P* **70** *L* **40** # 48

Slavick, Jeff Broadcom

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

The number 6 is less than 10 and so it should be spelled out.

SuggestedRemedy

Change "6 8-bit" to "six 8-bit"

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2.7** *P* **70** *L* **41** # 49

Slavick, Jeff Broadcom

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

The RS-FEC symbol size is called out to be 8-bits in the first sentence, so no need to keep including 8-bit before the RS-FEC each time you use. A summary of the total bits at the end though would be useful.

SuggestedRemedy

Change:
The encoder processes 122 8-bit RS-FEC message symbols to generate 6 8-bit RS-FEC parity symbols, which are then appended to the message to produce a codeword of 128 8-bit RS-FEC symbols.

To:

The encoder processes 122 RS-FEC message symbols to generate six RS-FEC parity symbols that are appended to the message to produce a codeword of 128 RS-FEC symbols (1024bits

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2.7** *P* **70** *L* **53** # 90

Ran, Adee Cisco Systems

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

Inline equation is small

SuggestedRemedy

Increase the equation size

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2.7** *P* **70** *L* **54** # 20

Slavick, Jeff Broadcom

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

Is the equation of "normal" size, seems a bit small.

SuggestedRemedy

Check if the proper font is use for the x^8+x^4Ó+1.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Increase font size of equation at line 54 to align with text.

Cl **190** *SC* **190.3.2.7** *P* **71** *L* **18** # 21

Slavick, Jeff Broadcom

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

m(x) in the sentence should be italics

SuggestedRemedy

Italicize the m(x) after the word polynomial

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2.7** *P* **71** *L* **24** # 23

Slavick, Jeff Broadcom

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

Which element is being identified?

SuggestedRemedy

Insert the following after the word element in italics with appropriate sub/superscripting "mi,5a^5 + mi,4a^4 + Ó + mi,1a + mi,0" with a using the alpha character.

Response *Response Status* **W**

ACCEPT.
(note, see 5th paragraph in 91.5.2.7)

Cl **190** *SC* **190.3.2.7** *P* **71** *L* **24** # 22

Slavick, Jeff Broadcom

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

The mi in the first sentence should be italics

SuggestedRemedy

Italicize the mi after the word symbol

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2.7** *P* **71** *L* **25** # 25

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **R** *RS-FEC*

The statement that mi,0 is the first bit transmitted is duplicative with the last sentence of this sub-section (pg71 lin 52).

SuggestedRemedy

Remove "mi,0 is the first bit transmitted"

Response *Response Status* **W**

REJECT.

CRG disagrees with commenter.
The two statements are similar but not identical. The first usage refers to message bits in the defined message symbol. Deleting it would remove the meaning of the notation. The second usage (at line 52) relates to the construction of the full codeword, not just the message symbols. Keeping both adds clarity and does no harm.

Cl **190** *SC* **190.3.2.7** *P* **71** *L* **26** # 26

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **A** *Editorial*

tx_RSmessage<975:0> is defined after it's used.

SuggestedRemedy

Delete:
tx_RSmessage<975:0> prior to the RS-FEC(128,122) encoder is formed as follows:
tx_RSmessage<975:0> = tx_group<975:0>

Replace the two remaining instances of tx_RSmessage with tx_group.

Add the following before "where:"
from the Transmit process

Response *Response Status* **W**

ACCEPT.

Cl **190** *SC* **190.3.2.7** *P* **71** *L* **36** # 91

Ran, Adee Cisco Systems

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

Parentheses should not be in italics

SuggestedRemedy

Remove italics from parentheses, 3 times in this line, also 4 more instances on this page, and other places.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2.7** *P* **71** *L* **37** # 29

Slavick, Jeff Broadcom

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

Too many commas in the sentence

SuggestedRemedy

Change:
The parity polynomial p(x) is calculated as the reminder of polynomial division of m(x) by g(x). Its coefficients, p5 to p0, as shown in Equation (190'3), are the parity symbols.

To one of the following:
Equation (190'3) defines the parity polynomial p(x) whose coefficients are the parity symbols p5 to p0. p(x) is the reminder of polynomial division of m(x) by g(x).

Or:
The parity polynomial p(x) is calculated as the reminder of polynomial division of m(x) by g(x). Equation (190'3) defines the mapping of the parity symbols p5 to p0 to its coefficients.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "The parity polynomial p(x) is calculated as the reminder of polynomial division of m(x) by g(x). Its coefficients, p5 to p0, as shown in Equation (190'3), are the parity symbols. " to
"The parity polynomial p(x) is calculated as the reminder of polynomial division of m(x) by g(x). Equation (190'3) defines the mapping of the parity symbols p5 to p0 to its coefficients."

Cl **190** *SC* **190.3.2.7** *P* **71** *L* **43** # 92

Ran, Adee Cisco Systems

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

In "pi,0 is the first bit transmitted" the "0" should be a subscript

SuggestedRemedy

Change to subscript

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2.7** *P* **71** *L* **43** # 28

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **R** *Editorial*

The statement that pi,0 is the first bit transmitted is duplicative with the last sentence of this sub-section (pg71 lin 52).

SuggestedRemedy

Remove "pi,0 is the first bit transmitted"

Response *Response Status* **W**

REJECT.

CRG disagrees with commenter.
The two statements are similar but not identical. The first usage refers to parity bits in the defined parity symbol. Deleting it would remove the meaning of the notation. The second usage (at line 52) relates to the construction of the full codeword, not just the parity symbols. Keeping both adds clarity and does no harm.

Cl **190** *SC* **190.3.2.7** *P* **71** *L* **50** # 145

Maguire, Valerie Copperopolis; aff'l w/ CME Consulting and Cisco

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

Prefer not to see 'x' just floating here.

SuggestedRemedy

Insert non-breaking space between "of" and "x".

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2.8** *P* **72** *L* **42** # 261

Jonsson, Ragnar Infineon

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

The wording "In no case shall the scrambler state be initialized to all zeros." is unclear, because it could imply that there are different "cases" that need to be considered. In particular, an implementer may struggle to understand what the "no case" is that is referenced in this text.

SuggestedRemedy

Change "In no case shall the scrambler state be initialized to all zeros." to "The scrambler shall never be initialized to all zeros."

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2.8** *P* **73** *L* **23** # 93

Ran, Adee Cisco Systems

Comment Type **ER** *Comment Status* **A** *PCS*

"as in Clause 40"
Reference is not specific enough. I assume the intent is 40.3.1.3.2, which contains the same equations for Sy_n and Sx_n, but it does not seem to be exactly the same for Sg_n. For Sy_n and Sx_n, either refer to an existing specification or note (informatively) that it is the same as an existing one.

SuggestedRemedy

Either change to "as specified in 40.3.1.3.2", or delete this phrase and add a paragraph "NOTE¨The specification for Sy_n and Sx_n is identical to the one in 40.3.1.3.2".

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Change "as in Clause 40" to "as specified in 40.3.1.3.2".

Add at P73 L25 (after paragraph): "NOTE¨The specification for Sy_n and Sx_n is identical to 40.3.1.3.2".

Cl **190** *SC* **190.3.2.9** *P* **73** *L* **30** # 95

Ran, Adee Cisco Systems

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

I interpret the symbol "^" (used in many expressions) as XOR, but this is not stated anywhere. In Equation (190'6) the "+" symbol is used for the same purpose. In 190.1.6.1 it is stated that "A plus symbol within a circle denotes a bit-wise exclusive OR (XOR) operation"; using three different symbols for the same operation is confusing.

SuggestedRemedy

Either change "^" to the circled-plus symbol (Unicode U+2295, ?) or (preferably) add "the character ^ denotes bitwise XOR operation" prior to the first expression.

Response *Response Status* **C**

REJECT.

The symbol ^ is used extensively to represent bitwise XOR in IEEE Std 802.3-2022, in multiple clauses, without need for further definition.

Cl **190** *SC* **190.3.2.9** *P* **73** *L* **36** # 96

Ran, Adee Cisco Systems

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

Equation (190'6) is not referenced anywhere; it does not need to be numbered.

SuggestedRemedy

Change "using the following generator polynomial: <equation>" to "using the generator polynomial g(x)=x^3+x^8".

(^ denotes superscript).

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2.11** *P* **76** *L* **29** # 262

Jonsson, Ragnar Infineon

Comment Type **ER** *Comment Status* **A** *Editorial*

The meaning of "+" and ">" is not clear in the formulas in lines 29-34. The operands are sequences of -1, 0, and 1, and there is no obvious definition for "+" for this kind of operands.

SuggestedRemedy

Add explanation of what "+" and ">" mean in the context of this text

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Insert line between line 30 and 32: "where + indicates an integer addition."Replace line 32 with "-1 if ((DS_n > 0) AND (RD_{n-1} > 0 OR (RD_{n-1} = 0 AND Sg_n = 1)))

Meaning of ">" is clear in the context of a conditional.

Cl **190** *SC* **190.3.2.11** *P* **76** *L* **32** # 97

Ran, Adee Cisco Systems

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

In the equation for SX_n there is an unusual asterisk-like character (?) that seems to denote logical AND, and "+" seems to denote logical OR, although in other expressions in this subclause (for DS_n and RD_n) it seems to denote addition. This is confusing.

Note that Table 21¹1 specifies usage of the unusual character as "Binary AND" but it is specific for state diagrams. Also, similar expressions in 40.3.1.3.4 use "and", and the state diagrams in clause 190 use the regular asterisk (which is preferable).

Also in 190.3.4.1 and 190.3.4.3

SuggestedRemedy

Add a sentence after the expression for DS_n: "where + denotes arithmetic addition". In the expression for SX_n, replace the symbols with the words "AND" and "OR". Add parentheses to avoid ambiguity.

Implement similar changes in the other mentioned expressions.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accomodated by comment 262

Cl **190** *SC* **190.3.2.11** *P* **76** *L* **36** # 94

Ran, Adee Cisco Systems

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

The paragraph starting with "A balanced code-group" seems to have a smaller font size than the rest of the text.

SuggestedRemedy

Correct the formatting.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2.11** *P* **76** *L* **39** # 263

Jonsson, Ragnar Infineon

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

The meaning of "x" is not clear in the formulas in lines 39-44. The operands are a scalar and a sequences of -1, 0, and 1, and there is no obvious definition for "x" for this kind of operands.

SuggestedRemedy

Add explanation of what "x" mean in the context of this text

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

(the multiplication symbol) is a defined parameter in the IEEE SA style guide.)

Cl **190** *SC* **190.3.2.12** *P* **77** *L* **13** # 271

Law, David HPE

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

Suggest that the source of eee_low_snr parameter should be noted.

SuggestedRemedy

Suggest that 'The eee_low_snr parameter communicated through the PMA_EEE_LOW_SNR.indication primitive ...' should be changed to read 'The eee_low_snr parameter generated by the PMA receive function and communicated through the PMA_EEE_LOW_SNR.indication primitive ...'.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.2.12** *P* **77** *L* **51** # 104

Ran, Adee Cisco Systems

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

"Transmission of the sleep signal may start"Ó"that follows the refresh period."
This text is repeated in 190.3.5.1

SuggestedRemedy

Consider deleting one of the duplicates.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Delete the first two sentences of the paragraph that begins "Transmission of the sleep signal may startÓ" P77 L51 through P78 L1.
Add to the end of the paragraph. " See 190.3.5.1 for synchronization of LPI signals, including when sleep and alert may start."

Cl **190** *SC* **190.3.3** *P* **78** *L* **12** # 172

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

Untestable shall: State diagrams aren't "implemented" per se - the behavior is implemented. The diagrams are conformed to, as in the previous sentence.

SuggestedRemedy

Change "shall implement the RFER Monitor" to "shall conform to the RFER Monitor"

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.3** *P* **78** *L* **42** # 98

Ran, Adee Cisco Systems

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

"RS" is used elsewhere as an acronym of "reconciliation sublayer".

SuggestedRemedy

Change "RS" to "RS-FEC" or to "Reed-Solomon".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "RS" to "RS-FEC"

Cl **190** *SC* **190.3.3** *P* **78** *L* **43** # 99

Ran, Adee Cisco Systems

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

"may use"Ó "to determineÓ" "and generates" - syntax mismatch, and standard language mismatch - is "generates accordingly" optional or required?

Similarly in 190.4.3 for the PMA receive function.

SuggestedRemedy

Change "and generates" to "and to generate".
Alternatively, rephrase to make the "generate" part mandatory and the rest optional.

Apply similarly in 190.4.3.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "and generates" to "and then generates"

Editor's note: What is used to make a determination is optional, but after it makes a determination, the pcs_status is generated according to the determination.

Cl **1903** *SC* **1903.3.3** *P* **78** *L* **54** # 27

Slavick, Jeff — Broadcom

Comment Type **TR** *Comment Status* **R** *RS-FEC*

There is no sub-clause describing the operation of the RS-FEC decoder and any status indicators it produces or statistics it provides.

SuggestedRemedy

Add a new sub-clause before 190.3.3.1 but at the same sub-level.

The Reed-Solomon decoder extracts the message symbols from the codeword, corrects them as necessary and discards the parity symbols. The RS-FEC decoder shall be capable of correcting any combination of up to t=3 symbol errors in a codeword. The probability that the decoder fails to indicate a codeword with t+1 errors as uncorrected is not expected to exceed 10^-6. This limit is also expected to apply for t+2 errors, t+3 errors, and so on.

The following counters shall be provided:
FEC_corrected_cw_counter
A 32-bit counter that increments by one for each RX_FRAME event (see 190.3.6.1.6) in which the FEC codeword contains errors and was corrected by the Reed Solomon decoder.

FEC_uncorrected_cw_counter
A 32-bit counter that increments by one for each RX_FRAME event (see 190.3.6.1.6) in which the FEC codeword contains errors that were detected but no corrected by the Reed Solomon decoder.

FEC_cw_counter
A 48-bit counter that increments by one for each RX_FRAME event (see 190.3.6.1.6).

FEC_codeword_error_bin_i
A set of three 32-bit counters were counter i increments by one for each RX_FRAME event (see 190.3.6.1.6) with exactly i correctable 8-bit symbols (I=1 to 3). For example if a codeword has exactly 2 error 8-bit symbols, then FEC_codeword_error_bin_2 is incremented.

In 190.3.7 add the following mappings
FEC_corrected_cw_counter to MDIO registers 3.802, 3.803
FEC_corrected_cw_counter to MDIO registers 3.804, 3.805
FEC_cw_counter to MDIO registers 3.300, 3.301, 3.302
FEC_corrected_error_bin_1 to MDIO registers 3.340, 3.341
FEC_corrected_error_bin_2 to MDIO registers 3.342, 3.343
FEC_corrected_error_bin_3 to MDIO registers 3.344, 3.345

Response *Response Status* **W**

REJECT.

CRG Disagrees with the commenter.

RS-FEC specifications integral to the PCS of BASE-T1 PHYs are different from those in high-speed PHYs where RS-FEC has been defined as a separate sublayer. Performance is integrated into the receiver. This has a long history with FEC in 1000BASE-T, MultiGBASE-T, and has continued with RS-FEC in 1000BASE-T1 and MultiGBASE-T1 PHYs. Separate specification from the receiver performance is not required in any of these PHYs because the sublayer cannot be separated from the PHY's PCS.

Cl **190** *SC* **190.3.3.1** *P* **79** *L* **6** # 171

Zimmerman, George — CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

Untestable shall: The identification of invalid characters is an untestable shall. The thing that is testable is the replacement o fthese with /E/, which is a second shall. Therefore, remove the shall on the "identification" - it is only a definition of what is to be replaced.

SuggestedRemedy

Change "Received characters shall be identified as invalid characters" with "Received characters are defined as invalid characters"

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.3.2** *P* **79** *L* **22** # 107

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **R** *RS-FEC*

There is no specification of the RS-FEC decoder correction capability. I assume there is an expectation that the decoder actually corrects errors, but this is not written anywhere.

with the current specifications, the decoder could just ignore the parity symbols and extract the payload, and this would be compliant. Or it could just mark codewords as invalid if any error is detected (nonzero syndrome), never correcting anything. This would have very low latency but it's not what people would expect.

The code specified in 190.3.2.7 has 2t=128-122=6 so a decoder is expected to be able to correct up to t=3 symbol errors (with 8-bit symbols).

SuggestedRemedy

Add a requirement that the RS-FEC decoder shall be able to correct up to t=3 symbol errors (the text in 119.2.5.3 can be used as a reference).

Response *Response Status* **W**

REJECT.

CRG Disagrees with the commenter.

RS-FEC specifications integral to the PCS of BASE-T1 PHYs are different from those in high-speed PHYs where RS-FEC has been defined as a separate sublayer. Performance is integrated into the receiver. This has a long history with 1000BASE-T, MultiGBASE-T, and has continued in 1000BASE-T1 and MultiGBASE-T1 PHYs. Separate specification from the receiver performance is not required because the sublayer cannot be separated from the PHY.

Cl **190** *SC* **190.3.4.2** *P* **81** *L* **4** # 100

Ran, Adee Cisco Systems

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

Figure 190-7 includes text with unreadably small font.
Note that the terms "LL frame" and "6-tuple" in the small-print labels are not defined anywhere.
The numbers appear in different font than the rest of the text, and the vertical alignment of the numbers in the first row is inconsistent.

SuggestedRemedy

Modify the figure to use at most 8-point font as in the style manual. This can be achieved by using vertical text and/or separating the "LL frame" and "6-tuple" labels into a detail callout attached to the first RS-FEC frame.

Change the numbers to sans serif font and align the first row correctly.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Consider breaking figure into two rows (one with 0 to 15 and the second with 16 to 31) and increasing font size) or rotating the figure. Breaking into two rows is preferable for readability.

Editorial license to reformat to increase font size. Additionally change numbers to sans serif font and align the first row correctly.

Cl **190** *SC* **190.3.4.2** *P* **82** *L* **1** # 146

Maguire, Valerie Copperopolis; aff'l w/ CME Consulting and Cisco

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

Paragraph formatting error.

SuggestedRemedy

Set the paragraph on line 1 to "start anywhere" so it will being right after Figure 190-8.
Grant Editor's license to adjust placement of remaining paragraphs in the clause as needed so the paragraphs flow smoothly.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.4.2** *P* **82** *L* **3** # 101

Ran, Adee Cisco Systems

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

Labels in Figure 190-8 are in "Times New Roman" font

SuggestedRemedy

Change to sans serif font

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.4.2** *P* **82** *L* **23** # 173

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

Untestable shall: whether the follower uses the FTFC value or not to determine the alignment is unobservable. It can (and probably does), but the alignment itself, specified in 190.3.5 is what is required - not that the FTFC is usedÓ descriptive language is appropriate here.

SuggestedRemedy

change "shall use the FTFC" to "uses the FTFC"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accomodated by comment 230.

Cl **190** *SC* **190.3.4.2** *P* **82** *L* **24** # 230

Murray, Brian Analog Devices

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

In clause 190.3.5 the detailed specification for PFC alignment is in 190.3.5.1 and is provided by the following text:

"A PHY in FOLLOWER mode is responsible for synchronizing its PFC to the PFC of the LEADER during PAM2 training. See 190.3.4.2 for the requirements on the FOLLOWER alignment with reference to the LEADER."

However, 190.3.4.2 contains the text below:

"When the config parameter is FOLLOWER and EEE is enabled for the link, the FOLLOWER shall use the FTFC value received from the LEADER to align its quiet-refresh cycle to that of the LEADER as specified in 190.3.5."

This creates a circular reference.

My preference is to keep all of the requirements on frame alignment in clause 190.3.4.2 since this is all connected to the formatted training frame exchange.

SuggestedRemedy

In clause 190.3.4.2 change the paragraph that starts on line 16 of page 82 to the following:

"The start of the training frame transmitted by the FOLLOWER shall be delayed by not more than 1 PCS partial frame with reference to the start of the training frame received from the LEADER, as seen at the MDI of the FOLLOWER. When EEE is enabled for the link, the FOLLOWER shall align its PFC to that of the LEADER as shown in Figure 190-12."

On page 82 line 22 change the following text:

"When the config parameter is FOLLOWER and EEE is enabled for the link, the FOLLOWER shall use the FTFC value received from the LEADER to align its quiet-refresh cycle to that of the LEADER as specified in 190.3.5."

to the text shown below:

"When the config parameter is FOLLOWER and EEE is enabled for the link, the FOLLOWER uses the FTFC value received from the LEADER to align its PFC to that of the LEADER."

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.4.2.3** *P* **83** *L* **20** # 102

Ran, Adee Cisco Systems

Comment Type **T** *Comment Status* **A** *EZ-PULL*

The equation for FTFC includes the symbol ">>" which is undefined. I assume it is a right-shift operator, but if that's the case, it's applied to the result of mod(), which is a number. So why not just divide by 16.

SuggestedRemedy

Change ">> 4" to "/ 16"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add after equation: "where >> indicates a bitwise right shift, truncating the values below the new binary point."

Cl **190** *SC* **190.3.4.2.4** *P* **83** *L* **41** # 40

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **A** *RS-FEC*

Only if you actually have the capability should you permit advertisement of EEE and RS-FEC

SuggestedRemedy

Change:
The PHY capability bits Oct10<0> and Oct10<1> reflect the values specified by the 100BASE-T1L training register bits 3.2297.14 and 3.2297.15, respectively.

To one of the two following options:

The PHY capability bits Oct10<0> and Oct10<1> indicate the PHYs request to enable RS-FEC and EEE modes of operation, respectively. rs_adv is set to one when the 100BASE-T1L PHY has the ability to operate in RS-FEC mode as indicated by status register 3.2296.14 and the 100BASE-T1L training register to request RS-FEC mode of operation is set to a one, 3.2297.14. eee_adv is set to one when the 100BASE-T1L PHY has the ability to operate in EEE mode as indicated by status register 3.2296.15 and the 100BASE-T1L training register to request EEE mode of operation is set to a one, 3.2297.15.

Or alternatively use following changes which utilizes sub-layer variables and maps those variables to the associated MDIO registers, since MDIO is not mandatory, just an option. DJ has moved in this direction of using variables within the sub-layer and then mapping them to MDIO container.

The PHY capability bits Oct10<0> and Oct10<1> indicate the PHYs request to enable RS-FEC and EEE modes of operation, respectively. rs_adv is set to one when the variables rs_fec_ability and rs_fec_request are both one. eee_adv is set to one when eee_ability and eee_request are both one.
In 190.3.7 add the following mappings
rs_fec_ability to MDIO register 3.2296.14
rs_fec_request to MDIO register 3.2297.14
eee_ability to MDIO register 3.2296.15
eee_request to MDIO register 3.2297.15

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Change: "The PHY capability bits Oct10<0> and Oct10<1> reflect the values specified by the 100BASE-T1L training register bits 3.2297.14 and 3.2297.15, respectively. "

To
"PHY capability bits Oct10<0> and Oct10<1> indicate the PHY's request to enable RS-FEC and EEE modes of operation, respectively. Bit Oct10<0>, rs_adv, is set to one when the 100BASE-T1L PHY has the ability to operate in RS-FEC mode as indicated by status register bit 3.2296.14 and the 100BASE-T1L training register bit 3.2297.14 to request RS-FEC mode of operation is also set to a one. Bit Oct10<1>, eee_adv, is set to one when the

100BASE-T1L PHY has the ability to operate in EEE mode as indicated by status register bit 3.2296.15 and the 100BASE-T1L training register bit 3.2297.15 to request EEE mode of operation is also set to a one."

Cl **190** *SC* **190.3.4.2.4** *P* **83** *L* **41** # 103

Ran, Adee Cisco Systems

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

training register

SuggestedRemedy

MDIO training register

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.4.2.4** *P* **83** *L* **45** # 39

Slavick, Jeff Broadcom

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

Figure 190-6 is the side-stream scrambler figure.

SuggestedRemedy

Change the reference to Figure 190-8.

Response *Response Status* **W**

ACCEPT.

Cl **190** *SC* **190.3.4.2.4** *P* **83** *L* **47** # 38

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **A** *RS-FEC*

eee_adv and rs_adv are only referred to here, I don't see a section for PCS resolution process.

SuggestedRemedy

Add the following to the last paragraph of 190.3.4.2.4
"When the transmitted eee_adv is set to one and the received Oct10<1> is also a one, then EEE enabled. When the transmitted rs_adv is to one and the recevied Oct10<0> is also a one, then RS-FEC mode is enabled."

Response *Response Status* **W**

ACCEPT IN PRINICIPLE.

(typo corrected, wording clarified)
Add the following to the last paragraph of 190.3.4.2.4

"EEE is enabled when transmitted eee_adv is set to one and the bit received in Oct10<1> is also a one. RS-FEC mode is enabled when the transmitted rs_adv is set to one and the bit received in Oct10<0> is also a one."

Cl **190** *SC* **190.3.4.2.5** *P* **84** *L* **3** # 174

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

there are several duplicative shalls in the description of the CRC. Only one is needed. The others describe the figure.

SuggestedRemedy

Change "shall implement the CRC polynomial" (at line 3) to "implements the CRC polynomial"
Change "shall be initialized to zero" (at line 6) to "are initialized to zero".

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.4.2.5** *P* **84** *L* **10** # 147

Maguire, Valerie Copperopolis; aff'l w/ CME Consulting and Cisco

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

Prefer not to see 'S0' just floating here.

SuggestedRemedy

Insert non-breaking space between "value" and "S0".

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.4.3** *P* **84** *L* **30** # 19

Slavick, Jeff Broadcom

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

The number 6 is less than 10 and so it should be spelled out.

SuggestedRemedy

Change "6 PAM2" to "six PAM2"

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.4.3** *P* **84** *L* **41** # 231

Murray, Brian Analog Devices

Comment Type **TR** *Comment Status* **A** *PCS*

In Table 190'8 the 4B6B NND code-groups for PAM-2 training are listed. The entry [0010] = [-1 1 1 1 1 1] has a running disparity of +4. All other entries in the table have a running disparity of 0 or +2. The result of this is a difference between the running disparity bound during PAM-2 training (+/-7) and during data (+/-5).

There are 14 unused 6-tuples with running disparity of +2 (and their inverse) available to use as an alternative 6-tuples in the 4B6B table. Propose to use the 6-tuple [-1 1 -1 1 1 1] which has a running disparity of +2, is well behaved with no significant concern over data correlation.This keeps the range of running disparity the same in training and data.

SuggestedRemedy

Replace the 6-tuple [-1 1 1 1 1 1] for entry [0010] in Table 190-8 with the 6-tuple [-1 1 -1 1 1 1].

Response *Response Status* **W**

ACCEPT.

Cl **190** *SC* **190.3.4.3** *P* **85** *L* **1** # 214

Wienckowski, Natalie IVN Solutions LLC

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

Should be a continued table.

SuggestedRemedy

To add (continued) to table title on the second page when a table is split across pages: Place the cursor at the end of table title on first page. Then click on the Variables Tab and insert "Table
Continuation" variable. This will add the (continued) on subsequent pages.]

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.4.3** *P* **85** *L* **14** # 232

Murray, Brian Analog Devices

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

The text ".. keeps the running sum of the transmitted PAM3 symbols within bounds Ó" refers to PAM3 symbols. However, 4B6B encoding uses PAM2.

SuggestedRemedy

Change "PAM3" to "PAM2".

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.4.3** *P* **85** *L* **19** # 264

Jonsson, Ragnar Infineon

Comment Type **ER** *Comment Status* **A** *Editorial*

The meaning of "+", ">", and "x" is not clear in lines 19-34. See comments on page 76.

SuggestedRemedy

Add explanation of what "+", "x", and ">" mean in the context of this text

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Insert line between line 19 and 21: "where + indicates an integer addition."Replace line 21 with "-1 if ((DS_n > 0) AND (RD_{n-1} > 0 OR (RD_{n-1} = 0 AND Sg_n = 1)))

Meaning of ">" is clear in the context of a conditional.

Cl **190** *SC* **190.3.6** *P* **88** *L* **33** # 55

He, Xiang Huawei Technologies

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

Clause 190 has both PCS and PMA, so the subclause title is better to clearly states whether this is for PCS or PMA, if this is not a PCS specific thing like "Training" or "LPI signaling". This also aligns better with the subclause title for 190.3.1 through 190.3.3.

SuggestedRemedy

Change "Detailed functions and state diagrams" to "PCS detailed functions and state diagrams".

Response *Response Status* **W**

REJECT.

Numbering of subclauses makes the association clear - PCS is 190.3 (and subclauses), PMA is 190.4 (and subclauses). This is similar to numerous other clauses.

Cl **190** *SC* **190.3.6.1.1** *P* **88** *L* **39** # 105

Ran, Adee
Cisco Systems

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

The element ordering in E_MII_R<0:1><0:5> is inconsistent with the bit ordering in RXD<3:0>. Similarly in many other constants and variables.

SuggestedRemedy

Consider using a consistent order.

Response *Response Status* **C**

REJECT.

Bit ordering for E_MII_R and similar MII variables needs to be consistent with the bit ordering of rx_mii, not RXD<3:0>

Cl **190** *SC* **190.3.6.1.1** *P* **89** *L* **38** # 106

Ran, Adee
Cisco Systems

Comment Type **TR** *Comment Status* **R** *RS-FEC*

The assigned values of RFER_CNT_LIMIT and RFRX_CNT_LIMIT result in hi_rfer being asserted when the RS-FEC block error ratio is about 16/88 or about 18% (assuming uncorrectable codewords occur randomly). This means 18% of the traffic can be lost (frame loss ratio higher than 1e-1!) without asserting hi_rfer, which makes it a very crude indication (the link will likley become useless at this performance or even lower BER) and does not match the stated BER/FLR requirements in 190.5.5.1.

Allowing a link to operate with such high error probability would raise MTTFPA concerns, because there is a non-negligible probability (with this codeword error probability and simple error model assumptions, estimated as ~0.2%) that a codeword with more than 3 errors is not detected as uncorrectable, but instead miscorrected to create 2t=6 symbol errors.

It practically becomes an indication of a dropped link, but this should already be detected by other means (pcs_status, implementation dependent) for the case where RS-FEC is not available.

Note that the PCS in clause 119 and similar ones asserts loss of alignment (and pcs_status=NOT_OK) upon reception of 3 consecutive uncorrectable RS-FEC codewords.

SuggestedRemedy

Increase RFRX_CNT_LIMIT to create a ratio based on the expected worst-case performance (e.g. frame loss ratio). For example, assuming the maximum allowed frame loss ratio is 1e-6 (very relaxed compared to about 1e-10 in BASE-R PHYs), RFRX_CNT_LIMIT should be RFER_CNT_LIMIT*1e6 or about 2^24.

If the current value is retained, add a NOTE stating that with random error assumptions, high_rfer will be asserted at a codeword error ratio of approximately 18% or above. (if the value is changed, add the note with the resulting probability).

Response *Response Status* **W**

REJECT.

The analysis uses a stationary error model - when in this channel it would more likely be burst errors, common to known causes in the application space. The analysis also neglects the fact that this high RFER count goes along with marking the blocks as Errors, guaranteeing that they will be discarded and counted at the MAC, indicating a bad link. Note that this is only a 100 Mbps link, so the MTTFPA calculation is much more generous than at 100 Gbps allowing monitoring of the MAC counters and reacting to a bad link.

Cl **190** *SC* **190.3.6.1.2** *P* **89** *L* **47** # 272

Law, David HPE

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

Based on the description in subclause 190.3.1 'PCS Reset function' and its use in the state diagrams, it appears that pcs_reset is a Boolean.

SuggestedRemedy

Suggest that 'Variable used by ...' should be changed to read 'Boolean variable used by ...'.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.6.1.2** *P* **89** *L* **48** # 273

Law, David HPE

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

Suggest that a cross-reference to subclause 190.3.1 be added to the definition of the pcs_reset variable since subclause 190.3.1 'PCS Reset function' defines the conditions under which pcs_reset is set to TRUE.

SuggestedRemedy

Add the text 'See 190.3.1' to the end of the definition of the pcs_reset variable.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.6.1.2** *P* **89** *L* **49** # 274

Law, David HPE

Comment Type **TR** *Comment Status* **A** *PCS*

The description of the rx_char variable in subclause 190.3.6.1.2 'Variables' says that it is a 'Structure representing one of the N characters that are output by the (8N)B/(8N + 1)B decoder' without defining which of the N characters. I believe that it is the reverse of the process described in subclause 190.3.2.4 'Block encoding' and involves unpacking the N values from an 8N + 1 bit block every 2N RX_CLK cycles.

I believe that this is covered in the penultimate paragraph of 190.3.3 'PCS Receive function' which says 'Every 2N RX_CLK cycles, an (8N+1)B block is received and is decoded to generate a list of N characters, each of which represents either a data octet or a control symbol. These characters are mapped one at a time into the rx_char structure, which is processed in accordance with Figure 190¹13 to generate signals at the MII.'.

SuggestedRemedy

Suggest that since rx_coded, including the transmission order, is defined in subclause 190.3.2.3 'Notation conventions', the following is added to the description of the rx_char variable:

A (8N+1)B block represented by rx_coded<0:8N> (see 190.3.2.3) is received every 2N RX_CLK cycles. The 9-bit character represented by rx_char is extracted from rx_coded<0:8N> every 2 RX_CLK cycles. The Boolean value of rx_char is extracted from rx_coded<0>, the 8-bit numerical value of rx_char is extracted from rx_coded<8N + 1:8N + 9>.

Response *Response Status* **W**

ACCEPT.

Cl **190** *SC* **190.3.6.1.2** *P* **90** *L* **5** # 275

Law, David HPE

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

Incorrect cross-reference.

SuggestedRemedy

Change '... encoder as described in 190.3.3.4' to read '... encoder as described in 190.3.2.4.'.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.6.1.2** *P* **90** *L* **9** # 215

Wienckowski, Natalie IVN Solutions LLC

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

Boolen variable with no defininition of "FALSE".

SuggestedRemedy

At the end of the description add: It is set FALSE otherwise.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.6.1.2** *P* **90** *L* **25** # 276

Law, David HPE

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

The definition of variables passed in primitives across the PMA service interface seems to vary. As an example, eee_low_snr is defined as a 'Parameter set by the PMA Receive function and communicated through the PMA_EEE_LOW_SNR.indication primitive.', yet tx_mode is described as a 'Variable set by the PHY control function and communicated through the PMA_TXMODE.indication primitive.'. While both are communicated through a primitive, these are state diagram variables as noted by the subclause 190.3.6.1.2 title 'Variables'. Further, subclause 190.2.2.2.2 'When generated' says 'The PHY Control function generates this primitive to indicate a change in tx_mode.', and subclause 190.2.2.17.2 'When generated' says 'The PMA generates PMA_EEE_LOW_SNR.indication messages to indicate a change in the eee_low_snr variable.'.

SuggestedRemedy

I believe that these variable definitions should be of the form 'Variable set by the <function_name> function and communicated through the <parameter_name> parameter of the <primitive name> primitive. See <primitive definition subclause>.'.

As a result, suggest that the following variables are updated to read as noted:

tx_info_frame_end
Variable set by the PCS Transmit function and communicated through the tx_info_frame_end parameter of the PMA_TXINFOFRAMEEND.request primitive. See 190.2.2.14.

tx_mode
Variable set by the PHY control function and communicated through the tx_mode parameter of the PMA_TXMODE.indication primitive. See 190.2.2.2.

eee_low_snr
Variable set by the PMA Receive function and communicated through the eee_low_snr parameter of the PMA_EEE_LOW_SNR.indication primitive. See 190.2.2.17.

rx_lpi_active
Variable set by the PMA Receive function and communicated through the rx_lpi_active parameter of the PMA_PCS_RX_LPI_STATUS.request primitive. See 190.2.2.15. The parameter is set to its default value ...

config
Variable set by the PHY Control function and communicated through the PMA_CONFIG.indication primitive. See 190.2.2.1.

link_control
Variable set by the Auto-Negotiation function and communicated through the config parameter of the PMA_LINK.request primitive. See 190.2.1.1.

link_status

Variable set by the Link Monitor function and communicated through the link_status parameter of the PMA_LINK.indication primitive. See 190.2.1.2.

loc_phy_ready
Variable set by the PHY Control function and communicated through the loc_phy_ready parameter of the PMA_LOCPHYREADY.indication primitive. See 190.2.2.12.

loc_rcvr_status
Variable set by the PHY Control function and communicated through the loc_rcvr_status parameter of the PMA_RXSTATUS.indication primitive. See 190.2.2.8.

pcs_rx_mode
Variable set by the PHY Control function and communicated through the pcs_rx_mode parameter of the PMA_PCSRXMODE.indication primitive. See 190.2.2.3.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.6.1.2** *P* **90** *L* **30** # 277

Law, David HPE

Comment Type **TR** *Comment Status* **A** *PCS*

The definition of rem_eee_low_snr says that it is a 'Variable set by the PMA Receive function ...'. Subclause 190.3.2.12 'EEE capability' says that 'The aux bit of every group of transmit bits, tx_group, is set to 1 when eee_low_snr is TRUE and is set to 0 otherwise.' and 'The variable rem_eee_low_snr indicates the value of the eee_low_snr variable communicated by the remote PHY.'. Since the PMA Receive function operates at a symbol level, generating rx_symb parameters communicated to the PCS through the PMA_UNITDATA.indication primitive, I don't believe the PMA Receive function can extract the aux bit. Instead, I believe that the rem_eee_low_snr variable is extracted by the PCS Receive function. In addition, it should be noted that rem_eee_low_snr is a Boolean variable.

SuggestedRemedy

Suggest that:

[1] The text 'Variable set by the PMA Receive function ...' should be changed to read 'Boolean variable set by the PCS Receive function ...'.
[2] The text 'See 190.3.2.12.' should be added to the end of the description of the rem_eee_low_snr variable.
[3] A line from the PCS RECEIVE block to the PCS TRANSMIT block labelled 'rem_eee_low_snr' should be added to Figure 190-3 'PCS reference diagram'.

Response *Response Status* **W**

ACCEPT.

Cl **190** *SC* **190.3.6.1.2** *P* **90** *L* **33** # 278

Law, David HPE

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

The definition of the rx_lpi_active variable says that it is '... set by the PMA Receive function ...', but that 'The parameter is set ... in each state of the PCS Receive state diagram ...'. The latter seems correct since subclause 190.2.2.15 'PMA_PCS_RX_LPI_STATUS.request' says the PMA_PCS_RX_LPI_STATUS.request primitive, which passes the rx_lpi_active parameter, '... is generated by the PCS Receive ...' and Figure 190'21 'EEE Refresh monitor state diagram', a PMA state diagram uses the rx_lpi_active value in state transitions.

SuggestedRemedy

Suggest that '... set by the PMA Receive function ...' is changed to read '... set by the PCS Receive function ...'.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.6.1.2** *P* **90** *L* **38** # 34

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **A** *Editorial*

The definition of rx_lpi_sleep doesn't quite make sense.

SuggestedRemedy

Change "when 32 consecutive rx_char values each represent /LI/" to "when the last 32 rx_char values recevied are /LI/ and EEE is supported and enabled"

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

(typo corrected)
Change "when 32 consecutive rx_char values each represent /LI/" to
"when the last 32 rx_char values received are /LI/ and EEE is supported and enabled"

Cl **190** *SC* **190.3.6.1.2** *P* **90** *L* **38** # 35

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **A** *Editorial*

Isn't a character one thing or another, not a representation of something that looks like a character.

SuggestedRemedy

In the definitinon of rx_wk_idle change "each represent" to "are"

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Accomodated by comment 34

Cl **190** *SC* **190.3.6.1.3** *P* **91** *L* **51** # 176

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

The state diagram is already required with a shall, and the behavior of the timers is specified within the state diagram - does each timer duration really need a "shall"? Note - this is a stylistic difference between many BASE-T/BASE-T1 clauses and the rest of 802.3. While this is useful in autoneg where the link_fail_inhibit_timer has different durations for different PHY types (and hence this results in different phy-specific compliance points for the autoneg compliance), it really doesn't seem useful here, where the durations are fixed.

SuggestedRemedy

Change "This timer shall have a period equal to" to "This timer's period is" for lpi_rx_wake_timer (P91 L53), lpi_tx_alert_timer (P92 L4), lpi_tx_sleep_timer (P92 L9), and lpi_tx_wake_timer (P92 L14).
Change "This timer shall expire" to "This timer expires" in 190.4.9.1.2 for follower_initi_timer (P105 L12), min_follower_silent_timer (P190 L16), min_pam3_tuning_timer(P105 L19), silent_timer (P105 L23), and lpi_refresh_rx_timer (P105 L29)

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.6.1.4** *P* **92** *L* **21** # 175

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

The 'shalls' on DECODE_MII and ENCODE are duplicative of the 'shalls' in 190.3.3.3 and 190.3.2.4, which requre the decoding of the received characters and encoding of the MII inputs. Since the entire PCS state diagram is required, the functions described for DECODE_MII and ENCODE are already specified.

SuggestedRemedy

Change "shall generate" to "generates" (P92 L21) and "shall encode" to "encodes" (P92 L24)

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.6.2** *P* **94** *L* **3** # 279

Law, David HPE

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

The variable loc_phy_ready is used in Figure 190'11 'PCS (8N)B/(8N+1)B Transmit state diagram' but does not appear to be defined in the associated subclause 190.3.6.1.2 'Variables'.

SuggestedRemedy

Suggest that the following definition be added to subclause 190.3.6.1.2 'Variables':

loc_phy_ready
Variable set to the value of the loc_phy_ready parameter generated by the PHY Control function and communicated through the PMA_LOCPHYREADY.indication primitive. See 190.2.2.12.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.6.2** *P* **94** *L* **49** # 30

Slavick, Jeff Broadcom

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

The transtion from TX_WAKE is going to where? I don't usually see a state name as the destination.

SuggestedRemedy

Make the arrow from TX_WAKE actually just connect directly to TX_MII and remove the TX_MII text from line 49

Response *Response Status* **W**

ACCEPT.

Cl **190** *SC* **190.3.6.2** *P* **95** *L* # 233

Murray, Brian Analog Devices

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

The variable name "tx_lpi_alert_active" is incorrectly used in 3 places in Figure 190-12.

SuggestedRemedy

Change "tx_lpi_alert_active" to "tx_alert_active" in states SEND_NORMAL, SEND_ALERT and SEND_WAKE.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.6.2** *P* **95** *L* **2** # 32

Slavick, Jeff Broadcom

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

The transtion from SEND_WAKE is going to where? I don't usually see a state name as the destination.

SuggestedRemedy

Make the arrow from SEND_WAKE actually just connect directly to SEND_NORMAL and remove the SEND_NORMAL text from line 45

Response *Response Status* **W**

ACCEPT.

Cl **190** *SC* **190.3.6.2** *P* **95** *L* **2** # 31

Slavick, Jeff Broadcom

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

What does the dotted box mean? This is EEE machine and the NOTE describes its requirement.

SuggestedRemedy

Remove the dotted box from FIgure 190-12

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190** *P* **95** *L* **8** # 170

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

the variable tx_lpi_alert_active in states SEND_NORMAL, SEND_ALERT,and SEND_WAKE isn't listed in the variables, and appears to be the variable tx_alert_active (otherwise there is no way tx_alert_active is set)Ó

SuggestedRemedy

change tx_lpi_alert_active to tx_alert_active in SEND_NORMAL, SEND_ALERT, and SEND_WAKE states of Figure 190-12.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accomodated by comment 280

Cl **190** *SC* **190.3.6.2** *P* **95** *L* **8** # 280

Law, David HPE

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

Figure 190'12 'EEE Transmit state diagram' uses the tx_lpi_alert_active variable, setting it TRUE in the SEND_ALERT state, then FALSE in the SEND_WAKE state. The viable tx_lpi_alert_active is not defined in 190.3.6.1.2 'Variables'. The variable tx_alert_active is defined in 190.3.6.1.2 'Variables' but is not used in any of the state diagrams.

Since the description of the tx_alert_active variable says it '... is set TRUE in the LPI transmit mode, when the PHY is transmitting alert signaling ...' and '... set FALSE otherwise.', this appears to be the same as the tx_lpi_alert_active variable used in Figure 190'12

SuggestedRemedy

Since the other LPI signalling related variables include _lpi_ (e.g., tx_lpi_active, tx_lpi_qr_active, rx_lpi_active, and rx_lpi_sleep), suggest that all instances of tx_alert_active be changed to read tx_lpi_alert_active.

Response *Response Status* **W**

ACCEPT.

Cl **190** *SC* **190.3.6.2** *P* **95** *L* **47** # 108

Ran, Adee
Cisco Systems

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

The NOTE in Figure 190-12 reads as a mandatory requirement, in violation of the style manual (18.1): "Notes provide additional information to assist the reader with a particular passage and shall not include mandatory requirements".

Similarly in Figure 190-15, but with RS-FEC instead of EEE.
The suggested remedy is based on notes in other state diagrams.

SuggestedRemedy

Change the note to read "NOTE¨This state diagram is only required when EEE is enabled for the link".

Apply the corresponding change (with RS-FEC) in Figure 190-15.

Response *Response Status* **C**

REJECT.

The note is not a requirement, it does not contain a shall. It reflects a requirement elsewhere in the text.

Cl **190** *SC* **190.3.6.2** *P* **96** *L* **13** # 33

Slavick, Jeff
Broadcom

Comment Type **TR** *Comment Status* **A** *Editorial*

Convention is to use a circled letter and the same letter in a "house" to represent transitions that aren't drawn in (or would require overlapping lines).

SuggestedRemedy

In Figure 190-13 part a, replace RX_PKT on line 13 with an enclosed P, replace the path from RX_IDLE to RX_LPI with an enclosed L on line 22, replace the three RX_IDL arcs on lines 28, 34 and 44 with an enclosed I, add circled P going into state RX_PKT, add circled I going into state RX_IDL.
In Figure 190-13 partb, add a circled L going into state RX_LPI (within the dotted box) and replace the two instances of RX_IDLE on line 30 with an enclosed I

Response *Response Status* **W**

ACCEPT IN PRINCIPLE

Clause 190 follows convention in clause 145 which is more readable than single letter tags. In Figure 190-13, at P96 Lines 27, 34, & 44, and P97 L30 (twice) put RX_IDL in a flag, and add an entry 'house' into RX_IDL. Do similarly for RX_PKT and RX_LPI on pages 96 & 97. See e.g., Figure 145-13 for an example.

Cl **190** *SC* **190.3.6.2** *P* **97** *L* **32** # 109

Ran, Adee
Cisco Systems

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

The NOTE in Figure 190-14 reads as a mandatory requirement, in violation of the style manual (18.1): "Notes provide additional information to assist the reader with a particular passage and shall not include mandatory requirements".

Also, this is part b of the PCS receive state diagram; the state diagram is always mandatory, only the states in this part are conditional.
The suggested remedy is based on notes in other state diagrams.

SuggestedRemedy

Change the note to read "NOTE¨Signals and functions shown with dashed lines are only required when EEE is enabled for the link".

Response *Response Status* **C**

REJECT.

The note is not a requirement, it does not contain a shall. It reflects a requirement elsewhere in the text. Additionally, there is only a dashed line used around the entire figure, no dashed lines or separate boxes, so the proposed note would be misleading, whereas the existing note is clear.

Cl **190** *SC* **190.3.6.2** *P* **97** *L* **32** # 36

Slavick, Jeff
Broadcom

Comment Type **TR** *Comment Status* **A** *Editorial*

This note stats this "figure" is only mandatory when EEE is enabled. But isn't this a figure that has to be spread over multiple pages, so part a and part b are really "one" figure. Which means this figure is always necessary just the dotted box is only applicable when EEE is enabled (as is stated on part a).

SuggestedRemedy

Replace the note in Figure 190-14, part b with the same note from part a

Response *Response Status* **W**

ACCEPT.

Cl **190** *SC* **190.3.7** *P* **98** *L* **1** # 110

Ran, Adee Cisco Systems

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

The subclause "PCS management" has no content.

SuggestedRemedy

Delete the heading.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accomodated by Comment 234.

Cl **190** *SC* **190.3.6.2** *P* **98** *L* **3** # 281

Law, David HPE

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

The variable link_status is used in Figure 190'1 'PCS Receive state diagram' and Figure 190'15 'PCS RFER Monitor state diagram' but does not appear to be defined in the associated subclause 190.3.6.1.2 'Variables'.

SuggestedRemedy

Suggest that the following definition is added to subclause 190.3.6.1.2 'Variables':

link_status
Variable set to the value of the link_status parameter generated by the Link Monitor function and communicated through the PMA_LINK.indication primitive. See 190.2.1.2.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.3.7** *P* **99** *L* **1** # 53

He, Xiang Huawei Technologies

Comment Type **ER** *Comment Status* **A** *Editorial*

PCS management subclause is empty.

SuggestedRemedy

Add proper content to this subclause. Call it "PCS management variables" if this subclause is going to list all management variables with MDIO mapping.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Delete 190.3.7 header.

Management variables are spelled out where they apply and in registers. There is no need for a third summary table, which creates the possibility for errors.

Cl **190** *SC* **190.3.7** *P* **99** *L* **1** # 234

Murray, Brian Analog Devices

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

Clause 190.3.7 (PCS Management) is empty. I don't think that we need this clause. If we do decide to keep the PCS management clause, then we should have an equivalent clause for PMA.

SuggestedRemedy

Merge Clause 190.4.4.1 and Clause 190.3.7 in a new subclause under Clause 190.6 with a Table showing the PMA and PCS MDIO registers for 100BASE-T1L

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete clause header 190.3.7

Cl **190** *SC* **190.4.1** *P* **100** *L* **7** # 282

Law, David HPE

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

Subclause 190.4.1 'PMA Reset function' defines when pma_reset = TRUE but not when pma_reset = FALSE.

SuggestedRemedy

For completeness, suggest that '... while any of the above reset conditions holds TRUE.' Should be changed to read '... while any of the above reset conditions holds true, and set pma_reset = FALSE' otherwise.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.4.1** *P* **100** *L* **10** # 111

Ran, Adee Cisco Systems

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

The sentences starting with "Under normal circumstancesÓ" (describing the time to link) are irrelevant for the PMA reset function; the time to link is measured starting from the exit from reset.
A better location for these (informative?) statements would be somewhere below 190.3.4 or in 190.4.4.2.

SuggestedRemedy

Move the text to a better location.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace "Under normal circumstances...) to establish a valid link." with
"See 190.3.4 for information about training time at P100 L9.

Move the replaced text: "Under normal circumstances the 100BASE-T1L PHY Control state diagram takes no longer than 100 ms to enter the SEND_IDLE_OR_DATA state after exiting from reset or low power mode (see Figure 190-19). However, in conditions of high noise, more than one attempt may be required to establish a valid link." (P100 L9 to 13) to 190.3.4 PMA training (currently empty top-level header).

Cl **190** *SC* **190.4.2** *P* **100** *L* **23** # 235

Murray, Brian Analog Devices

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

The text states:

"When the PMA_CONFIG.indication parameter config is LEADER, the PMA Transmit function shall source TX_TCLK from a local clock source while meeting the transmit jitter requirements of 190.5.4.4. The LEADER-FOLLOWER relationship shall include loop timing. If the PMA_CONFIG.indication parameter
config is FOLLOWER, the PMA Transmit function shall source TX_TCLK from the recovered clock of 190.4.7 while meeting the jitter requirements of 190.5.4.4".

But TX_TCLK is not defined nor used anywhere. Also the jitter requirements clause reference is incorrect (it should be 190.5.4.3).

SuggestedRemedy

Change the text to:

"When the PMA_CONFIG.indication parameter config is LEADER, the PMA Transmit function shall source the transmit clock from a local clock source while meeting the transmit jitter requirements of 190.5.4.3. The LEADER-FOLLOWER relationship shall include loop timing. If the PMA_CONFIG.indication parameter config is FOLLOWER, the PMA Transmit function shall source the transmit clock from the recovered clock of 190.4.7 while meeting the jitter requirements of 190.5.4.3."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change the text to:
"When the PMA_CONFIG.indication parameter config is LEADER, the PMA Transmit function shall source the transmit clock from a local clock source while meeting the transmit jitter requirements of 190.5.4.3. The LEADER-FOLLOWER relationship includes loop timing. If the PMA_CONFIG.indication parameter config is FOLLOWER, the PMA Transmit function shall source the transmit clock from the recovered clock of 190.4.7 while meeting the jitter requirements of 190.5.4.3."

Cl **190** *SC* **190.4.2** *P* **100** *L* **23** # 112

Ran, Adee Cisco Systems

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

Incorrect cross-reference: the jitter requirements are in 190.5.4.3.

SuggestedRemedy

Change 190.5.4.4 to 190.5.4.3, twice in this paragraph.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.4.2** *P* **100** *L* **24** # 177

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

Duplicate shall: The loop timing relationship is already specified by the requirement that the FOLLOWER shall source from the recovered clockÓ (note all BASE-T clauses don't have this as a shall. Clauses 97 & 149 included it, as a duplicate)

SuggestedRemedy

change "shall include loop timing" to "includes loop timing"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accomodated by comment 235.

Cl **190** *SC* **190.4.2** *P* **100** *L* **30** # 178

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

45.2.1.7.4 is included in the draft - this should be a direct cross reference, not an External reference (green)

SuggestedRemedy

Remove External flag on 45.2.1.7.4 and replace with a cross reference

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.4.2** *P* **100** *L* **30** # 203

Huber, Thomas Nokia

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

Subclause 45.2.1.7.4 is part of this amendment, so it should not be shown as an external reference

SuggestedRemedy

Change the character format of 45.2.1.7.4 back to the default paragraph format

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.4.3** *P* **101** *L* **9** # 179

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

There is no register 45.2.1.252.7, and no copy of the receive fault bit in the PMA status register. (45.2.1.236b). There is no need to copy the bit.

SuggestedRemedy

Change "the receive fault bit specified in 45.2.1.7.5 and 45.2.1.252.7." to "the receive fault bit specified in 45.2.1.7.5."

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.4.3** *P* **101** *L* **9** # 180

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

45.2.1.7.5 is included in the draft - this should be a direct cross reference, not an External reference (green)

SuggestedRemedy

Remove External flag on 45.2.1.7.5 and replace with a cross reference

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.4.3** *P* **101** *L* **9** # 236

Murray, Brian Analog Devices

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

The PMA Receive fault function is mapped to the receive fault bit specified in clause 45.2.1.252.7 which does not exist. Likely it meant to refer to 45.2.1.236b 100BASE-T1L PMA status register (Register 1.2301). But there is no receive fault bit specified in that clause.

SuggestedRemedy

Remove the reference to 45.2.1.252.7 in the the last sentence of the last paragraph in Clause 190.4.3 changing the text to:

"If the MDIO interface is implemented, then this function shall contribute to the receive fault bit specified in 45.2.1.7.5"

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.4.3** *P* **101** *L* **9** # 204

Huber, Thomas Nokia

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

Subclause 45.2.1.7.5 is part of this amendment, so it should not be shown as an external reference

SuggestedRemedy

Change the character format of 45.2.1.7.5 back to the default paragraph format

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.4.4.1** *P* **101** *L* **31** # 237

Murray, Brian Analog Devices

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

In Table 190-12, the "Transmit disable" MDIO control variable is mapped to the PMA control variable "PMA_transmit_disable", but in Clause 190.4.2.1 is named "pma_transmit_disable", which is inconsistent. Also the "Register/bit number" for the "Reset" variable is incomplete. It should be "1.0.15/1.2300.15"

SuggestedRemedy

In Table 190-12:

Change the second row of the "PMA control variable" column to: "pma_transmit_disable"

Change the first row of the of the "Register/bit number columt to "1.0.15/1.2300.15"

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.4.4.2** *P* **101** *L* **36** # 181

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

Duplicate shall: compliance with state diagrams in 190.4.9.2 is currently required already under 190.4.4.2 whether or not the PHY is in the startup sequence.

SuggestedRemedy

change "shall comply with the state diagrams" to "behaves as specified in the state diagrams"

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.4.4.2** *P* **102** *L* **1** # 265

Jonsson, Ragnar Infineon

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

The statement "At any time during start-up, if the local receiver status (indicated by loc_rcvr_status) transitions to NOT_OK, PHY Control returns to the LINK_FAIL state and waits for the link_fail_inhibit_timer to expire and Auto-Negotiation to restart." is not entirely consistent with the state diagram in Figures 190-17 through 190-19, where there are states that cannot transition to the LINK_FAIL state.

SuggestedRemedy

Make the text and the state diagrams consistent.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "At any time during start-up," to"Except in the states SEND_IDLE_NOT_READY and PAM3_TUNING, at any time during start-up,"

Add new sentence after the quoted sentence (P102 L3)
"The states SEND_IDLE_NOT_READY and PAM3_TUNING may experience transient events where loc_rcvr_status transitions briefly to NOT_OK as the receiver adapts to PAM3 signaling."

Cl **190** *SC* **190.4.5** *P* **102** *L* **8** # 238

Murray, Brian Analog Devices

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

The text states that the link_status variable is communicated to the PHY Control function through the PMA_LINK.indication primitive, but the PHY Control is a PMA function. Furthermore, in the 100BASE-T1L PHY Control function, link_status is not used.

SuggestedRemedy

Change the text, in the second sentence of the first paragraph in 190.4.5, to remove the reference to the PHY Control function, as shown:

"This variable is communicated to the PCS and the Auto-Negotiation function through the PMA_LINK.indication primitive as specified in 190.2.1.2"

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.4.6** *P* **102** *L* **11** # 183

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

Duplicate shall: Figure 190-20 is included in 190.4.9.2 which is already required under 190.4.4 PHY Control.

SuggestedRemedy

change "shall comply with the state diagram of Figure 190-20" to "behaves as specified by the state diagram of Figure 190-20"

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.4.5** *P* **102** *L* **11** # 182

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

Duplicate shall: Figure 190-20 is included in 190.4.9.2 which is already required under 190.4.4 PHY Control.

SuggestedRemedy

change "shall comply with the state diagram of Figure 190-20" to "behaves as specified by the state diagram of Figure 190-20"

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.4.7** *P* **102** *L* **35** # 184

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

Untestable shall - what is a "clock suitable for signal sampling" should be specified in the jitter and frequency stability specifications.

SuggestedRemedy

change "shall provide" to "provides"

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.4.7** *P* **102** *L* **37** # 239

Murray, Brian Analog Devices

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

The text states that "The received clock signal is supplied to the PMA Transmit function by received_clock". The "received_clock" signal is only used in the PMA reference diagram of Figure 190-16 and it goes from the "PMA RECEIVE" function to the "CLOCK RECOVERY" function. The "recovered_clock" signal is the one that goes from the "CLOCK RECOVERY" to the "PMA TRANSMIT" function.

SuggestedRemedy

Change the text to:

"When the PMA_CONFIG.indication parameter config is FOLLOWER, the received clock signal is supplied to the PMA Transmit function".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE

This is actually an insert…

Insert "When the PMA_CONFIG.indication parameter config is FOLLOWER, " so that P102 L37 reads ""When the PMA_CONFIG.indication parameter config is FOLLOWER, the received clock signal is supplied to the PMA Transmit function by received_clock."

Cl **190** *SC* **190.4.8.1** *P* **103** *L* **2** # 185

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

Duplicate shall: 190.4.4 already requires the transmitted symbols to comply with 190.5.4 at the MDI.

SuggestedRemedy

Delete: "This symbol response shall comply with the electrical specifications given in 190.5.4."

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.4.9** *P* **103** *L* **19** # 56

He, Xiang — Huawei Technologies

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

Clause 190 has both PCS and PMA, so the subclause title is better to clearly states whether this is for PCS or PMA.
I also see the state diagrams for this subclause is for "PHY control", if these diagrams belong to the PMA subclause, and is part of PMA, please consider call them "PMA control state diagrams".

SuggestedRemedy

Change "Detailed functions and state diagrams" to "PMA detailed functions and state diagrams".
Subsquently, consider to rename "PHY control state diagram" to "PMA state diagram" for the state diagram figures.

Response *Response Status* **W**

REJECT.

Numbering makes the association clear. This is similar to numerous other clauses.

Cl **190** *SC* **190.4.9.1.1** *P* **103** *L* **22** # 284

Law, David — HPE

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

The variable rx_lpi_active, used in Figure 190-21 'EEE Refresh monitor state diagram', appears to be missing from subclause 190.4.9.1.1 'Variables' list.

SuggestedRemedy

Suggest that the following be added to subclause 190.4.9.1.1 'Variables':

rx_lpi_active
Variable set by the PCS Receive function and communicated through the rx_lpi_active parameter of the PMA_PCS_RX_LPI_STATUS.request primitive. See 190.2.2.15.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.4.9.1.1** *P* **103** *L* **22** # 283

Law, David — HPE

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

The variable pma_reset appears to be missing from subclause 190.4.9.1.1 'Variables' list defining the PMA state diagram variables.

SuggestedRemedy

Suggest that the following be added to subclause 190.4.9.1.1 'Variables':

pma_reset
Boolean variable used by PCS Reset to initialize all PCS functions. See 190.4.1.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

(typo in response said PCS Reset) Add to subclause 190.4.9.1.1 'Variables':pma_resetBoolean variable used by PMA Reset to initialize all PMA functions. See 190.4.1.

Cl **190** *SC* **190.4.9.1.1** *P* **103** *L* **29** # 113

Ran, Adee — Cisco Systems

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

Some variables communicated through primitives.are called "variable" while others are called "parameter".

SuggestedRemedy

Unify the definitions across this subclause.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accomodated by comment 276

Cl **190** *SC* **190.4.9.1.1** *P* **103** *L* **42** # 114

Ran, Adee
Cisco Systems

Comment Type **E** *Comment Status* **A** *EZ-PULL*

The definition of pam3_detected is repetitive, unnecessarily complicated, and the description of FALSE is badly phrased.

SuggestedRemedy

Change to "TRUE: a compatible signal detected", "FALSE: a compatible signal is not detected".

Response *Response Status* **C**

ACCEPT.

Replace description with "A Boolean variable set to TRUE when a signal compatible with PAM3 signaling and incompatible with PAM2 signaling from the remote PHY is detected, and set to FALSE otherwise."

Cl **190** *SC* **190.4.9.1.1** *P* **104** *L* **30** # 285

Law, David
HPE

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

Change 'timing_locked:' to read 'timing_locked'.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.4.9.1.1** *P* **104** *L* **30** # 115

Ran, Adee
Cisco Systems

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

Stray colon after "timing_locked"

SuggestedRemedy

Delete it

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.4.9.1.1** *P* **104** *L* **43** # 117

Ran, Adee
Cisco Systems

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

The definitions of other variables either include a list of values and meanings (e.g. in ready_to_transmit) or a reference to a subclause that contains such a list (e.g. in rem_phy_idle). Here (tx_info_countdown_done) the meaning is not described, only the conditions when each value is assigned are listed (which is redundant, since the state diagrams already specifies them).
Similarly for lpi_refresh_detect.

SuggestedRemedy

For both variables, write the possible values (FALSE and TRUE) and their meaning, as in other variables. Add the conditions for setting if necessary.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

At P104 L41 replace definition of tx_info_countdown_done with "Variable set by the PHY Control function to indicate whether the countdown is complete. When the PHY Control state diagram is in the INFO_COUNTDOWN state, three training frames incorporating InfoField data are transmitted, defining the countdown.

Values:
TRUE: Transmission of the third and final training frame associated with the countdown has begun.

FALSE: The transmission of the third and final training frames has not yet begun.

At P105 L10, add an assignment of FALSE to the tx_info_countdown_done variable in the INFO_COUNTDOWN state (see below):
tx_info_countdown_done <= FALSE

for lpi_refresh_detect
At P105 L3, replace definition of lpi_refresh_detect with "Variable to indicate whether the receiver has reliably detected refresh signaling while the PMA Receive function is in LPI receive mode.

Values:
TRUE: Refresh signaling has been detected.
FALSE: all other times."

Cl **190** *SC* **190.4.9.1.1** *P* **104** *L* **43** # 116

Ran, Adee Cisco Systems

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

Small numbers in the text should be spelled out

SuggestedRemedy

Change "3" to "three", twice, and change "3rd" to "last"

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.4.9.2** *P* **106** *L* **3** # 119

Ran, Adee Cisco Systems

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

The entry condition to DISABLE_TRANSMITTER "link_control = DISABLE + pma_reset" is ambiguous; The state diagram conventions in 21.5 do not assign operator precedence, but has parentheses to indicate precedence. In this case, the reader could deduce the precedence because DISABLE is not a Boolean value, but it is not friendly.
Note that parentheses are used in other cases (e.g. in this figure, the transition to INFO_EXCHANGE). This should be done consistently.
A similar issue exists in other diagrams and other conditions.

SuggestedRemedy

Change the entry condition to "(link_control = DISABLE) + pma_reset" in this case. Add parentheses similarly in all cases that may appear ambiguous.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change entry condition to DISABLE_TRANSMITTER to add parentheses around link_control = DISABLE

Editorial license to add parentheses in other cases where there is a conditional expression ("=", "<", ">", etc.) followed by a logical operation, where needed for clarity. Note- this may not always improve clarity, and operator hierarchy from clause 145 does not require it.

Cl **190** *SC* **190.5.** *P* **106** *L* **29** # 120

Ran, Adee Cisco Systems

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

PMA electrical specifications should be part of the PMA sublayer specification.

SuggestedRemedy

One solution is to move 190.5 to be a subclause under 190.4 (possibly grouping the existing subclauses under "Functional specifications").
An alternative is to change the title of 190.4 from "Physical Medium Attachment (PMA) sublayer" to "PMA functional specifications" (this title is subject of another comment).

Response *Response Status* **C**

REJECT.

PMA electrical specifications are a separate subsection in most (if not every) BASE-T and BASE-T1 clause of IEEE Std 802.3. Making it different here would confuse the reader familiar with similar technologies in 802.3

Cl **190** *SC* **190.4.9.2** *P* **107** *L* **16** # 286

Law, David HPE

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

Change 'SEND_IDLE _NOT_READY' to read 'SEND_IDLE_NOT_READY' (remove space between 'IDLE' and '_NOT').

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.4.9.2** *P* **108** *L* **11** # 287

Law, David HPE

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

Change 'loc_phy_ready <= true' to read 'loc_phy_ready <= TRUE'.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.4.9.2** *P* **108** *L* **31** # 118

Ran, Adee Cisco Systems

Comment Type **T** *Comment Status* **X** *Editorial*

Figure 190'20 (Link Monitor state diagram) is equivalent to an assignment of link_status = FAIL if (link_control=DISABLE) or (pma_reset) or (tx_mode=SEND_N), or OK otherwise. The text in 190.4.5 (Link Monitor function) repeats the definition of the state diagram in too many words, making it look more complicated than it is.

SuggestedRemedy

Consider replacing the state diagram with an assignment statement in 190.4.5 and simplifying the text description.

Proposed Response *Response Status* **C**

REJECT.

CRG disagrees with commenter.

Commenter provides insufficient remedy.Link Monitor state diagrams are present in most similar clauses (BASE-T and BASE-T1) in IEEE Std 802.3. Changing the format is unusual.

Cl **190** *SC* **190.4** *P* **109** *L* **27** # 54

He, Xiang Huawei Technologies

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

Is there a subclause for PMA management variables?

SuggestedRemedy

Suggest to add a subclause for PMA management variables.

Response *Response Status* **W**

REJECT.

Commenter provides insufficient remedy. Management variables are spelled out where they apply and in registers. There is no need for a third summary table, which creates the possibility for errors.

Cl **190** *SC* **190.5.1** *P* **109** *L* **33** # 122

Ran, Adee Cisco Systems

Comment Type **T** *Comment Status* **A** *EMC*

This subclause says nothing about the EMC tests, using convoluted sentences. (What does "during the test" and "specified device"?)

SuggestedRemedy

Delete the subclause.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "Applications for the specified device" to "Expected applications for 100BASE-T1L"

Change "during the test" to "during EMC test conditions"

Cl **190** *SC* **190.5.2** *P* **109** *L* **43** # 123

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **R** *Test Modes*

I assumed that all test modes described are normatively required, but then realized that the even-numbered modes are optional, conditional of "increased transmit level" which is not defined anywhere. And it is not explicitly stated that the odd-numbered test modes are normatively required. The RS-FEC support adds another level of complexity.

It looks like there are actually 2 PMA-specific test modes (1 and 3) and 5 PMA+PCS test modes (5, 7, 9, 11, and 13; RS-FEC enable or disable is purely a PCS control), plus a bit that controls the transmit level. I assume there are reasons to define the test modes this way, and the suggested remedy is based on that (but a cleaner scheme separating the PCS test modes from the PMA test modes should be considered).

SuggestedRemedy

Change from
"The test modes described in this subclause are provided to allow testing of the transmitter"
to
"The test modes described in this subclause are provided to allow testing of the transmitter. Test modes 1, 3, 5, 7, and 11 shall be provided by all PHYs. Test modes 2, 4, 6, and 12 shall be provided if the PMA supports the optional increased transmit level (see <reference>). Test modes 9, 10, 13, and 14 shall be provided if the PCS supports RS-FEC (see <reference>)".

Use references to the subclause that specify the increased transmit level and RS-FEC as options (are there MDIO bits to indicate support?), or add new subclauses if there are no such specifications.

Response *Response Status* **W**

REJECT.

Test modes are required in all cases.
Even numbered test modes are not defined if increased transmit level is not supported (see P110 L15), but the setting still exists.If RS-FEC encoding is not supported, test modes 9 and 10 are undefined.

(P110 L32), but again, the setting still exists. Similarly for test modes 13 & 14 (P110 L39)

Cl **190** *SC* **190.5.2** *P* **109** *L* **45** # 131

Ran, Adee Cisco Systems

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

"The test modes can be enabled by setting bits 1.2302.15:12 <Ó> If MDIO is not implemented, a similar functionality shall be provided by equivalent means"
This requirement is covered by the text of 190.6 and need not be repeated. It does not appear in other subclauses that mention MDIO (190.4.2, 190.4.3).

SuggestedRemedy

Change to "If the MDIO interface is implemented, the test modes can be enabled by setting bits 1.2302.15:12 <Ó>"

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.5.2** *P* **109** *L* **49** # 124

Ran, Adee Cisco Systems

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

The test modes already include numbers. The list letters are unnecessary.

SuggestedRemedy

Change from lettered list to dashed list.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.5.4.1** *P* **112** *L* **32** # 191

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

Comment Type **TR** *Comment Status* **A** *Test Modes*

Unlike clause 146, we have made each test mode explicit to the transmit mode - hence the electrical specs are all written as though they only apply to the test modes. We need to link the auto-neg output to the transmitter level (we have descriptive text, but no requirement)

SuggestedRemedy

Insert new first sentence in 190.5.4.1 (P112 L32) ¶When not in test mode, the transmitter output voltage mode shall be as determined by the result of auto-negotiation as specified in 98B.3.2. See 190.6.1.÷
Add new PMA Electrical PICS Item PMAE 2 - Feature = "Transmitter level control"
Subclause= 190.5.4.1 Value/Comment = "Determined by autonegotiation per 98B.3.2."
Status M Support: Yes[] No[]

Response *Response Status* **W**

ACCEPT.

Cl **190** *SC* **190.5.4.1** *P* **112** *L* **38** # 6

Schicketanz, Dieter Reutlingen University

Comment Type **T** *Comment Status* **A** *Reduced TX level*

1.0 Vpp operating mode (and 2.0 Volt) are defined here , but there is no explanation when to use each. In the link specification only 500m is specified. Fort what voltage level?

SuggestedRemedy

define somewhere where each Voltage is used and add in link spec a secon link like in dg.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change P118 L5 to say "the insertion loss of the 100BASE-T1L link segment for the increased TX level mode shall meet the values determined using Equation (190-13):"

Change title of Figure 190-29 to read 100BASE-T1L link segment insertion loss (increased TX level)

Add after figure 190-29 (P118 L39) "The insertion loss of the 100BASE-T1L link segment for the standard TX level mode shall meet the values determined using Equation (190-14):"

Insert new equation 190-14, and figure 190-30 100BASE-T1L link segment insertion loss (standard TX level)

Insertion Loss(f) <= 4.15*sqrt(f)+0.034*f+1.35/sqrt(f)+5*0.02*sqrt(f) (dB) (190-14)
where f is the frequency in MHz 1 <= f <= 60

Equation (190-14) is plotted in Figure 190-30, which is provided for information only.

Cl **190** *SC* **190.5.4.2** *P* **112** *L* **44** # 18

Slavick, Jeff Broadcom

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

Incomplete sentence, there is no "what to do"

SuggestedRemedy

Change:
With the transmitter in test mode 3 and, if 2.0 Vpp mode is supported, in test mode 4, and using the transmitter test fixture shown in Figure 190'23.
To:
The transmitter output droop is measured with the transmitter in test mode 3 and in test mode 4 (if 2.0 Vpp mode is supported) using the transmitter test fixture shown in Figure 190'23.

Response *Response Status* **W**

ACCEPT.

Cl **190** *SC* **190.5.4.2** *P* **112** *L* **45** # 216

Wienckowski, Natalie IVN Solutions LLC

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

The first sententence is not a complete sentence.

SuggestedRemedy

Add at the end of the sentence fragment: the following transmitter droop measurements apply in test modes 3 and 4, respectively.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accomodated by comment 18

Cl **190** *SC* **190.5.4.3** *P* **113** *L* **13** # 186

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

Comment Type **T** *Comment Status* **A** *Test Modes*

Requirements on the user: the jitter measurement interval and measurement bandwidth are conditions of the measurement, but are stated as requirements on the user (with a 'shall').

SuggestedRemedy

Change "Jitter shall be measured over an interval of 1 ms ª 10%. The bandwidth of the measurement device shall be larger than 200 MHz." to "These requirements apply when measured over an interval of 1 ms ª 10% with a measurement device of at least 200 MHz bandwidth."

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.5.4.4** *P* **113** *L* **26** # 125

Ran, Adee
Cisco Systems

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

"For the 1.0 Vpp operating mode, in test mode 7 <Ó> the transmit power shall be 1.0 ª 1.2 dBm"

1 V PtP (specified in 190.5.4.1) with PAM2 modulation on a 100 Ohm load delivers V^2/R=1^2/100 = 0.01 W = 10 mW; this is 10 dBm prior to pulse shaping. The PSD mask in figure 190-26 shows a mild low-pass response with about 4 dB attenuation at the Nyquist frequency (40 MHz) - not a lot more than square pulse shaping - how does that get anywhere near 1 dBm?

I may have got something completely wrong but it seems that the voltage and power specs don't match.

Similarly for the 2.0 Vpp mode (which should be just 6 dB higher - why is it 7 dB?)

SuggestedRemedy

If I'm not wrong - update whatever is necessary. (If I am wrong but it's not easy to explain why - consider adding a clarifying NOTE).

Response *Response Status* **W**

REJECT.

CRG DISAGREES WITH COMMENTER. Commenter makes an error in his calculation and uses 1 Vpeak, PAM2 not 1Vpp PAM3 (0.5Vp, with 1.76dB PAR). V^2/100ohm = 2.5mW (4dBm) minus 1.76dB PAR = 2.2 dBm, which fits the upper end fo the transmit power limit. The lower limit is for pulse shaping. Note that the difference between a 1st order nyquist filter and unfiltered pulse is > 1 dB…

Cl **190** *SC* **190.5.4.4** *P* **113** *L* **29** # 240

Murray, Brian
Analog Devices

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

The PSD masks equations references for 2.0 Vpp and 1.0 Vpp are reversed.

SuggestedRemedy

Change the following text:

"The power spectral density of the transmitter, measured into a 100 W load using the test fixture shown in Figure 190'23, shall be
between the upper and lower masks specified in Equation (190'9) and Equation (190'10) for the 1.0 Vpp transmit amplitude and by Equation (190'11) and Equation (190'12) for the 2.0 Vpp transmit amplitude"

to:

"The power spectral density of the transmitter, measured into a 100 W load using the test fixture shown in Figure 190'23, shall be
between the upper and lower masks specified in Equation (190'9) and Equation (190'10) for the 2.0 Vpp transmit amplitude and by Equation (190'11) and Equation (190'12) for the 1.0 Vpp transmit amplitude"

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.5.5** *P* **116** *L* **3** # 187

Zimmerman, George
CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

Duplicate (& duplicate again) shalls. Both sentences here just say we meet the requirements that are required elsewhere... why are we duplicating the SHALLs so much? Rewriting this text to be descriptive and cover the fact that the link segments for the tests describe all need to meet 190.7.

SuggestedRemedy

Replace P116 L3 & 4 with "The receiver electrical tests exercise the PMA Receive function and test performance to electrical specifications of a link partner's transmitter as well as performance in noise. Link segments used in the test configurations for this subclause shall be within the limits specified in 190.7."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace P116 L3 & 4 with "The receiver electrical tests exercise the PMA Receive function and test performance to electrical specifications of a link partner's transmitter as well as performance in noise. Link segments used in the test configurations are within the limits specified in 190.7."

Cl **190** SC **190.5.5.3** P **116** L **21** # 126

Ran, Adee Cisco Systems

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

"to these noise sources"

SuggestedRemedy

"to this noise source"

Response *Response Status* **C**

ACCEPT.

Cl **190** SC **190.5.5.3** P **116** L **23** # 241

Murray, Brian Analog Devices

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

There is an unintended like break at line 23:

"[Ó]. This specification

may be considered satisfied [Ó]"

SuggestedRemedy

Remove the line break to merge the first and second paragraphs in 190.5.5.3

Response *Response Status* **C**

ACCEPT.

Cl **190** SC **190.5.5.3** P **116** L **23** # 127

Ran, Adee Cisco Systems

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

"This specification<break>may be considered"

SuggestedRemedy

Remove the break

Response *Response Status* **C**

ACCEPT.

Cl **190** SC **190.5.5.3** P **116** L **23** # 217

Wienckowski, Natalie IVN Solutions LLC

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

Extraneious carriage return.

SuggestedRemedy

Remove the carriage return after "specification".

Response *Response Status* **C**

ACCEPT.

Cl **190** SC **190.5.5.3** P **116** L **28** # 220

Brychta, Michal Analog Devices

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

(Figure 190-28-Alien crosstalk noise rejection test set-up) The output of the Noise Source may not be correctly terminated.

SuggestedRemedy

Change the resistor "100ohm" to a generic value "Rs ohm", with a note "The combination of Rs and the two 500 ohm resistors matches the source impedance of the noise source.". Refer as an example to 802.3da clause 188.6.6.2 Figure 188-16.

Response *Response Status* **C**

ACCEPT.

Cl **190** SC **190.5.5.3** P **116** L **34** # 129

Ran, Adee Cisco Systems

Comment Type **T** *Comment Status* **X** *PMA Electrical*

"< 0.5 m" - between which points? The subclause text does not address this requirement at all.

SuggestedRemedy

Add appropriate subclause text and make the relevant points to the figure.

Proposed Response *Response Status* **C**

REJECT.

CRG disagrees with commenter.
Figure is clear, and has been shown to be clear through use in at least clauses 40, 96, 97, 146, 147, 149, and 165.

Cl **190** *SC* **190.5.5.3** *P* **116** *L* **41** # 128

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **A** *PMA Electrical*

The NOTE includes an allowed ("may") modification the test conditions; this is not informative text.

SuggestedRemedy

Move this paragraph to normal subclause text. If desired, add a NOTE to explain the motivation for this allowance (e.g. "this allowance is provided to address limitations in noise generators").

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Change "may be adapted" in the NOTE below figure 190-28 to "should be adapted". (the note should be a recommendation of what to do, not a permission)

Cl **190** *SC* **190.5.6** *P* **116** *L* **45** # 130

Ran, Adee Cisco Systems

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

The subclause "PMA local loopback" has no content.

SuggestedRemedy

Delete the heading.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accomodated by Comment 218

Cl **190** *SC* **190.5.6** *P* **116** *L* **45** # 218

Wienckowski, Natalie IVN Solutions LLC

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

Heading with no contents

SuggestedRemedy

Delete 190.5.6

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.6.1** *P* **117** *L* **1** # 134

Ran, Adee Cisco Systems

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

The placement of 190.6.1 "Support for Auto-negotiation" under 190.6 "Management interface" seems inappropriate. AN and MDIO are completely different functions, one is optional and one is mandatory.

SuggestedRemedy

Promote 190.6.1 to become 190.7, and keep the existing 190.6.2 as a subclause below it.

Response *Response Status* **C**

REJECT.

MDIO is optional, but the ubiquitous management interface is mandatory. Auto-Negotiation is found under the management section in all BASE-T and BASE-T1 PHYs which use it. (see e.g., 40.5, 55.6, or 97.8)

Cl **190** *SC* **190.6.1** *P* **117** *L* **3** # 135

Ran, Adee Cisco Systems

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

"and shall be capable of operating as LEADER or FOLLOWER"
This requirement seems to belong in 190.6.2.

SuggestedRemedy

Move this requirement to 190.6.2

Response *Response Status* **C**

REJECT.

190.6.2 is about the configuration of LEADER-FOLLOWER, not the capability.

Cl **190** *SC* **190.7.1.4.1** *P* **117** *L* **6** # 139

Ran, Adee Cisco Systems

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

"Each 100BASE-T1L segment"

SuggestedRemedy

"Each 100BASE-T1L link segment"

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.6.1** *P* **117** *L* **15** # 242

Murray, Brian — Analog Devices

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

Item d) in the enumerated list is incorrect. Auto-negotiation is not used to negotiate EEE.

SuggestedRemedy

Remove item d) from the enumerated list.

Response *Response Status* **C**

ACCEPT.

Cl **190** *SC* **190.6.1** *P* **117** *L* **15** # 132

Ran, Adee — Cisco Systems

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

[auto-negotiation is used] "To negotiate EEE capabilities as specified in 190.1.3.3."
But per 190.1.3.3 EEE capability are negotiated in InfoField as part of the training - which is after auto-negotiation.

SuggestedRemedy

Delete item d)

Response *Response Status* **W**

ACCEPT.

Cl **190** *SC* **190.6.1** *P* **117** *L* **16** # 133

Ran, Adee — Cisco Systems

Comment Type **TR** *Comment Status* **A** *Reduced TX level*

[auto-negotiation is used] "To negotiate the low <Ó> and high <Ó> operating modes ..."
How is that done?
(I reckon Table 98B¹1 has something to do with it but what are the rules for the negotiation? There should probably be a new subclause in clause 98)

SuggestedRemedy

Provide a reference to the subclause that contains the information (add a new one if necessary).

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Add to P117 L16 (item e) at the end, "(see 98B.3 and 98B.4)."

Cl **190** *SC* **190.6.2** *P* **117** *L* **22** # 136

Ran, Adee — Cisco Systems

Comment Type **TR** *Comment Status* **R** *Management*

"One PHY should be configured as LEADER and one PHY should be configured as FOLLOWER"
This is not just a recommendation ("should"); it is an unavoidable situation if proper operation is assumed, as described in the next paragraph.

SuggestedRemedy

Change to "For successful operation of a link between two PHYs, one PHY must be configured as LEADER and the other as FOLLOWER". Move this sentence to the second paragraph before "In the case where <Ó>".

Response *Response Status* **W**

REJECT.

The configuration is not necessarily a forced configuration. It may be resolved as a preference in auto-negotiation, according to Table 98-4. This same language and technique has been used successfully for over 20 years (including 1000BASE-T) and resulting in successful BASE-T PHY links without misunderstanding.

Cl **190** *SC* **190.7** *P* **117** *L* **31** # 8

Schicketanz, Dieter — Reutlingen University

Comment Type **T** *Comment Status* **X** *EMC*

This clause specifies Link segment characteristics differently to cg. Why ? UTP starts at 1MHz, shielded from .5 MHz .Insertion loss from .1MHz

SuggestedRemedy

Using cg as example rearrange clause 190.7 . And separate Unshielded links by specifying it by TCL and shielded links by coupling attenuation

Proposed Response *Response Status* **C**

REJECT.

CRG disagrees with commenter.

The specification in this clause was driven by discussions and measurements and follows the model of clause 97 option A. Coupling attenuation is generally application environment specific and is left to the cabling specifications for shielded cable.

Cl **190** *SC* **190.7.** *P* **117** *L* **35** # 138

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **R** *Link Segment*

"The term "link segment" used in this clause refers to a single balanced pair of conductors operating in full duplex."
This reads like a length of cable, and connectors are not mentioned; but the next paragraph talks about "supports up to five in-line connectors". It is unclear whether a channel comprising several cables with connectors between them is considered one link segment or multiple link segments.

Also I think "operating in full duplex" is a property of the PHY (and the protocol used), not of the link segment.

SuggestedRemedy

Please specify more clearly what a link segment is. A figure showing the boundaries of the link segment in a connectorized channel would help.

Delete "operating in full duplex".

Response *Response Status* **W**

REJECT.

Link Segment is defined in 1.4 as "The point-to-point full-duplex medium connection between two and only two Medium Dependent Interfaces (MDIs)."

That would include any connectors, which are, of course, also conductors. The medium is capable of full-duplex conduction of signals. It doesn't have one-way amplifiers or directional couplers in it. This same language has been used successfully for over 20 years (including 1000BASE-T) and resulting in successful BASE-T PHY links without misunderstanding.

Cl **190** *SC* **190.7.1.1** *P* **118** *L* **41** # 9

Schicketanz, Dieter Reutlingen University

Comment Type **T** *Comment Status* **A** *Reduced TX level*

as 2 transmit voltages are specified there should be 2 corresponding links as in cg

SuggestedRemedy

as in cg, add second link

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accomodated by comment 6.

Cl **190** *SC* **190.7.1.4.1** *P* **120** *L* **3** # 10

Schicketanz, Dieter Reutlingen University

Comment Type **T** *Comment Status* **A** *EMC*

It is unusual to specify only TCL for shielded links

SuggestedRemedy

delete this subclause and replace by coupling attenuation.As starting values take cg values (extended to 60 MHz) and add E1 E2 and E3 and the electromagnetic noise environment . This would solve line 6 too. If TCL is kept match lower frequencies

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The values in this section were driven by measurements of shielded cabling.

Add the following NOTE at P120 L8 (after the paragraph, before the equation):
"NOTE - The TCL values specified for the link segment assume that the link segment uses cable which meets the coupling attenuation values specified in 146.7.1.5."

Cl **190** *SC* **190.7.1.4.1** *P* **120** *L* **3** # 2

Lusted, Kent Synopsys

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

The abbreviation "TCL" is used as the title for subclause 190.7.1.4.1 and 190.7.1.4.2. However, the abbrevation is not defined anywhere and it is not clear to this reader as to what "TCL" is.

SuggestedRemedy

Provide the expanded abbreviation "TCL" at least once in the document. Consider adding to the Abbreviation list in Clause 1.4.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

TCL is already in the list in Clause 1.4, that definition is expanded and used in the change below:Change header for 190.7.1.4.1 from "TCL (shielded)" to "Transverse Conversion Loss Scd11/Scd22 (TCL) (shielded)"

Cl **190** *SC* **190.7.1.1** *P* **120** *L* **6** # 137

Ran, Adee Cisco Systems

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

"Each 100BASE-T1L link segment" - within what set of segments?

I initially interpreted it as "each segment between connectors", but based on the text in 190.7.1.4.2 I suspect the intent is each differential pair within a bundle of differential pairs (as in a CAT6 cable). But I'm not sure this is relevant in general.

Similarly in 190.7.1.2, 190.7.1.4.1, 190.7.1.4.2

SuggestedRemedy

If there is no special meaning to "each", change "each link segment" to "a link segment". Otherwise, clarify what "each" refers to (within what set of segments?)
Apply in all instances of "each 100BASE-T1L link segment".

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Change "each 100BASE-T1L segment" to "the link segment" in 190.7.1.2, 190.7.1.4.1 and 190.7.1.4.2 (capitalize as appropriate).

Note - the language of "each" seems to have slipped over from multi-pair BASE-T to single-pair ethernet in clause 97, 149, and 165. Commenter may consider maintenance.

Cl **190** *SC* **190.7.1.4.2** *P* **121** *L* **2** # 11

Schicketanz, Dieter Reutlingen University

Comment Type **T** *Comment Status* **X** *Link Segment*

It is unusual to specify a specific cable type in a system standard

SuggestedRemedy

delete from line 2 and 3: "and is specified to align with the use of Category 6 cables and components". Match starting frequencies to .1 MHz and add E1 and E2 as in cg.

Proposed Response *Response Status* **C**

REJECT.

CRG disagrees with commenter. Cabling category is specified in other IEEE Std 802.3 BASE-T clauses. See, e.g., clauses 25, 33, 40, 55, 113, and 126.

Cl **00** *SC* **0** *P* **121** *L* **35** # 12

Schicketanz, Dieter Reutlingen University

Comment Type **T** *Comment Status* **R** *EMC*

electromagnetic classifications missing

SuggestedRemedy

add the subclause "146.7.1.6 Electromagnetic classifications" from cg in page 121 line 35 as new subclause.

Response *Response Status* **C**

REJECT.

CRG disagrees with commenter. Electromagnetic classifications are not referenced in the specification, so repeating the re-iteration of ISO/IEC specifications, as is done in 146.7.1.6 is unnecessary.

Cl **190** *SC* **190.7.2.1** *P* **122** *L* **8** # 168

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

The requirement that the link segment meet the alien NEXT is missing.

SuggestedRemedy

Replace "PSANEXT loss is determined by summing the power of the individual pair-to-pair differential alien NEXT loss values over the frequency range 0.1 MHz to 60 MHz as follows in Equation (190¹4)." with
text below, adapted from 146.7.2.1
"PSANEXT loss is determined by summing the power of the individual pair-to-pair differential alien NEXT loss values over the frequency range 0.1 MHz to 60 MHz as follows in Equation (190¹XX)."
(insert new equation 190-XX, identical to Equation 146-13)
"where the function AN(f)j,N represents the magnitude (expressed in dB) of the alien NEXT loss at frequency
f of the disturbing 100BASE-T1L link segment j (1 to m) for the disturbed 10BASE-T1L link segment N.
The power sum ANEXT loss between a disturbed 100BASE-T1L link segment and other disturbing
100BASE-T1L link segments shall meet the values determined using Equation (190¹17) or 60 dB, whichever
is less."
(note to editor, Equation 190-17 above refers to the current numbering of the equation at P122 L13 - it will obviously be renumbered)

Add new PICS item to Link Segment, "Power sum ANEXT loss between a disturbed 100BASE-T1L link segment and the disturbing 100BASE-T1L link segment" | 190.7.2.1 | Meets equation 190-17 or 60 dB whichever is less | Yes[] No[]

Response *Response Status* **W**

ACCEPT IN PRINCIPLE. (Proposed Response below, changing start frequency to 1 MHz as per other comments)

Replace "PSANEXT loss is determined by summing the power of the individual pair-to-pair differential alien NEXT loss values over the frequency range 0.1 MHz to 60 MHz as follows in Equation (190-4)." with text below, adapted from 146.7.2.1"PSANEXT loss is determined by summing the power of the individual pair-to-pair differential alien NEXT loss values over the frequency range 1 MHz to 60 MHz as follows in Equation (190-XX)."(insert new equation 190-XX, identical to Equation 146-13)"where the function AN(f)j,N represents the magnitude (expressed in dB) of the alien NEXT loss at frequencyf of the disturbing 100BASE-T1L link segment j (1 to m) for the disturbed 10BASE-T1L link segment N.The power sum ANEXT loss between a disturbed 100BASE-T1L link segment and other disturbing100BASE-T1L link segments shall meet the values determined using Equation (190-17) or 60 dB, whichever is less."

(note to editor, Equation 190-17 above refers to the current numbering of the equation at P122 L13 - it will obviously be renumbered)

Add new PICS item to Link Segment, "Power sum ANEXT loss between a disturbed 100BASE-T1L link segment and the disturbing 100BASE-T1L link segment" | 190.7.2.1 | Meets equation 190-17 or 60 dB whichever is less | Yes[] No[]

Cl **190** *SC* **190.7.2.2** *P* **122** *L* **8** # 169

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

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

The requirement that the link segment meet the alien NEXT is missing.

SuggestedRemedy

Replace "as follows in Equation (190¹5)." at P123 L11 with
text below, adapted from 113.7.3.2.1
"as follows in Equation (190¹YY)."
(insert new equation 190-YY, identical to Equation 113-29, except the subscripted index "i" and the sum over index "i" is omitted)
"where AACRF(f)j, N is the magnitude in dB of the alien ACRF at frequency f of the disturbing link j (1 to m) into the 100BASE-T1L link segment N.
The PSAACRF between a disturbed duplex channel in a link segment and the disturbing duplex channels in other link segments shall meet the values determined using Equation (190¹18)."
(note to editor, Equation 190-18 above refers to the current numbering of the equation at P123 L14 - it will obviously be renumbered)

Add new PICS item to Link Segment, "Power sum PSAACRF loss between a disturbed 100BASE-T1L link segment and the disturbing 100BASE-T1L link segment" | 190.7.2.2 | Meets equation 190-18 or 60 dB whichever is less | Yes[] No[]

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Replace "as follows in Equation (190-5)." at P123 L11 with text below, adapted from 113.7.3.2.1

"as follows in Equation (190-YY)."
(insert new equation 190-YY, identical to Equation 113-29, except the subscripted index "i" and the sum over index "i" is omitted)
"where AACRF(f)j, N is the magnitude in dB of the alien ACRF at frequency f of the disturbing link j (1 to m) into the 100BASE-T1L link segment N.The PSAACRF between a disturbed duplex channel in a link segment and the disturbing duplex channels in other link segments shall meet the values determined using Equation (190-18)."

(note to editor, Equation 190-18 above refers to the current numbering of the equation at P123 L14 - it will obviously be renumbered)

Add new PICS item to Link Segment, "Power sum PSAACRF loss between a disturbed 100BASE-T1L link segment and the disturbing 100BASE-T1L link segment" | 190.7.2.2 | Meets equation 190-18 or 60 dB whichever is less | Yes[] No[]

Cl **190** *SC* **190.8.1** *P* **124** *L* **26** # 13

Schicketanz, Dieter — Reutlingen University

Comment Type **E** *Comment Status* **R** *MDI*

MDI connectors

SuggestedRemedy

just a remark, as not specified there will be different connectors on the market from different vendors at the end equippment

Response *Response Status* **C**

REJECT.

Commenter does not request any change to the draft.

Cl **190** *SC* **190.8.2** *P* **124** *L* **33** # 14

Schicketanz, Dieter — Reutlingen University

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

MDI electrical specifications start at 1MHz

SuggestedRemedy

should start from 0.1 MHz (varios locations) to match link and cg

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

There is no good technical reason to require 100BASE-T1L link segments to be a proper subset of 10BASE-T1L link segments. Many cables are only qualified to 1 MHz low frequency, which is sufficient for 100BASE-T1L. Suggest harmonizing all MDI and link segment specifications to start at 1 MHz.

Cl **190** *SC* **190.8.2.1** *P* **125** *L* **7** # 221

Brychta, Michal — Analog Devices

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

More work may need to be done to see if the limits are feasible, specifically when adding power coupling.

SuggestedRemedy

Not in a position to give specific proposal, but willing to work on this topic.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accomodated by comment 205

Cl **190** *SC* **190.8.2.2** *P* **126** *L* **7** # 222

Brychta, Michal — Analog Devices

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

More work may need to be done to see if the limits are feasible, specifically when adding power coupling.

SuggestedRemedy

Not in a position to give specific proposal, but willing to work on this topic.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Insert Editor's note at P126 L2 (190.8.2.2) stating:
Editor's Note (to be removed prior to D 2.2 circulation) - The MDI mode conversion loss is left open for comment. Experts are encouraged to evaluate the limits for economic and technical feasibility.

Cl **190** *SC* **190.11** *P* **129** *L* **1** # 167

Zimmerman, George — CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

Comment Type **ER** *Comment Status* **A** *PICS*

PICS are needed for clause 190

SuggestedRemedy

Add PICS per contribution zimmerman_PICS_3dg_20250901.pdf with editorial license to align with other resolved comments.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Note, the file is zimmerman_PICS_3dg_20250901.xlsx. Editorial license to adjust PICS per comment resolution and changes in text.

Cl **98B** *SC* **98B** *P* **131** *L* **1** # 255

Jones, Peter — Cisco

Comment Type **TR** *Comment Status* **A** *Downshift*

Add Downshift/upshift to the draft as described in jones_3dg_august_2025_01.pdf

SuggestedRemedy

Make changes as per attached jones_3dg_august_2025_01.pdf pages 8 to 17.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Make changes as per jones_3dg_september_2025_02.pdf pages 7 to 22 with editorial license.

Cl **98B** *SC* **98B.3** *P* **131** *L* **14** # 243

Murray, Brian — Analog Devices

Comment Type **T** *Comment Status* **X** *AutoNeg*

802.3dg is proposing to use 2 of the available 15 technology ability bits and 802.3dm is proposing to use a further 6 bits. We are rapidly approaching the point where next page exchange will be required.

This is primarily arising because the standard allows all different kinds of PHYs to coexist on the same link.

We should try to use the 15 remaining technology bits more efficiently.

SuggestedRemedy

A detailed presentation has been provided.

Proposed Response *Response Status* **C**

REJECT.

Commenter provides insufficient remedy. Presentation https://www.ieee802.org/3/dg/public/May_2025/Curran_3dg_01_09162025.pdf for further information, but detailed text is needed. This area will be considered in scope due to other changes in AutoNeg.

Cl **98B** *SC* **98B.3** *P* **131** *L* **20** # 244

Murray, Brian — Analog Devices

Comment Type **T** *Comment Status* **A** *Reduced TX level*

At present there is an implicit assumption that A21 can only be set if A10 is set. The ability to support increased voltage in 100BASE-T1L is regarded as a qualifier of the base 100BASE-T1L ability.

There is no need to restrict 100BASE-T1L PHYs in this way. For applications where significant interference (EFT, for example) is expected, it may be beneficial to allow the PHY to decline support for operation at 1 Vpp. It is felt to be better to not bring up a link than to bring up an intermittently unreliable link.

SuggestedRemedy

Change "100BASE-T1L ability" to "100BASE-T1L standard transmit/receive level ability". At line 35 changed the single entry in the dashed list to two entries as follows:

- 100BASE-T1L increased transit/receive level
- 100BASE-T1L standard transmit/receive level

On page 24 change the single entry for 100BASE-T1L to two entries.

On page 28 add a new status bit, 1.2301.13, for standard transmit/receive level.

Response *Response Status* **C**

ACCEPT.

Cl **98B** *SC* **98B.3** *P* **131** *L* **28** # 190

Zimmerman, George CME Consulting/ADI,APLgp,CSCO,MRVL,Onsmi,Son

Comment Type **TR** *Comment Status* **A** *Reduced TX level*

There is missing information on how the transmit and receive level ability bit is resolved. This is accomplished by 98B.3.1 10BASE-T1L-specific bit assignments for 10BASE-T1L (which points to clause 146) I suggest we do the same here. [note - we may wish to have additional management & visibiltiy, but I've only covered minimal control here]

SuggestedRemedy

After Table 98B-1, add the following to the draft:
<Editing instruction> Insert 98B.3.2 following 98B.3.1 as follows: </end Ed Inst>
"98B.3.2 100BASE-T1L increased transmit/receive level ability
Bit A21 shall be set to one when the PHY has the ability to transmit and received at the increased transmit level, and set to zero when the PHY does not have the ability to transmit and receive the increased transmit level, or the ability is not advertised. When MDIO is implemented, the ability of the PHY can be determined by bit 1.2301.12 (see 45.2.1.236b). Note that setting bit A21 to zero is a way of explicitly requesting the lower transmit level. If bit A21 is one for both the PHY and the link partner, increased transmit level shall be selected. If bit A21 is zero for either the local PHY or the link partner, the lower transmit level is selected.÷

Insert to the end of item (e) in 190.6.1 (P117 L18), ¶(See 98B.3.2 for information on control and resolution)÷

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Accomodated by response to comment 244.