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

Lusted, Kent — Synopsys

Comment Type **TR** *Comment Status* **X**

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

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.7.1.4.1** *P* **120** *L* **3** # 2

Lusted, Kent — Synopsys

Comment Type **E** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

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

Martino, Kjersti — Inneos

Comment Type **E** *Comment Status* **X**

Typo in Heading "Effect or receipt"

SuggestedRemedy

Change to "Effect of receipt"

Proposed Response *Response Status* **O**

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

Martino, Kjersti — Inneos

Comment Type **E** *Comment Status* **X**

Typo in Heading "Effect or receipt"

SuggestedRemedy

Change to "Effect of receipt"

Proposed Response *Response Status* **O**

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

Martino, Kjersti — Inneos

Comment Type **E** *Comment Status* **X**

Typo in Heading "Effect or receipt"

SuggestedRemedy

Change to "Effect of receipt"

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.5.4.1** *P* **112** *L* **38** # 6

Schicketanz, Dieter — Reutlingen University

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

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.

Proposed Response *Response Status* **O**

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

Schicketanz, Dieter — Reutlingen University

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

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* **O**

Cl **190** *SC* **190.7** *P* **117** *L* **31** # 8

Schicketanz, Dieter — Reutlingen University

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

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* **O**

Cl **190** *SC* **190.7.1.1** *P* **118** *L* **41** # 9

Schicketanz, Dieter — Reutlingen University

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

as 2 transmit voltages are specified there should be 2 corresponding links as in cg

SuggestedRemedy

as in cg, add second link

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.7.1.4.1** *P* **120** *L* **3** # 10

Schicketanz, Dieter — Reutlingen University

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

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

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.7.1.4.2** *P* **121** *L* **2** # 11

Schicketanz, Dieter — Reutlingen University

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

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* **O**

Cl **00** *SC* **0** *P* **121** *L* **35** # 12

Schicketanz, Dieter — Reutlingen University

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

electromagnetic classifications missing

SuggestedRemedy

add the subclause "146.7.1.6 Electromagnetic classifications" from cg in page 121 line 35 as new subclause.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.8.1** *P* **124** *L* **26** # 13

Schicketanz, Dieter — Reutlingen University

Comment Type **E** *Comment Status* **X**

MDI connectors

SuggestedRemedy

just a remark, as not specified there will be different connectors on the market from different vendors at the end equippment

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.8.2** *P* **124** *L* **33** # 14

Schicketanz, Dieter — Reutlingen University

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

MDI electrical specifications start at 1MHz

SuggestedRemedy

should start from 0.1 MHz (varios locations) to match link and cg

Proposed Response *Response Status* **O**

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

Brown, Matt — Alphawave Semi

Comment Type **E** *Comment Status* **X**

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

SuggestedRemedy

Update 802.3dj abstract with text from D2.0.

Proposed Response *Response Status* **O**

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

Brown, Matt — Alphawave Semi

Comment Type **E** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

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

Brown, Matt — Alphawave Semi

Comment Type **E** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.5.4.2** *P* **112** *L* **44** # 18

Slavick, Jeff — Broadcom

Comment Type **TR** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

Comment Type **E** *Comment Status* **X**

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

SuggestedRemedy

Change "6 PAM2" to "six PAM2"

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

Comment Type **E** *Comment Status* **X**

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

SuggestedRemedy

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

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

Comment Type **E** *Comment Status* **X**

m(x) in the sentence should be italics

SuggestedRemedy

Italicize the m(x) after the word polynomial

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

Comment Type **E** *Comment Status* **X**

The mi in the first sentence should be italics

SuggestedRemedy

Italicize the mi after the word symbol

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **X**

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 + … + mi,1a + mi,0" with a using the alpha character.

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

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

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

SuggestedRemedy

Change "1,024" to "1024"

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **X**

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"

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **X**

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

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **X**

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

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **X**

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"

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

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

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.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.3.6.2** *P* **94** *L* **49** # 30

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **X**

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

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.3.6.2** *P* **95** *L* **2** # 31

Slavick, Jeff Broadcom

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

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

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.3.6.2** *P* **95** *L* **2** # 32

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **X**

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

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.3.6.2** *P* **96** *L* **13** # 33

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **X**

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

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.3.6.1.2** *P* **90** *L* **38** # 34

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **X**

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"

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.3.6.1.2** *P* **90** *L* **38** # 35

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **X**

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"

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.3.6.2** *P* **97** *L* **32** # 36

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **X**

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

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **X**

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."

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **X**

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."

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **X**

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

SuggestedRemedy

Change the reference to Figure 190-8.

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **X**

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

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **X**

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)

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

Comment Type **TR** *Comment Status* **X**

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

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

Comment Type **ER** *Comment Status* **X**

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

SuggestedRemedy

Remove it

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

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

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

SuggestedRemedy

Remove "were derived to"

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

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

First sentence only lists one of the two modes.

SuggestedRemedy

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

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

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

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.

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

Comment Type **E** *Comment Status* **X**

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

SuggestedRemedy

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

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

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

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

Proposed Response *Response Status* **O**

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

Slavick, Jeff Broadcom

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

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

SuggestedRemedy

Change "1,024" to "1024"

Proposed Response *Response Status* **O**

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

He, Xiang — Huawei Technologies

Comment Type **TR** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

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

He, Xiang — Huawei Technologies

Comment Type **TR** *Comment Status* **X**

"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 2….. When RS-FEC is enabled, N is 8 …". 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".

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.3.7** *P* **99** *L* **1** # 53

He, Xiang — Huawei Technologies

Comment Type **ER** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.4** *P* **109** *L* **27** # 54

He, Xiang — Huawei Technologies

Comment Type **ER** *Comment Status* **X**

Is there a subclause for PMA management variables?

SuggestedRemedy

Suggest to add a subclause for PMA management variables.

Proposed Response *Response Status* **O**

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

He, Xiang — Huawei Technologies

Comment Type **ER** *Comment Status* **X**

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".

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.4.9** *P* **103** *L* **19** # 56

He, Xiang — Huawei Technologies

Comment Type **ER** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

"This adds"

SuggestedRemedy

Change to "This amendment adds"

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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

SuggestedRemedy

Remove subclause 1.3 from the amendment.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **X**

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."

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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

SuggestedRemedy

Remove subclause 1.5 from the amendment.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

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

"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* **O**

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

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **X**

"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.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

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

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".

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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

SuggestedRemedy

Format all new cells with underline.

Proposed Response *Response Status* **O**

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

Ran, Adee — Cisco Systems

Comment Type **E** *Comment Status* **X**

"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.

Proposed Response *Response Status* **O**

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

Ran, Adee — Cisco Systems

Comment Type **E** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

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

Ran, Adee — Cisco Systems

Comment Type **E** *Comment Status* **X**

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

SuggestedRemedy

Underline as necessary.

Proposed Response *Response Status* **O**

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

Ran, Adee — Cisco Systems

Comment Type **TR** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

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

Ran, Adee — Cisco Systems

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

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

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

"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.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

"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.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **X**

"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.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

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

"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* **O**

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

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

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

"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".

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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

SuggestedRemedy

change "adaptative" to "adaptive".

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

"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.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **X**

The value "-" for "previous transfer" in the 4th and 5th rows is not one of the categories defined in Table 190–1.

SuggestedRemedy

Clarify or correct if necessary.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

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

"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.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **X**

"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.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

"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 190–6). 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.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

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

"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.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

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

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

SuggestedRemedy

Change to "is inferred".

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

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

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* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

Inline equation is small

SuggestedRemedy

Increase the equation size

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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

SuggestedRemedy

Change to subscript

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **ER** *Comment Status* **X**

"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".

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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).

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

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

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 21–1 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.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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

SuggestedRemedy

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

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

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

"may use"… "to determine…" "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.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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

SuggestedRemedy

Change to sans serif font

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

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

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"

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

training register

SuggestedRemedy

MDIO training register

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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

SuggestedRemedy

Consider deleting one of the duplicates.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **X**

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).

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **X**

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).

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.3.6.2** *P* **95** *L* **47** # 108

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.3.6.2** *P* **97** *L* **32** # 109

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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".

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.3.7** *P* **98** *L* **1** # 110

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

The subclause "PCS management" has no content.

SuggestedRemedy

Delete the heading.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.4.1** *P* **100** *L* **10** # 111

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

The sentences starting with "Under normal circumstances…" (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.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.4.2** *P* **100** *L* **23** # 112

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.4.9.1.1** *P* **103** *L* **29** # 113

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

Some variables communicated through primitives.are called "variable" while others are called "parameter".

SuggestedRemedy

Unify the definitions across this subclause.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.4.9.1.1** *P* **103** *L* **42** # 114

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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".

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.4.9.1.1** *P* **104** *L* **30** # 115

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

Stray colon after "timing_locked"

SuggestedRemedy

Delete it

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.4.9.1.1** *P* **104** *L* **43** # 116

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

Small numbers in the text should be spelled out

SuggestedRemedy

Change "3" to "three", twice, and change "3rd" to "last"

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.4.9.1.1** *P* **104** *L* **43** # 117

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.4.9.2** *P* **108** *L* **31** # 118

Ran, Adee Cisco Systems

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

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* **O**

Cl **190** *SC* **190.4.9.2** *P* **106** *L* **3** # 119

Ran, Adee Cisco Systems

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

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.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.5.** *P* **106** *L* **29** # 120

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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).

Proposed Response *Response Status* **O**

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

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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".

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.5.1** *P* **109** *L* **33** # 122

Ran, Adee Cisco Systems

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

This subclause says nothing about the EMC tests, using convoluted sentences. (What does "during the test" and "specified device"?)

SuggestedRemedy

Delete the subclause.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.5.2** *P* **109** *L* **43** # 123

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.5.2** *P* **109** *L* **49** # 124

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

The test modes already include numbers. The list letters are unnecessary.

SuggestedRemedy

Change from lettered list to dashed list.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.5.4.4** *P* **113** *L* **26** # 125

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **X**

"For the 1.0 Vpp operating mode, in test mode 7 <…> the transmit power shall be 1.0 ± 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).

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.5.5.3** *P* **116** *L* **21** # 126

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

"to these noise sources"

SuggestedRemedy

"to this noise source"

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.5.5.3** *P* **116** *L* **23** # 127

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

"This specification<break>may be considered"

SuggestedRemedy

Remove the break

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.5.5.3** *P* **116** *L* **41** # 128

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **X**

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").

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.5.5.3** *P* **116** *L* **34** # 129

Ran, Adee Cisco Systems

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

"< 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* **O**

Cl **190** *SC* **190.5.6** *P* **116** *L* **45** # 130

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

The subclause "PMA local loopback" has no content.

SuggestedRemedy

Delete the heading.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.5.2** *P* **109** *L* **45** # 131

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

"The test modes can be enabled by setting bits 1.2302.15:12 <…> 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 <…>"

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.6.1** *P* **117** *L* **15** # 132

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **X**

[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)

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.6.1** *P* **117** *L* **16** # 133

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **X**

[auto-negotiation is used] "To negotiate the low <…> and high <…> operating modes ..."
How is that done?
(I reckon Table 98B–1 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).

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.6.1** *P* **117** *L* **1** # 134

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.6.1** *P* **117** *L* **3** # 135

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **X**

"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

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.6.2** *P* **117** *L* **22** # 136

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **X**

"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 <…>".

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.7.1.1** *P* **120** *L* **6** # 137

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **X**

"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".

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.7.** *P* **117** *L* **35** # 138

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **X**

"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".

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.7.1.4.1** *P* **117** *L* **6** # 139

Ran, Adee Cisco Systems

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

"Each 100BASE-T1L segment"

SuggestedRemedy

"Each 100BASE-T1L link segment"

Proposed Response *Response Status* **O**

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

Graber, Steffen Pepperl+Fuchs SE

Comment Type **E** *Comment Status* **X**

"(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.

Proposed Response *Response Status* **O**

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

Graber, Steffen Pepperl+Fuchs SE

Comment Type **E** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

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

Graber, Steffen — Pepperl+Fuchs SE

Comment Type **E** *Comment Status* **X**

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

SuggestedRemedy

Align font size.

Proposed Response *Response Status* **O**

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

Graber, Steffen — Pepperl+Fuchs SE

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

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.

Proposed Response *Response Status* **O**

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* **X**

Cramped text.

SuggestedRemedy

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

Proposed Response *Response Status* **O**

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* **X**

Prefer not to see 'x' just floating here.

SuggestedRemedy

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

Proposed Response *Response Status* **O**

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* **X**

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.

Proposed Response *Response Status* **O**

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* **X**

Prefer not to see 'S0' just floating here.

SuggestedRemedy

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

Proposed Response *Response Status* **O**

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* **X**

There are no normative references.

SuggestedRemedy

Delete clause 1.3 header and contents.

Proposed Response *Response Status* **O**

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* **X**

There are no abbreviations.

SuggestedRemedy

Delete clause 1.5 header and contents.

Proposed Response *Response Status* **O**

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* **X**

Missing underline for added space

SuggestedRemedy

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

Proposed Response *Response Status* **O**

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* **X**

Missing underline for added space

SuggestedRemedy

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

Proposed Response *Response Status* **O**

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* **X**

Existing space marked with underline

SuggestedRemedy

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

Proposed Response *Response Status* **O**

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* **X**

Missing underline for added space

SuggestedRemedy

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

Proposed Response *Response Status* **O**

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* **X**

Missing underline for added space

SuggestedRemedy

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

Proposed Response *Response Status* **O**

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* **X**

Missing underline for added space

SuggestedRemedy

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

Proposed Response *Response Status* **O**

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

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

Comment Type **E** *Comment Status* **X**

Fill in clause TBD on 802.3dk abstract.

SuggestedRemedy

Replace "TBD" with "168".

Proposed Response *Response Status* **O**

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* **X**

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

Proposed Response *Response Status* **O**

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* **X**

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.

Proposed Response *Response Status* **O**

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* **X**

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):"

Proposed Response *Response Status* **O**

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* **X**

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):"

Proposed Response *Response Status* **O**

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* **X**

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:

Proposed Response *Response Status* **O**

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* **X**

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."

Proposed Response *Response Status* **O**

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* **X**

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):"

Proposed Response *Response Status* **O**

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* **X**

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.

Proposed Response *Response Status* **O**

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* **X**

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."

Proposed Response *Response Status* **O**

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* **X**

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 PD22…

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

Proposed Response *Response Status* **O**

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* **X**

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.

Proposed Response *Response Status* **O**

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* **X**

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 (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 0.1 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 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 (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[]

Proposed Response *Response Status* **O**

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* **X**

The requirement that the link segment meet the alien NEXT is missing.

SuggestedRemedy

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[]

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.** *P* **95** *L* **8** # 170

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

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

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)…

SuggestedRemedy

change tx_lpi_alert_active to tx_alert_active in SEND_NORMAL, SEND_ALERT, and SEND_WAKE states of Figure 190-12.

Proposed Response *Response Status* **O**

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* **X**

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"

Proposed Response *Response Status* **O**

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* **X**

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"

Proposed Response *Response Status* **O**

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* **X**

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 used… descriptive language is appropriate here.

SuggestedRemedy

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

Proposed Response *Response Status* **O**

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* **X**

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".

Proposed Response *Response Status* **O**

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* **X**

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)

Proposed Response *Response Status* **O**

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* **X**

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)

Proposed Response *Response Status* **O**

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* **X**

Duplicate shall: The loop timing relationship is already specified by the requirement that the FOLLOWER shall source from the recovered clock… (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"

Proposed Response *Response Status* **O**

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* **X**

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

Proposed Response *Response Status* **O**

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* **X**

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."

Proposed Response *Response Status* **O**

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* **X**

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

Proposed Response *Response Status* **O**

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* **X**

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"

Proposed Response *Response Status* **O**

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* **X**

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"

Proposed Response *Response Status* **O**

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* **X**

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"

Proposed Response *Response Status* **O**

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* **X**

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"

Proposed Response *Response Status* **O**

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* **X**

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."

Proposed Response *Response Status* **O**

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* **X**

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 ± 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 ± 10% with a measurement device of at least 200 MHz bandwidth."

Proposed Response *Response Status* **O**

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* **X**

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."

Proposed Response *Response Status* **O**

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* **X**

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)."

Proposed Response *Response Status* **O**

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* **X**

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 encoded…" 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 []

Proposed Response *Response Status* **O**

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* **X**

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)"

Proposed Response *Response Status* **O**

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* **X**

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[]

Proposed Response *Response Status* **O**

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

Marris, Arthur — Cadence Design Systems

Comment Type **E** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

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

Huber, Thomas — Nokia

Comment Type **E** *Comment Status* **X**

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

SuggestedRemedy

Delete clause 1.3

Proposed Response *Response Status* **O**

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

Huber, Thomas — Nokia

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

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

Proposed Response *Response Status* **O**

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

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **X**

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

SuggestedRemedy

Delete clause 1.5

Proposed Response *Response Status* **O**

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

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **X**

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”.'

Proposed Response *Response Status* **O**

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

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **X**

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:

Proposed Response *Response Status* **O**

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

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **X**

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

Proposed Response *Response Status* **O**

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

Huber, Thomas Nokia

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

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* **O**

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

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **X**

Typo in the clause title

SuggestedRemedy

Change 'descrption' to 'description'

Proposed Response *Response Status* **O**

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

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **X**

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

SuggestedRemedy

Underline "Type G".

Proposed Response *Response Status* **O**

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

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **X**

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

SuggestedRemedy

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

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.4.2** *P* **100** *L* **30** # 203

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **X**

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

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.4.3** *P* **101** *L* **9** # 204

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **X**

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

Proposed Response *Response Status* **O**

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

Graber, Steffen Pepperl+Fuchs SE

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

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).

Proposed Response *Response Status* **O**

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

Wienckowski, Natalie IVN Solutions LLC

Comment Type **E** *Comment Status* **X**

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

SuggestedRemedy

Change "TBD" to 168.

Proposed Response *Response Status* **O**

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

Wienckowski, Natalie IVN Solutions LLC

Comment Type **E** *Comment Status* **X**

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

SuggestedRemedy

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

Proposed Response *Response Status* **O**

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

Wienckowski, Natalie IVN Solutions LLC

Comment Type **E** *Comment Status* **X**

Delete empty subclause

SuggestedRemedy

Delete 1.3 heading and editing instructions.

Proposed Response *Response Status* **O**

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

Wienckowski, Natalie IVN Solutions LLC

Comment Type **E** *Comment Status* **X**

Delete unchanged content of subclause

SuggestedRemedy

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

Proposed Response *Response Status* **O**

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

Wienckowski, Natalie IVN Solutions LLC

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

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* **O**

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

Wienckowski, Natalie IVN Solutions LLC

Comment Type **E** *Comment Status* **X**

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

Proposed Response *Response Status* **O**

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

Wienckowski, Natalie IVN Solutions LLC

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

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.

Proposed Response *Response Status* **O**

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

Wienckowski, Natalie IVN Solutions LLC

Comment Type **E** *Comment Status* **X**

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

Proposed Response *Response Status* **O**

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

Wienckowski, Natalie IVN Solutions LLC

Comment Type **E** *Comment Status* **X**

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.]

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.3.6.1.2** *P* **90** *L* **9** # 215

Wienckowski, Natalie IVN Solutions LLC

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

Boolen variable with no defininition of "FALSE".

SuggestedRemedy

At the end of the description add: It is set FALSE otherwise.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.5.4.2** *P* **112** *L* **45** # 216

Wienckowski, Natalie IVN Solutions LLC

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

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.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.5.5.3** *P* **116** *L* **23** # 217

Wienckowski, Natalie IVN Solutions LLC

Comment Type **E** *Comment Status* **X**

Extraneious carriage return.

SuggestedRemedy

Remove the carriage return after "specification".

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.5.6** *P* **116** *L* **45** # 218

Wienckowski, Natalie IVN Solutions LLC

Comment Type **E** *Comment Status* **X**

Heading with no contents

SuggestedRemedy

Delete 190.5.6

Proposed Response *Response Status* **O**

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

Brychta, Michal Analog Devices

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

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.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.5.5.3** *P* **116** *L* **28** # 220

Brychta, Michal Analog Devices

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

(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.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.8.2.1** *P* **125** *L* **7** # 221

Brychta, Michal Analog Devices

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

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.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.8.2.2** *P* **126** *L* **7** # 222

Brychta, Michal Analog Devices

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

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.

Proposed Response *Response Status* **O**

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

Murray, Brian Analog Devices

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

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"

Proposed Response *Response Status* **O**

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

Murray, Brian Analog Devices

Comment Type **E** *Comment Status* **X**

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 ..."

Proposed Response *Response Status* **O**

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

Murray, Brian Analog Devices

Comment Type **E** *Comment Status* **X**

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 ..."

Proposed Response *Response Status* **O**

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

Murray, Brian Analog Devices

Comment Type **E** *Comment Status* **X**

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

Proposed Response *Response Status* **O**

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

Murray, Brian Analog Devices

Comment Type **E** *Comment Status* **X**

The text in the first sentence of the fist paragraph of page 65 states: "Any MII transfer in Table 190–1 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 190–1 for which TX_EN is 0, including Assert remote fault, is categorized as IDL"

Proposed Response *Response Status* **O**

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

Murray, Brian Analog Devices

Comment Type **E** *Comment Status* **X**

The text states "Table 190–2 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 190–3.". Table 190-3 showns 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 190–2 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 190–3. 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).

Proposed Response *Response Status* **O**

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

Murray, Brian Analog Devices

Comment Type **E** *Comment Status* **X**

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

SuggestedRemedy

Change the following text:

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

to:

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

Proposed Response *Response Status* **O**

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

Murray, Brian Analog Devices

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

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."

Proposed Response *Response Status* **O**

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

Murray, Brian Analog Devices

Comment Type **TR** *Comment Status* **X**

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].

Proposed Response *Response Status* **O**

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

Murray, Brian Analog Devices

Comment Type **E** *Comment Status* **X**

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

SuggestedRemedy

Change "PAM3" to "PAM2".

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.3.6.2** *P* **95** *L* # 233

Murray, Brian Analog Devices

Comment Type **E** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.3.7** *P* **99** *L* **1** # 234

Murray, Brian Analog Devices

Comment Type **E** *Comment Status* **X**

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

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.4.2** *P* **100** *L* **23** # 235

Murray, Brian Analog Devices

Comment Type **E** *Comment Status* **X**

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."

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.4.3** *P* **101** *L* **9** # 236

Murray, Brian Analog Devices

Comment Type **E** *Comment Status* **X**

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"

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.4.4.1** *P* **101** *L* **31** # 237

Murray, Brian Analog Devices

Comment Type **E** *Comment Status* **X**

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"

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.4.5** *P* **102** *L* **8** # 238

Murray, Brian Analog Devices

Comment Type **E** *Comment Status* **X**

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"

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.4.7** *P* **102** *L* **37** # 239

Murray, Brian Analog Devices

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

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".

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.5.4.4** *P* **113** *L* **29** # 240

Murray, Brian Analog Devices

Comment Type **E** *Comment Status* **X**

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"

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.5.5.3** *P* **116** *L* **23** # 241

Murray, Brian Analog Devices

Comment Type **E** *Comment Status* **X**

There is an unintended like break at line 23:

"[…]. This specification

may be considered satisfied […]"

SuggestedRemedy

Remove the line break to merge the first and second paragraphs in 190.5.5.3

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.6.1** *P* **117** *L* **15** # 242

Murray, Brian Analog Devices

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

Item d) in the enumerated list is incorrect. Auto-negotiation is not used to negotiate EEE.

SuggestedRemedy

Remove item d) from the enumerated list.

Proposed Response *Response Status* **O**

Cl **98B** *SC* **98B.3** *P* **131** *L* **14** # 243

Murray, Brian Analog Devices

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

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* **O**

Cl **98B** *SC* **98B.3** *P* **131** *L* **20** # 244

Murray, Brian Analog Devices

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

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.

Proposed Response *Response Status* **O**

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

Murray, Brian Analog Devices

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

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"

Proposed Response *Response Status* **O**

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

Murray, Brian Analog Devices

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

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).;"

Proposed Response *Response Status* **O**

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

Murray, Brian Analog Devices

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

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"."

Proposed Response *Response Status* **O**

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

Murray, Brian Analog Devices

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

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"."

Proposed Response *Response Status* **O**

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

Murray, Brian Analog Devices

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

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."

Proposed Response *Response Status* **O**

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

Murray, Brian Analog Devices

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

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."

Proposed Response *Response Status* **O**

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

Murray, Brian Analog Devices

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

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

Proposed Response *Response Status* **O**

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

Murray, Brian — Analog Devices

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

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.

Proposed Response *Response Status* **O**

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

Murray, Brian — Analog Devices

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

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."

Proposed Response *Response Status* **O**

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

McClellan, Brett — Marvell

Comment Type **E** *Comment Status* **X**

change 'Clause TBD' to 'Clause 168'

SuggestedRemedy

change 'Clause TBD' to 'Clause 168'

Proposed Response *Response Status* **O**

Cl **98B** *SC* **98B** *P* **131** *L* **1** # 255

Jones, Peter — Cisco

Comment Type **TR** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

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

Jonsson, Ragnar — Infineon

Comment Type **E** *Comment Status* **X**

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"

Proposed Response *Response Status* **O**

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

Jonsson, Ragnar Infineon

Comment Type **E** *Comment Status* **X**

The use of ARF is ambiguous, since "Assert Remote fault" it is 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"

Proposed Response *Response Status* **O**

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

Jonsson, Ragnar Infineon

Comment Type **TR** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

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

Jonsson, Ragnar Infineon

Comment Type **E** *Comment Status* **X**

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

Proposed Response *Response Status* **O**

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

Jonsson, Ragnar Infineon

Comment Type **E** *Comment Status* **X**

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."

Proposed Response *Response Status* **O**

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

Jonsson, Ragnar Infineon

Comment Type **E** *Comment Status* **X**

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."

Proposed Response *Response Status* **O**

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

Jonsson, Ragnar Infineon

Comment Type **ER** *Comment Status* **X**

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

Proposed Response *Response Status* **O**

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

Jonsson, Ragnar Infineon

Comment Type **ER** *Comment Status* **X**

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

Proposed Response *Response Status* **O**

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

Jonsson, Ragnar Infineon

Comment Type **ER** *Comment Status* **X**

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

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.4.4.2** *P* **102** *L* **1** # 265

Jonsson, Ragnar Infineon

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

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.

Proposed Response *Response Status* **O**

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

Law, David HPE

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

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.

Proposed Response *Response Status* **O**

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

Law, David HPE

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

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.

Proposed Response *Response Status* **O**

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

Law, David HPE

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

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.

Proposed Response *Response Status* **O**

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

Law, David HPE

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

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'.

Proposed Response *Response Status* **O**

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

Law, David HPE

Comment Type **E** *Comment Status* **X**

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 ...'.

Proposed Response *Response Status* **O**

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

Law, David HPE

Comment Type **E** *Comment Status* **X**

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 ...'.

Proposed Response *Response Status* **O**

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

Law, David HPE

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

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 ...'.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.3.6.1.2** *P* **89** *L* **48** # 273

Law, David HPE

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

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.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.3.6.1.2** *P* **89** *L* **49** # 274

Law, David HPE

Comment Type **TR** *Comment Status* **X**

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 190–13 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>.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.3.6.1.2** *P* **90** *L* **5** # 275

Law, David HPE

Comment Type **E** *Comment Status* **X**

Incorrect cross-reference.

SuggestedRemedy

Change '... encoder as described in 190.3.3.4' to read '... encoder as described in 190.3.2.4.'.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.3.6.1.2** *P* **90** *L* **25** # 276

Law, David HPE

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

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.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.3.6.1.2** *P* **90** *L* **30** # 277

Law, David HPE

Comment Type **TR** *Comment Status* **X**

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'.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.3.6.1.2** *P* **90** *L* **33** # 278

Law, David HPE

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

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 ...'.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.3.6.2** *P* **94** *L* **3** # 279

Law, David HPE

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

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.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.3.6.2** *P* **95** *L* **8** # 280

Law, David HPE

Comment Type **TR** *Comment Status* **X**

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.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.3.6.2** *P* **98** *L* **3** # 281

Law, David HPE

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

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.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.4.1** *P* **100** *L* **7** # 282

Law, David HPE

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

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.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.4.9.1.1** *P* **103** *L* **22** # 283

Law, David HPE

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

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.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.4.9.1.1** *P* **103** *L* **22** # 284

Law, David HPE

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

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.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.4.9.1.1** *P* **104** *L* **30** # 285

Law, David HPE

Comment Type **E** *Comment Status* **X**

Change 'timing_locked:' to read 'timing_locked'.

SuggestedRemedy

See comment.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.4.9.2** *P* **107** *L* **16** # 286

Law, David HPE

Comment Type **E** *Comment Status* **X**

Change 'SEND_IDLE _NOT_READY' to read 'SEND_IDLE_NOT_READY' (remove space between 'IDLE' and '_NOT').

SuggestedRemedy

See comment.

Proposed Response *Response Status* **O**

Cl **190** *SC* **190.4.9.2** *P* **108** *L* **11** # 287

Law, David HPE

Comment Type **E** *Comment Status* **X**

Change 'loc_phy_ready <= true' to read 'loc_phy_ready <= TRUE'.

SuggestedRemedy

See comment.

Proposed Response *Response Status* **O**

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

Law, David HPE

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

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.

Proposed Response *Response Status* **O**

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

Law, David HPE

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

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.'.

Proposed Response *Response Status* **O**