Cl **00** *SC* **0** *P* *L* # 72

Law, David 3Com

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

It has been agreed with staff that where a subclause is inserted prior to the existing first subclause it is labelled [existing subclause - one level].[a through z]. Where a subclause is inserted after an existing subclause - assuming it is not the last - the new subclause it is labelled [subclause number][a through z].

For example to insert two subclauses before 43.2.1 the subclauses would be numbered 43.2.a and 43.2.b. Two subclauses between 43.2.1 and 43.2.2 would be numbered 43.2.1a and 43.2.1b. Two subclauses added after the last subclause 43.2.2 would be numbered 43.2.3 and 43.2.4.

At the moment we are not consistent in IEEE P802.3ba and IEEE P802.3az. In some cases the draft isn't consistent with itself.

SuggestedRemedy

Use consistent subclause insertion numbering including style guide and approach agreed with staff.

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* *L* # 106

Anslow, Peter Nortel Networks

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

The comparison document only shows added text (in blue). This means that deletions from the draft cannot easily be seen.

SuggestedRemedy

Please show additions and deletions (in strikeout and red) in the comparison document as other projects have done.

Proposed Response *Response Status* **O**

Cl **14** *SC* **14** *P* **15** *L* **5** # 101

Thaler, Pat Broadcom

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

Some text still implies that a type 10BASE-Te MAU is not a type 10BASE-T one, but it needs to be for backwards compatibility in places like autonegotiation. 10BASE-Te should be treated as a subtype of 10BASE-T.

SuggestedRemedy

In the title of Clause 14, change "and type 10BASE-Te" to "including type 10BASE-Te".

14.1.1 in the note say: "Support for both 10BASE-Te and non-10BASE-Te signal levels in a single device is not expected." Or you could use legacy 10BASE-T where you need to differentiate from 10BASE-Te.

14.1.1.3 - the first paragraph doesn't explicitly exclude 10BASE-Te. The paragraph needs language to exclude 10BASE-Te; either replace 10BASE-T with "10BASE-T except 10BASE-Te" or "legacy 10BASE-Te"

14.3, The additional sentence "This subclause also ..." is not needed since 10BASE-T includes 10BASE-Te when not otherwise specified.

14.3.1.2 the paragaph about insertion loss for a legacy 10BASE-T MAU needs to explicitly exclude 10BASE-Te.

This needs to be done for every time that there is a requirement that is different for 10BASE-Te. The paragraph near the beginning of 14.3.1.2 that contains the reference to Figure 14-7 is an example where it was done right.

Proposed Response *Response Status* **O**

Cl **14** *SC* **14.1.1** *P* **15** *L* **22** # 104

Booth, Brad AppliedMicro

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

There was a comment #10511 that was issued against the note in 14.1.1.
I believe that the issue still exists with the note.
"Expected" is defined as "considered likely or probable to happen or arrive." The use of the word reads with a level of uncertainty. Notes are used to call attention; therefore, it should contain stronger wording.

SuggestedRemedy

Change to read:
Support for both 10BASE-T and 10BASE-Te in a single device is not requried.

Proposed Response *Response Status* **O**

Cl **14** *SC* **14.1.1.1** *P* **15** *L* **49** # 69

Law, David 3Com

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

I believe that 10BASE-Te is a MAU and not a PHY. See subclause 14.1.1'Overview' which states that 'This clause also specifies the functional, electrical, and mechanical characteristics of the Energy Efficient version of 10BASE-T, the type 10BASE-Te MAU, and one specific medium for use with that MAU.'. 10BASE-T is also a MAU. A MAU is not the same as a PHY - see Figure 1-1 in IEEE Std 802.3-2008.

SuggestedRemedy

Change 'A 10BASE-Te PHY interoperates with a 10BASE-T PHY if the minimum cabling requirements of a 10BASE-Te PHY are met.' to read 'A 10BASE-Te MAU interoperates with a 10BASE-T MAU if the minimum cabling requirements of a 10BASE-Te MAU are met.

Also change subclause 78.1 (page 235, line 20) that reads 'In addition to the above, EEE defines a 10 Mb/s PHY (10BASE-Te) with reduced transmit amplitude requirements. The 10BASE-Te PHY is fully interoperable with 10BASE-T PHYs over 100 m of class D (Category 5) or better cabling as specified in ISO/IEC 11801:1995.' to read 'In addition to the above, EEE defines a 10 Mb/s MAU (10BASE-Te) with reduced transmit amplitude requirements. The 10BASE-Te MAU is fully interoperable with 10BASE-T MAUs over 100 m of class D (Category 5) or better cabling as specified in ISO/IEC 11801:1995.'.

Proposed Response *Response Status* **O**

Cl **14** *SC* **14.10.3** *P* **21** *L* **12** # 97

Thaler, Pat Broadcom

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

Since the decision was that 10BASE-T includes 10BASE-Te, it is unclear whether a maker of a 10BASE-Te MAU also checks the 10BASE-T box yes.

SuggestedRemedy

Add text to the 10BASE-T entry that excludes 10BASE-TE.

Proposed Response *Response Status* **O**

Cl **22** *SC* **22.2.1** *P* **22** *L* **5** # 71

Law, David 3Com

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

EEE requires the use of the MAC defined in Annex 4A.

SuggestedRemedy

Change the text 'The definition of LPI signaling assumes the use of the MAC defined in Annex 4A..' to read 'Support for EEE requires the use of the MAC defined in Annex 4A ..'.

Please make the same change in subclause 35.2.1, 46.1.7 and 78.1.1.

Proposed Response *Response Status* **O**

Cl **24** *SC* **24.1.1** *P* **31** *L* **26** # 68

Law, David 3Com

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

Footnote 5 seems to be marked as inserted text yet I don't seem to be able to find footnote 5 - and it should be at the bottom of this page.

SuggestedRemedy

Provide footnote 5 at the bottom of this page.

Proposed Response *Response Status* **O**

Cl **24** *SC* **24.1.2** *P* **31** *L* **19** # 107

Cobb, Terry CommScope

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

Maintenance request #1206 The objective d) is correct as it is written. The objective reflects what is in the TP-PMD standard which is what this clause uses for 100BASE-TX. The TP-PMD standard is specifically written to focus on Category 5 UTP and 150 ohm STP cabling, see Annex E of ANSI X3.263-1995.

The objectives are meant to serve as goals at the start of a project. Being able to run over UTP was important because there are more impairments due to noise, crosstalk, and EMC; compared to screened or shielded systems. So distinguishing UTP as a minimum objective is correct. It is the lowest common denominator.

I also don't believe you should change objectives that were true at the time.

SuggestedRemedy

Reject maintenance request #1206

Proposed Response *Response Status* **O**

Cl **24** *SC* **24.1.2** *P* **31** *L* **19** # 108

Cobb, Terry CommScope

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

Maintenance request #1207 The objective 1) is correct as it is written.

The objectives are meant to serve as goals at the start of a project. Being able to run over UTP was important because there are more impairments due to noise, crosstalk, and EMC; compared to screened or shielded systems. So distinguishing UTP as a minimum objective is correct. It is the lowest common denominator.

I also don't believe you should change objectives that were true at the time.

SuggestedRemedy

Reject maintenance request #1207

Proposed Response *Response Status* **O**

Cl **24** *SC* **24.2.3.1** *P* **35** *L* **39** # 70

Law, David 3Com

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

According to Table 22-2 a binary value 0001 of receive nibble-wide Data signals (RXD), together with the de-assertion of RX_DV and the assertion of RX_ER on the MII is used to indicate "Assert LPI" (see page 26, line 10).

SuggestedRemedy

Change '.. used to indicate "receive LPI", as ..' to read '.. used to indicate "Assert LPI", as ..'.

Proposed Response *Response Status* **O**

Cl **24** *SC* **24.2.3.4** *P* **37** *L* **13** # 67

Law, David 3Com

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

A reference to subclause 45.2.3.9b would be better than to Table 45-1 which is the global register list and does not list individual bits.

SuggestedRemedy

Change the text '.. register 3.22 (refer to Table 45-1) shall ..' to read '.. register 3.22 (see 45.2.3.9b) shall ..',

Proposed Response *Response Status* **O**

Cl **28C** *SC* **28C.12** *P* **258** *L* **33** # 66

Kasturia, Sanjay Teranetics

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

This is a "pile on" to comment #20192. Annex 28C and Clause 45.2.7.13a and clause 45.2.7.14a require new EEE next pages and new message codes that add 1/2 second during autonegotiation. This is unnecessary time.

SuggestedRemedy

Use the existing NP and XNP to control advertising of BASE-T EEE

Proposed Response *Response Status* **O**

Cl **28C** *SC* **28C.12** *P* **258** *L* **33** # 103

Woodruff, Bill Aquantia

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

This is a "pile on" to comment #20192. Annex 28C and Clause 45.2.7.13a and clause 45.2.7.14a require new EEE next pages and new message codes that add 1/2 second during autonegotiation. This is unnecessary time.

Submitted as TR, changed to T

SuggestedRemedy

Use the existing NP and XNP to control advertising of BASE-T EEE

Proposed Response *Response Status* **O**

Cl **28C** *SC* **28C.12** *P* **258** *L* **33** # 73

Marris, Arthur Cadence

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

This is a pile on to 20192 against draft 2.1

Surely the whole point of adding XNPs for 10GBASE-T was to use them for this sort of configuration operation.

SuggestedRemedy

Please reconsider reponse to 20192

Proposed Response *Response Status* **O**

Cl **28C** *SC* **28C.12** *P* **258** *L* **38** # 98

Thaler, Pat Broadcom

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

This says that 45.2.7.13a defines what is sent in bits U10:U0 so there are no remaining U field bits (which is the only field in the unformatted page).

The bits should all be defined in one place (45.2.7.13a) so that this doesn't need to be updated two places if another bit is used sometime. My comment on 15.2.7.13a would update it to cover all the bits.

This comment also applies to 73A.4

SuggestedRemedy

Delete ", the remaining field bits....on receipt".

Proposed Response *Response Status* **O**

Cl **36** *SC* **36.2.5.1.3** *P* **75** *L* **30** # 79

Pillai, Velu Broadcom

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

Definition of code_sync_status should be same as what is there in 802.3-2008 for sync_stauts.

SuggestedRemedy

A parameter set by the PCS Synchronization process to reflect the status of the link as viewed by the receiver.

Proposed Response *Response Status* **O**

Cl **36** *SC* **36.2.5.1.7** *P* **76** *L* **48** # 81

Pillai, Velu Broadcom

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

Description for tx_ts_timer, tx_tq_timer and tx_tr_timer starts as :
This timer is started when the PCS receiver enters..
It should be
This timer is started when the PCS transmitter enters..

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **36** *SC* **36.2.5.2.2** *P* **83** *L* **13** # 1

Barnette, James Vitesse Semiconducto

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

Branches from LPI_IDLE_D, LPI_K, RX_WAKE, and RX_WTF, are not sufficiently specified when multiple conditions occur simultaneously.

SuggestedRemedy

Branches from LPI_IDLE_D near line 13:

On the branch from LPI_IDLE_D to RX_LINK_FAIL, change the condition from "rx_ts_timer_done" to "signal_detect = OK * rx_ts_timer_done". On the branch from LPI_IDLE_D to off-page node F, change the condition from "xmit != DATA * SUDI(![/K28.5/])" to "signal_detect = OK * !rx_ts_timer_done * xmit != DATA * SUDI(![/K28.5/])". On the branch from LPI_IDLE_D to LPI_K, change the condition from "xmit = DATA * SUDI + SUDI([/K28.5/])" to "signal_detect = OK * !rx_ts_timer_done * (xmit = DATA * SUDI + SUDI([/K28.5/]))".

Branches from LPI_K near line 19:

On the branches from LPI_K to off-page nodes D, F, and C as well as the branch back to LP_IDLE_D, insert the condition "signal_detect = OK * <cond>" where <cond> is replaced by the previously-stated condition.

Branches from RX_WAKE near line 32:

On the branch to RX_WTF, insert the condition "signal_detect = OK * !(code_sync_status = OK * SUDI([/K28.5/]*EVEN)) * ..." into the condition for this branch. On the branch to RX_WAKE_DONE, insert the condition "signal_detect = OK * ..." into the condition for this branch.

Similarly, in branches from RX_WTF near line 36:

On the branch to RX_LINK_FAIL, insert the condition "signal_detect = OK * !(code_sync_status = OK * SUDI([/K28.5/]*EVEN)) * ..." into the condition for this branch. On the branch to RX_WAKE_DONE, insert the condition "signal_detect = OK * ..." into the condition for this branch.

Proposed Response *Response Status* **O**

Cl **36** *SC* **36.2.5.2.2** *P* **83** *L* **44** # 2

Barnette, James Vitesse Semiconducto

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

When state RX_QUIET is to be left via transition (signal_detect = FAIL * rx_tq_timer_done) entering state RX_LINK_FAIL (via the "I" connector) signal "rx_quiet" is not set back to FALSE.

In case this condition (and transition) is ever met rx_quiet will never be set to FALSE again. A receiver would never be able to get data again since the receiver (e.g. a deserializer) would be powered down all the time - only a reset would help.

SuggestedRemedy

When entering state RX_LINK_FAIL signal "rx_quiet" must be reset (rx_quiet <= FALSE; this would be an additional assignment to the already existing assignment "rx_lpi_active <= FALSE").

Proposed Response *Response Status* **O**

Cl **36** *SC* **Fig 36-7a** *P* **81** *L* **24** # 80

Pillai, Velu Broadcom

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

Missing closing paranthesis after idle_d

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **36** *SC* **Fig 36-7c** *P* **83** *L* **40** # 83

Pillai, Velu Broadcom

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

Exit out of RX_WAKE_DONE should be to H and not to G

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **36** *SC* **Fig 36-7c** *P* **83** *L* **5** # 82

Pillai, Velu Broadcom

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

To be consistent across all the EEE PHYs, change the state name from START_RX_SLEEP to RX_SLEEP. Also on page 76, line 31.

If the editor decides to keep the name, then on page 76, line 28 change the name RX_SLEEP to START_RX_SLEEP.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **36** *SC* **Fig36-7a** *P* **81** *L* **4** # 84

Pillai, Velu Broadcom

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

Missing rx_lpi_active <= FALSE inside LINK_FAILED state

SuggestedRemedy

Add the above.

Proposed Response *Response Status* **O**

Cl **40** *SC* **40.1.3** *P* **89** *L* **9** # 96

Thaler, Pat Broadcom

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

The response to comment 427 on the initial WG ballot was suppose to be applied here to remove "more commonly known as"

SuggestedRemedy

Apply the response.

Proposed Response *Response Status* **O**

Cl **40** *SC* **40.3.1.3.4** *P* **97** *L* **11** # 63

Healey, Adam LSI Corporation

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

It has been pointed out by IEEE staff editors that, per IEEE style, equations should be replaced rather than highlighting changes using strikethroughs and underscores.

SuggestedRemedy

Remove change highlighting (strikethrough and underscore) from the equations in this subclause and add replacement instructions before each equation.

Proposed Response *Response Status* **O**

Cl **40** *SC* **40.3.4** *P* **99** *L* **11** # 62

Grimwood, Michael Broadcom

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

For 1000BASE-T EEE, the PHY can use 3 of the 4 pairs to provide a reliable indication of scrambler lock. If the PHY needs to encode LPI during training, then one of the pairs is needed to convey this information so that only 2 of the 4 pairs can effectively be used. This constraint results in a small but non-zero degradation in the robustness of the link-up process. Additionally, even if a PHY is allowed to encode LPI during training, the link cannot actually enter a low power state during this time. Thus, permitting an LPI command during training offers no real benefit yet results in a slight degradation in robustness.

This small degradation in robustness can be eliminated by having the PHY ignore LPI requests during training.

SuggestedRemedy

Explicitly prevent encoding loc_lpi_req during training. The changes required to accomplish this follow:

Introduce a new variable, loc_lpi_en, which in the PHY Control state diagram (Figure 40-15a) is set TRUE in the state "SEND IDLE or DATA" and is set FALSE in the states "SLAVE SILENT" and "SEND IDLE".

In the Local LPI Request state diagram (Figure 40-9), modify the transition condition into the state "LOC LPI REQ OFF" to be:

pcs_reset = ON + link_status != OK + loc_lpi_en = FALSE.

Document the communication between the PHY Control and the Local LPI Request blocks by updating the functional and reference diagrams and defining the PMA service primitive associated with the variable, loc_lpi_en.

A presentation will be submitted for review at the January 2010 interim meeting in New Orleans detailing the specific changes required.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.7.13a** *P* **128** *L* **24** # 57

Grimwood, Michael Broadcom

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

The next page bit number references don't match up with the EEE advertisement register bit numbering as was specified in the resolution to Comment #193 against Draft 2.1 at the November Plenary.

SuggestedRemedy

In table 45-157a

For 7.60.3 change next page bit number from "U2" to "U3"
For 7.60.2 change next page bit number from "U1" to "U2"
For 7.60.1 change next page bit number from "U0" to "U1"

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.7.13a** *P* **128** *L* **25** # 99

Thaler, Pat Broadcom

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

The bit assignments still aren't right. Bits 3 through 1 of the register should map to U3 through U1 of the U field. I.e. each bit in the register should map to the corresponding bit of the U field. This was agreed in the resolution of my comment 416 on the first ballot and in the response to 193 in the first recirculation.

This comment also applies to 45.2.7.14a which should use the same mapping.

SuggestedRemedy

Change the mapping of bits 3 through 1 to U3 through U1 respectively in both tables.

I would also prefer that the resolution in response to 416 be fully implemented - the register bits 0 through 15 should map to U0 through U15 (all bits apply to Clause 73 and only bits 0 through 10 apply to Clause 28) with the unused values reserved. That allows the mapping for the register to U bits to be established now for when additional bits are added latter.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.7.14a** *P* **130** *L* **24** # 58

Grimwood, Michael Broadcom

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

The next page bit number references don't match up with the EEE link partner ability register bit numbering as was specified in the resolution to Comment #193 against Draft 2.1 at the November Plenary.

Also, since this refers to register 7.61 the bit designations need to be changed from 7.60.x to 7.61.x.

SuggestedRemedy

In table 45-157b,

Change all eight occurrences of "7.60." to "7.61."

For 7.60.3 (7.61.3) change next page bit number from "U2" to "U3"
For 7.60.2 (7.61.2) change next page bit number from "U1" to "U2"
For 7.60.1 (7.61.1) change next page bit number from "U0" to "U1"

Proposed Response *Response Status* **O**

Cl **46** *SC* **46.4a** *P* *L* # 77

Parnaby, Gavin Solarflare Communicat

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

TX_EN, TX_ER and TXD<7:0> are not the correct names for 10G.
RX_EN, RX_ER and RXD<7:0> are not the correct names for 10G.

This seems to be a copy/paste error from the GMII clause.

SuggestedRemedy

Update the names and description to use TXD/TXC, RXD/RXC.

Proposed Response *Response Status* **O**

Cl **46** *SC* **46.4a** *P* **135** *L* **47** # 75

Parnaby, Gavin Solarflare Communicat

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

The MAC should be prevented from requesting a transition into LPI within 1 ms of sending or receiving fault signaling, to prevent LPI requests occuring during PCS_Test while the PHY is retraining. This would prevent any frames being lost during LPI transitions following PCS_Test.

The current text states that LPI requests should be prevented unless the link has been operational for at least 1 second, but this only traps the case when the link retrains after autoneg.

SuggestedRemedy

Add text stating that transitions to LPI should be prevented within 1 ms of sending or receiving fault signaling.

Proposed Response *Response Status* **O**

Cl **46** *SC* **46.4a** *P* **135** *L* **48** # 74

Parnaby, Gavin Solarflare Communicat

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

Do we need to add a description here of what happens if the PHY is in LPI on the transmit side and in the normal operational mode on the receive side, and it receives LF from the link partner?

It is not clear from the text whether LF or LP_IDLE takes precedence.

I believe that, according to 46.3.4, the RS should respond to LF by sending RF on the transmit path. This would wake the transmit side of the link if it were in LPI.

SuggestedRemedy

Add text stating that the fault signaling takes precedence - transmitting the RF will wake up the PHY.

Should this description be added to clause 78?

Proposed Response *Response Status* **O**

Cl **47** *SC* **47.1.6** *P* **140** *L* **41** # 44

Brown, Matt Applied Micro (AMCC)

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

A mode is required where a XAUI link supports LPI signalling, but does not support the QUIET/REFRESH cycling.

SuggestedRemedy

Specify an MDIO bit field XAUI_EEE_QUIET_ENABLE to determine if QUIET state is support. If TRUE, transmit will turn off tx_mode is QUIET. If FALSE, transmit will not turn off if tx_mode is QUIET.

Proposed Response *Response Status* **O**

Cl **49** *SC* **00** *P* **00** *L* **0** # 53

Brown, Matt Applied Micro (AMCC)

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

Capitalization of constants TRUE and FALSE is inconsistent.

SuggestedRemedy

In all text and figures, where the word represents a value or state, replace:
"true" with "TRUE"
"false" with "FALSE"

Proposed Response *Response Status* **O**

Cl **49** *SC* **49** *P* **158** *L* **1** # 95

Pillai, Velu Broadcom

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

The draft is not addressing the situation in which how a transmitter will handle an LPI request if the link partner is transmitting Local fault.

SuggestedRemedy

Michael Grimwood is expected to address this problem for 10GBASE-T PHYs through a presentation. Either the 10GBASE-R PHY should adopted a similar solution or there is a need for discussing this issue separately.

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.1.5** *P* **159** *L* **33** # 46

Brown, Matt Applied Micro (AMCC)

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

SuggestedRemedy

Provide specification for EEE service primitives:
ENERGY_DETECT.indication(energy_detect) -- equate to energy_detect variable
TX_MODE.request(tx_mode) -- equate to tx_mode variable
RX_MODE.request(rx_mode) -- equate to rx_mode variable
RX_LPI_ACTIVE.request(rx_lpi_active) -- equate to rx_lpi_active variable

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.2.2** *P* **164** *L* **22** # 51

Brown, Matt Applied Micro (AMCC)

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

The energy_detect variable state is determined from energy_detect primitive from FEC and/or PMA. The primitive has the values OK and FAIL, whereas the energy detect variable is expected to have the values TRUE and FALSE. Redefine energy_detect variable and update LPI Receive state diagram (Figure 49-17).

SuggestedRemedy

Change variable name from energy_detect to energy_detect_ok. Make changes throughout section to references to this variable (not the primitive) including Figure 49-17.

Change definition of energy_detect_ok to...
A Boolean variable indicating when the PMD detects signal energy. The variable is set to TRUE when the energy_detect primitive indicates OK and is set to FALSE when the energy_detect primitive indicates FAIL.

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.2.2** *P* **164** *L* **43** # 54

Brown, Matt Applied Micro (AMCC)

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

All variables here are specific to EEE based on sentence on line 20.

SuggestedRemedy

Replace "For EEE capability, this" with "This".

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.2.2** *P* **165** *L* **19** # 55

Brown, Matt Applied Micro (AMCC)

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

It is common to refer to PCS receiver not PCS's receiver.

SuggestedRemedy

Change "PCS's receiver" to "PCS receiver".
7 instances on page 165

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.2.5** *P* **165** *L* **34** # 88

Pillai, Velu Broadcom

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

Timer description for tx_ts_timer, tx_tq_timer tx_tr_timer and tx_tw_timer states
This timer is started when the PCS's receiver..
change it to
This timer is started when the PCS's transmitter.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.3** *P* **165** *L* **10** # 3

Brown, Matt Applied Micro (AMCC)

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

Figure 49-14 on page 165 and Figure 49-16 on page 169.
Behavior of SM in TX_LI in Figure 49-14 is independent of state in Figure 49-16. Sending of IDLE blocks during WAKE is not enforce. Need to ensure that state machines don't get unsynchronized. Should have predictable behavior from start of SLEEP to end of WAKE. Should unify behavior of 10GBASE-R and 10GBASE-T Tx state machines.

Incorporate TX_L and TX_WN states similar to Clause 55 Figure 55-15a.

SuggestedRemedy

Create variables:
tx_lpi_active: " A boolean variable set to TRUE when PHY is in LPI mode and set to FALSE when PHY is not in LPI mode."
tx_lpi_req: "A boolean variable set to TRUE when PHY client is requesting LPI and is otherwise set to FALSE."

Copy definitions of LPBLOCK_T and IBLOCK_T from Clause 55.

In Figure 49-14:
In state TX_INIT add line
"tx_lpi_req=FALSE"
In state TX_LI add lines
"tx_coded=LPBLOCK_T"
"tx_lpi_req=TRUE"
Delete transitions:
TX_LI to TX_C
TX_LI to TX_E

Add state TX_W with lines:
"tx_lpi_req=FALSE"
"tx_coded=IBLOCK_T"

Add transitions as follows:
TX_LI to TX_W: !(T_TYPE(tx_raw)=LI)
TX_W to TX_C: !tx_lpi_active*(T_TYPE(tx_raw)=C)
TX_W to TX_E: !tx_lpi_active*(T_TYPE(tx_raw)=(E+D+S+T))

In Figure 49-16...
In TX_ACTIVE add line "tx_lpi_active=FALSE"
In TX_SLEEP add line "tx_lpi_active=TRUE"
Replace all instances each as follows:
"T_TYPE(tx_raw)=LI" with "tx_lpi_req"
"T_TYPE(tx_raw)!=LI" with "!tx_lpi_req"

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.3** *P* **170** *L* **11** # 56

Brown, Matt Applied Micro (AMCC)

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

Figure 49-17.
In transition RX_ACTIVE to RX_SLEEP need to qualify with RX_BLOCK_LOCK.

SuggestedRemedy

Change transition criteria to:
rx_block_lock*(block_lock=rx_block_lock)*R_TYPE(rx_coded)=LI

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.3.1** *P* **168** *L* **5** # 89

Pillai, Velu Broadcom

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

The transmit LPI state diagram controls tx_mode which disables the transmitter when true.

This should say

The transmit LPI state diagram controls tx_mode which disables the transmitter when it is set to quiet.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.3.1** *P* **170** *L* **33** # 52

Brown, Matt Applied Micro (AMCC)

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

After signal changes from ALERT to DATA, the energy_detect may possibly indicate no energy. The purpose of using the ALERT signal was to provide a higher energy signal so that we may energy_detect threshold higher to prevent false energy detect from noise.

As a result, when in RX_WAKE and RX_WTF states, it is very possible and expected that energy_detect will go FALSE before block lock is achieved.

Since energy_detect is VERY reliable with the ALERT signal, a transition to RX_WAKE indicates either a REFRESH or WAKE signal not a false detection of noise or ringing.

SuggestedRemedy

Remove the following transitions:
RX_WAKE to RX_QUIET
RX_WTF to RX_QUIET

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.4.4** *P* **159** *L* **40** # 47

Brown, Matt Applied Micro (AMCC)

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

Not clear what LPI is.

SuggestedRemedy

Change "Low Power Idle(LPI) is an option" to "Low Power Idle (LPI) control characters."

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.4.4** *P* **159** *L* **40** # 48

Brown, Matt Applied Micro (AMCC)

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

Note clear what "this option" is.

SuggestedRemedy

Change "this option" to "EEE capability".

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.4.4** *P* **159** *L* **40** # 49

Brown, Matt Applied Micro (AMCC)

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

It says that if EEE is supported LPI characters may be transmitted and if EEE is not supported then LPI characters are treated as errors. If EEE is supported, but not enabled as a result of AN, how shall LPI characters be treated. Does supported mean implemented and enabled?

SuggestedRemedy

Clarify what is meant by supported and/or clarify what to do if EEE is implemented, but not enabled.

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.4.7** *P* **160** *L* **8** # 45

Brown, Matt Applied Micro (AMCC)

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

For consistency, change /LI/ name to match name in Clause 55 (page 188, line 18).

SuggestedRemedy

Change "LPI" to "lp_idle".
Alternately, change Clause 55 "lp_idle" to "LPI".

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.6** *P* **161** *L* **1** # 50

Brown, Matt Applied Micro (AMCC)

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

Scramble behavior here should align with than in scamble_bypass definition.

SuggestedRemedy

Change:
"To aid block synchronization in the receiver for EEE capability when Clause 74 FEC is in use, the scrambler input shall bypass the scrambler while scrambler_bypass is TRUE."

To:
To aid block synchronization in the receiver for EEE capability when Clause 74 FEC is in use, the PCS will pass the unscrambled data from the scrambler input rather than the scrambled data from the scrambler output. The scrambler will continue to operate normally shifting input data into the delay line.

Proposed Response *Response Status* **O**

Cl **49** *SC* **Fig 49-16** *P* **169** *L* **12** # 86
Pillai, Velu Broadcom

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

Arrow head for TX_ACTIVE back to TX_ACTIVE needs to touch the vertical line.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **49** *SC* **Fig 49-16** *P* **169** *L* **24** # 91
Pillai, Velu Broadcom

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

Either change all the 1usec timer name to
one_uS_timer
or
one_us_timer

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **49** *SC* **Fig 49-16** *P* **169** *L* **41** # 90
Pillai, Velu Broadcom

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

Inside TX_REFRESH state change
tx_mode <= data
to
tx_mode <= DATA

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **49** *SC* **Fig 49-17** *P* **170** *L* **46** # 94
Pillai, Velu Broadcom

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

In draft 2.2 a new state got added to Fig 49-17. In certain cases this transition from RX_WAKE to RX_SCR_BYPASS can cause issues.

For example: during refresh, what if the FEC gained the block lock by chance much before the transmitter asserts scr_bypass. This will lead the receive PCS to get an rx_block_lock, at which case this transition will take place. But then when the transmitter asserts scr_bypass, the receive PCS might see != LI, which will wake the receiver up.

SuggestedRemedy

Don't have a suggestion at this point. But certainly this needs more discussions.

Proposed Response *Response Status* **O**

Cl **49** *SC* **Fig 49-17** *P* **170** *L* **47** # 92
Pillai, Velu Broadcom

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

one_uS_timer is used in TX LPI and RX LPI state diagrams. It is better to use different names for these timers to avoid confusion and to follow the usual practice in IEEE standards.

SuggestedRemedy

Suggestion is to change the one on Fig 49-16 to be tx_one_uS_timer and the one on fig 49-17 to be rx_one_uS_timer. And add appropriate descriptions under 49.2.13.2.5

Proposed Response *Response Status* **O**

Cl **49** *SC* **Fig 49-17** *P* **170** *L* **9** # 87
Pillai, Velu Broadcom

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

Arrow heads for RX_ACTIVE to RX_ACTIVE and RX_SLEEP to RX_ACTIVE are floating.

SuggestedRemedy

Fix the diagram

Proposed Response *Response Status* **O**

Cl **49** *SC* **Figure 49-17** *P* **170** *L* **18** # 65

Horner, Rita Avago Technologies

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

In RX_SLEEP, the transition with the condition "rx_block_lock *~rx_tq_timer_done * R_TYPE(rx_coded) = IDLE" goes nowhere. There is a missing line connection, to the right of the Figure 49-17.

SuggestedRemedy

Draw in a feedback line to the RX_ACTIVE state, which matches the earlier D2.2 version of the diagram.

Proposed Response *Response Status* **O**

Cl **49** *SC* **Figure 49-17** *P* **170** *L* **9** # 64

Horner, Rita Avago Technologies

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

RX_ACTIVE, the transition with the condition "block_lock != rx_block_lock" goes nowhere. There is a missing connectin to the right of the Figure 49-17.

SuggestedRemedy

Draw in a feedback line to the RX_ACTIVE state, which matches the earlier D2.2 version of the diagram.

Proposed Response *Response Status* **O**

Cl **51** *SC* **52.2.6.1** *P* **176** *L* **6** # 5

Brown, Matt Applied Micro (AMCC)

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

Condition for energy_detect=OK is not specified. Nor is it defined where the states come from.

Since PMA_ENERGY_DETECT.indication is identical to PMD_SIGNAL.indication, the intermediate energy_detect variable/signal is not required.

SuggestedRemedy

Change description of PMA_ENERGY_DETECT.indication(energy_detect) to:
"The energy_detect parameter takes on one of two values OK or FAIL as indicated by PMD_SIGNAL.indication(SIGNAL_OK). A value of OK indicates that the PMD detects a signal. A value of FAIL indicates that the PMD does not detect a signal. A value of OK does not guarantee that a valid signal is being presented to the PMA client."

Change when generated as follows:
The PMA generates this primitive whenever the PMD_SIGNAL.indication(SIGNAL_OK) primitive is received.

Proposed Response *Response Status* **O**

Cl **51** *SC* **52.2.6.1** *P* **176** *L* **6** # 4

Brown, Matt Applied Micro (AMCC)

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

Condition for energy_detect=OK is not specified.

SuggestedRemedy

Change description to:
The energy_detect parameter takes on one of two values: OK or FAIL. A value of OK indicates that the PMA detects a signal. A value of FAIL indicates that the PMA does not detect a signal. A value of OK does not guarantee that a valid signal is being presented to the PMA client.

Proposed Response *Response Status* **O**

Cl **55** *SC* *P* *L* # 76
Parnaby, Gavin Solarflare Communicat

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

Add the 10GBASE-T ad hoc output (link monitor and fast retrain capabilities) to the draft.

SuggestedRemedy

As comment.

Proposed Response *Response Status* **O**

Cl **55** *SC* **00** *P* *L* # 7
Brown, Matt Applied Micro (AMCC)

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

The phrase "LPI transmit mode" is used to describe or specify two different spans. In one context, it refers to the time from the beginning of SLEEP to the end of WAKE. In another, it refers to the time from the end of SLEEP to the beginning of ALERT. The starting point is also described as starting when LI is first received on the XGMII.

SuggestedRemedy

Create a unique phrase to describe each epoch and replace the phrases appropriately.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55** *P* **179** *L* **9** # 29
Brown, Matt Applied Micro (AMCC)

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

The referenced adhoc proposal recommends inclusion of counters to track the number of times a fast retrain is invoked. By the same logic, a counter for normal retrains is also required.

SuggestedRemedy

Create a new counter normal_retrain_counter.
Definition: "Counts the number of times a normal re-train occurs. The counter is increment each time the SILENT state in Figure 55-24 is entered. The counter is reset when read or when entering the DISABLE_10GBASE-T_TRANSMITTER state in Figure 55-24. The counter is readable in MDIO register x.x."

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.1.3** *P* **179** *L* **49** # 6
Brown, Matt Applied Micro (AMCC)

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

"link system" should be "link partner system"

SuggestedRemedy

Change "local and link system" to "local and link partner system"

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.1.33** *P* **182** *L* **35** # 8
Brown, Matt Applied Micro (AMCC)

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

SLEEP may be immediately followed by either REFRESH or QUIET.

SuggestedRemedy

Replace:
Following these frames the link partner ceases transmission and is quiet.
With:
Following these frames the link partner begins a QUIET/REFRESH cycle, where the link is normally quiet.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.2.2.10.1** *P* **185** *L* **45** # 9
Brown, Matt Applied Micro (AMCC)

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

The rx_lpi_active primitive is inconsistently defined. It says that it takes on the value in SM in Figure 16 (TRUE or FALSE) and defines to possible values as ACTIVE and NOT_ACTIVE.

SuggestedRemedy

Change "ACTIVE" to "TRUE".
Change "NOT_ACTIVE" to "FALSE".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.2.2.21** *P* **189** *L* **40** # 11

Brown, Matt Applied Micro (AMCC)

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

The lpi_tx_mode is ignored specifically when the is not in the PCS_Data state in the PHY control state diagram (Figure 55.24).

SuggestedRemedy

Change
"During PMA training the lpi_tx_mode variable is ignored."
to
"During PMA training (PHY is not in PCS_Data state) the lpi_tx_mode variable is ignored."

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.2.2.21** *P* **190** *L* **4** # 12

Brown, Matt Applied Micro (AMCC)

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

quiet-refresh ends when any non-LI block is detected. There is no longer block error detection.

SuggestedRemedy

Change:
"The quiet-refresh cycle is repeated until IDLE codewords are detected at the XGMII."
To:
"The quiet-refresh cycle is repeated until LP_IDLE blocks are no longer detected at the XGMII."

Delete:
"The PHY will also transition back to the normal operation mode if an error condition occurs. This error condition is defined as the detection of any characters other than LP_IDLE or IDLE at the XGMII."

Change:
"After the alert signal the PCS completes the transition from LPI mode to normal mode by sending a wake signal which is composed of lpi_wake_time LDPC frames composed of IDLE 64B/65B blocks if an error condition has not been detected."
To:
"After the alert signal the PCS completes the transition from LPI mode to normal mode by sending a wake signal which is composed of lpi_wake_time LDPC frames composed of IDLE 64B/65B blocks."

Delete:
"The wake signal contains LDPC frames composed of local fault 64B/65B blocks if an error condition has been detected."

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.2.2.9** *P* **188** *L* **18** # 10

Brown, Matt Applied Micro (AMCC)

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

For consistency, change /LI/ name to match name in Clause 49 (page 160, line 9).

SuggestedRemedy

Change "lp_idle" to "LPI".
Alternately, change Clause 49 "LPI" to "lp_idle".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.2.2.9a** *P* **189** *L* **13** # 100

Thaler, Pat Broadcom

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

Most of the clean-up of terminology for LPI and EEE has been done, but there are still a few cases where the EEE capability is referred to as low power idle.

in the state machine definitions of clause 55, "When the low power idle function is <not> supported," appears a number of times including in 55.3.5.2.4 Functions where ther is no low power idle function. These should all refer to EEE which is the name of the optional capability.

SuggestedRemedy

If low power idle is not supported should be "If EEE is not supported".
"the low power idle function" shoudl be "EEE"

Check for any other instances of supported being applied to low power idle or LPI and correct. LPI is the signal and LPI mode is the state where that signal is used. EEE is the optional capability.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.2.3** *P* **190** *L* **38** # 13

Brown, Matt Applied Micro (AMCC)

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

Change "PCS_Status=OK is asserted" to "PCS_Status is set to OK".

Note that PCS_Status primitive uses OK and NOT_OKAY. The pcs_status variable in the PHY control state diagram (Figure 55-24 in 802.3-2008). However, the pcs_status variable definition (section 55.3.6.1 in 802.3-2008) specifies values TRUE and FALSE.

SuggestedRemedy

Change "PCS_Status=OK is asserted" to "PCS_Status is set to OK".
Change instance on Page 191, line 6, as well.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.4a.3** *P* **193** *L* **27** # 30

Brown, Matt Applied Micro (AMCC)

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

clarify "long training sequence"

SuggestedRemedy

Replace "long training sequence" with "training sequence without periodic re-initializaion".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.4a.3** *P* **194** *L* **20** # 16

Brown, Matt Applied Micro (AMCC)

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

Use of timer state in global boolean expression is a bit messy since it's state is ambiguous until started the first time.

SuggestedRemedy

Create variable "tx_lpi_alert_active".
In figure 55-16b...
in TX_NORMAL and SEND_WAKE add line "tx_lpi_alert_active=FALSE"
in SEND_ALERT add line "tx_lpi_alert_active=TRUE"
Create variable definition...
"tx_lpi_alert_active -- A boolean variable that is set true when the PHY is transmitting ALERT signaling. Set false otherwise."

On page 194 line 40 and 53 replace "!tx_lpi_qr_active*!lpi_tx_alert_time_done" with "tx_lpi_alert_active".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.4a.3** *P* **194** *L* **20** # 14

Brown, Matt Applied Micro (AMCC)

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

rx_lpi_req variable no longer used

SuggestedRemedy

Remove definition for rx_lpi_req.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.4a.3** *P* **194** *L* **20** # 17

Brown, Matt Applied Micro (AMCC)

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

Use of timer state in global boolean expression is a bit messy since it's state is ambiguous until started the first time.

SuggestedRemedy

Create variable "tx_lpi_alert_active".
In figure 55-16b...
in TX_NORMAL and SEND_WAKE add line "tx_lpi_alert_active=FALSE"
in SEND_ALERT add line "tx_lpi_alert_active=TRUE"
Create variable definition...
"tx_lpi_alert_active -- A boolean variable that is set true when the PHY is transmitting ALERT signaling. Set false otherwise."

On page 194 line 40 and 53 replace "!tx_lpi_qr_active*!lpi_tx_alert_time_done" with "tx_lpi_alert_active".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.4a.3** *P* **194** *L* **20** # 15

Brown, Matt Applied Micro (AMCC)

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

tx_lpi_error variable no longer used

SuggestedRemedy

Remove definition for tx_lpi_error.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.2.3** *P* **195** *L* **23** # 18

Brown, Matt Applied Micro (AMCC)

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

Timer values for LPI states must be precise number of symbols in length. Often timers have some tolerance.

SuggestedRemedy

Line 23...
Change "equal to 9 LDPC frame periods" to "equal to exactly 9 LDPC frames"
Line 27...
Change "equal to 4 LDPC frame periods" to "equal to exactly 4 LDPC frames"
Lines 31 and 36...
Change "equal to lpi_wake_time LDPC frame periods" to "equal to exactly lpi_wake_time LDPC frames"

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.2.3** *P* **195** *L* **33** # 19

Brown, Matt Applied Micro (AMCC)

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

Grammar

SuggestedRemedy

Change "recever send IDLE" to "receiver sends IDLE".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.2.5** *P* **197** *L* **23** # 20

Brown, Matt Applied Micro (AMCC)

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

Error counter is readible via MDIO register 3.22 specified in sub-clause 45.2.3.9b EEE wake error counter..

SuggestedRemedy

Add text "The value is held at all ones in the case of overflow. The current value of lpi_rxw_err_cnt is available in MDIO register 3.22 specified in sub-clause 45.2.3.9b. The counter is reset to zero when read."

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.4** *P* **197** *L* **32** # 22

Brown, Matt Applied Micro (AMCC)

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

reference to TX_L should be RX_L

SuggestedRemedy

Replace TX_L with RX_L.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.4** *P* **198** *L* **4** # 21

Brown, Matt Applied Micro (AMCC)

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

Figure 55-14. Use of timer state in global boolean expression is messy. Consider replacing reference to timer state with new variable rx_lpi_wake.

SuggestedRemedy

Create variable "rx_lpi_wake".
In figure 55-16a...
in RX_INIT, RX_WE, and RX_C add line "rx_lpi_wake=FALSE"
in RX_W add line "rx_lpi_wake=TRUE"
Create variable definition...
"rx_lpi_wake -- A boolean variable that is set true when the PHY Rx is in the WAKE state and sending IDLE to the XGMII. Set false otherwise."

Delete note in Figure 55-14.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.4** *P* **199** *L* **18** # 59

Grimwood, Michael Broadcom

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

[Tag: 10GBASE-T lpi_req during training]

If LPI is signaled while the PHY is training, during the PCS_Test state, the local PHY may transition to QUIET before the Link Partner PHY is ready.

The PHY Control and Transmit PCS state diagrams need to be modified to check whether the local PHY is training and, if it is, ignore the LPI request.

SuggestedRemedy

At the end of section 55.4.5.1, introduce a new variable, loc_lpi_en.

In the Fig 55-24 PHY Control state diagram, loc_lpi_en is set to FALSE upon entry into state PCS_Test and is set to TRUE upon entry into PCS_Data.

In the Transmit PCS state diagram, inhibit transitions to LPI (TX_L) when loc_lpi_en is FALSE.

Document the communications between the PHY Control block and the Transmit PCS block by updating the functional and reference diagrams and defining the PMA service primitive associated with the variable, loc_lpi_en.

A presentation will be submitted for review at the January 2010 interim meeting in New Orleans detailing the specific changes required.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.4** *P* **200** *L* **13** # 112

Brown, Matt Applied Micro (AMCC)

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

Figure 55-15a.
If a normal retrain occurs while a PHY transmitter is in LPI mode, there is no specified mechanism to abort the LPI mode (TX_L state) in the PCS 64B/65B transmit state diagram.

SuggestedRemedy

Provide a mechansim to cause transition to TX_INIT when normal retrain (exit from PCS_DATA state in Figure 55-24) occurs.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.4** *P* **201** *L* **5** # 23
Brown, Matt Applied Micro (AMCC)

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

In Figure 55-16 and Figure 55-16a, the variable rx_lpi_active is never initialized to FALSE.

SuggestedRemedy

In Figure 55-16, RX_INIT state add line "rx_lpi_active=FALSE".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.4** *P* **201** *L* **5** # 78
Parnaby, Gavin Solarflare Communicat

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

rx_lpi_active is not set in the 64B/65B state diagram until RX_L. It should be reset in RX_INIT.

tx_lpi_req is not set in the 64B/65B state diagram until TX_L. It should be reset in TX_INIT.

SuggestedRemedy

Add rx_lpi_active <= false to the RX_INIT state.

Add tx_lpi_req <= false to the TX_INIT state.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.4** *P* **202** *L* **10** # 113
Brown, Matt Applied Micro (AMCC)

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

Figure 55-15a.
If a normal retrain occurs while a PHY receiver is in LPI mode, there is no specified mechanism to abort the LPI mode (RX_L state) in the PCS 64B/65B transmit state diagram.

SuggestedRemedy

Provide a mechansim to cause transition to RX_INIT state when normal retrain (exit from PCS_DATA state in Figure 55-24) occurs.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.4** *P* **202** *L* **26** # 28
Brown, Matt Applied Micro (AMCC)

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

Figure 55-16a. RX_WE is a zero time state.

SuggestedRemedy

Add note the figure that RX_WE is a zero-time state.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.4** *P* **202** *L* **6** # 27
Brown, Matt Applied Micro (AMCC)

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

Figure 55-16a. Note in upper right is incorrect. The entire diagram is required for EEE.

SuggestedRemedy

Remove note or change to "The portion of the state machine is this figure is required for EEE capability."

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.4** *P* **203** *L* **7** # 25
Brown, Matt Applied Micro (AMCC)

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

Note in upper right corner of Figure 55-16b is not required.

SuggestedRemedy

Remove note.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.4** *P* **203** *L* **7** # 24
Brown, Matt Applied Micro (AMCC)

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

SLEEP state should not begin until beginning of frame.

SuggestedRemedy

Change transition criteria from TX_NORMAL to SEND_SLEEP to "tx_lpi_req*ldpc_frame_done".
(Similar to transitions to SEND_ALERT state.)

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.2.2** *P* **205** *L* **10** # 26
Brown, Matt Applied Micro (AMCC)

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

Since this section specifies the timing requirements, the requirement for slave loop timing should be moved here from Section 55.3.4a.1 (page 191, line 51) or re-stated here.

SuggestedRemedy

Add line from 55.3.4a.1. "An EEE capable PHY shall support loop timing and loop timing shall be enabled on the slave PHY." Maybe statement in 44.3.4a.1 should refer to this section.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72** *P* **224** *L* # 93
Pillai, Velu Broadcom

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

None of the changes listed in Pillai_1109_01.pdf got added/modified into CL72.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **74** *SC* **74** *P* **230** *L* # 85
Pillai, Velu Broadcom

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

Editor forgot to change the tx_quiet and rx_quiet to tx_mode and rx_mode.

SuggestedRemedy

Refer to Pillai_1109_01.pdf and modify appropriately.

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.5.1** *P* **231** *L* **19** # 31
Brown, Matt Applied Micro (AMCC)

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

Missing underscore in names. Inconsistent with other instances.

SuggestedRemedy

Change:
FEC_TXQUIET to FEC_TX_QUIET
FEC_RXQUIET to FEC_RX_QUIET
FEC_LPIACTIVE to FEC_LPI_ACTIVE

Make similar changes through sections where necessary.

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.5.1** *P* **231** *L* **32** # 32
Brown, Matt Applied Micro (AMCC)

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

rx_lpi_active is not sent to lower layers

SuggestedRemedy

Change
"rx_quiet", tx_quiet and rx_lpi_active to control"
to
"rx_quiet and tx_quiet to control".

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.5.1.4** *P* **231** *L* **43** # 33

Brown, Matt Applied Micro (AMCC)

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

energy_detect is not a boolean variable is has values OK and FAIL

SuggestedRemedy

Redefine as follows:
"The energy_detect parameter takes on one of two values OK or FAIL as indicated by PMA_SIGNAL.indication(SIGNAL_OK). A value of OK indicates that the PMD detects a signal. A value of FAIL indicates that the PMD does not detect a signal. A value of OK does not guarantee that a valid signal is being presented to the PMA client."

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.5.1.5** *P* **232** *L* **10** # 34

Brown, Matt Applied Micro (AMCC)

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

Re-word.

SuggestedRemedy

Change defintion to:
The rx_lpi_active parameter is a boolean variable sent from the PCS that is set to TRUE when LPI mode is active at the receiver and set to FALSE otherwise.

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.5.1.5.2** *P* **232** *L* **19** # 35

Brown, Matt Applied Micro (AMCC)

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

Effect of rx_lpi_active is to enable use of fast block lock.

SuggestedRemedy

Change definition to:
When rx_lpi_active is TRUE, fast block lock as specified in 74.5.1.8 will be used to quickly determine the FEC start of frame during EEE REFRESH or WAKE. When rx_lpi_active is FALSE, fast block lock will not be used.

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.5.1.6** *P* **232** *L* **27** # 36

Brown, Matt Applied Micro (AMCC)

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

RE-word.

SuggestedRemedy

Change:
"The rx_quiet parameter can take on one of two values: TRUE or FALSE. A boolean variable sent from the PCS..."
To:
"The rx_quiet parameter is a boolean variable sent from the PCS..."

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.5.1.6.2** *P* **232** *L* **38** # 37

Brown, Matt Applied Micro (AMCC)

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

rx_quiet effect of receipt looks like PCS definition. Specify FEC behavior.

SuggestedRemedy

Change definition to:
When rx_quiet is TRUE the FEC decoder logic may deactivate functional blocks to conserve energy. When rx_quiet is FALSE the FEC decoder logic operate normally. The value rx_quiet is passed to the client layer through PMA_RX_QUIET(rx_quiet).request.

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.5.1.7** *P* **232** *L* **27** # 38

Brown, Matt Applied Micro (AMCC)

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

RE-word.

SuggestedRemedy

Change:
"The tx_quiet parameter can take on one of two values: TRUE or FALSE. A boolean variable sent from the PCS..."
To:
"The tx_quiet parameter is a boolean variable sent from the PCS..."

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.5.1.7.2** *P* **233** *L* **3** # 39
Brown, Matt Applied Micro (AMCC)

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

rx_quiet effect of receipt looks like PCS definition. Specify FEC behavior.

SuggestedRemedy

Change definition to:
When tx_quiet is TRUE the FEC encode logic may deactivate functional blocks to conserve energy. When tx_quiet is FALSE the FEC decoder logic operate normally. The value rx_quiet is passed to the client layer through PMA_TX_QUIET(tx_quiet).request.

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.5.1.8** *P* **233** *L* **22** # 41
Brown, Matt Applied Micro (AMCC)

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

The note is talking both about transmit injection and receiver lock detection.
The note is out of place here and should be in the PCS Tx section (Clause 49).

SuggestedRemedy

Delete first line or move it to sub-clause 49.2.6.
Delete 2nd line and move it to previous paragraph.

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.5.1.8** *P* **233** *L* **35** # 42
Brown, Matt Applied Micro (AMCC)

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

incorrect reference to FEC_SIGNAL.indication
also incorrect capitalization

SuggestedRemedy

Change: "FEC_SIGNAL.indication(RX_LPI_ACTIVE)" to "FEC_LPI_ACTIVE.request(rx_lpi_active)"

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.5.1.8** *P* **233** *L* **35** # 43
Brown, Matt Applied Micro (AMCC)

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

incorrect reference to FEC_SIGNAL.indication
also incorrect capitalization

SuggestedRemedy

Change: "FEC_SIGNAL.indication(RX_LPI_ACTIVE)" to "FEC_LPI_ACTIVE.request(rx_lpi_active)"

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.5.1.8** *P* **233** *L* **8** # 40
Brown, Matt Applied Micro (AMCC)

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

SLIP is an action, moving the candidate start of block location.
Also, pull the 2nd sentence of the following paragraph into this paragraph.

SuggestedRemedy

Change paragraph to:
When rx_lpi_active is TRUE, FEC Rapid block lock mechanism will attempt to determine the FEC start of block location based on the deterministic pattern. When the rapid block lock is locked, the determined start of block location is used as the FEC lock state diagram candidate start of block location until the rapid block lock loses lock. Assuming the rapid block lock determined the correct start of block location, the FEC lock state diagram will achieve lock without requiring subsequent slips. The rapid lock algorithm is implementation dependent and outside the scope of this standard.

Delete second sentence of paragraph on line 22.

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.7.4.8** *P* *L* # 102
Thaler, Pat Broadcom

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

The response to 384 on the first Working Group ballot has not been fully implemented.
FEC does not have "frames", it has blocks

SuggestedRemedy

All instances of "frame" in Claause 74 should be replaced with "block".

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.1.1.2.1** *P* **237** *L* **8** # 60

Grimwood, Michael Broadcom

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

Indicate that LPI requests are undefined when the PHY is indicating Local Fault or Remote Fault.

SuggestedRemedy

The effect of receipt of this primitive is undefined if link_status is not OK (see 28.2.6.1.1) or if LPI_REQUEST=ASSERT within 1 second of the change of link_status to OK.

To:

The effect of receipt of this primitive is undefined if link_status is not OK (see 28.2.6.1.1), or if LPI_REQUEST=ASSERT within 1 second of the change of link_status to OK, the PHY is indicating Local Fault, or the PHY is indicating Remote Fault.

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.4** *P* **230** *L* **30** # 109

Diab, Wael Broadcom

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

Comment #110 on D2.1 requested a change from Tw_sys to Tw_sys_tx to update the L2 nomenclature to the one adopted by the wake-shrinkage ad-hoc. Nevertheless, the scope of replacing Tw_sys with Tw_sys_tx was limited to only 78.4, leaving other dependent area on L2 with the incorrect older nomenclature. For L2 purposes the scope ought to be more than 78.4, specifically for 79 and to check if C30 or C30 annexes need updating.

SuggestedRemedy

For the purposes of Layer 2, update the entire draft to match the nomenclature change done in comment #110 on D2.1. Specifically, change Tw_sys to Tw_sys_tx for the Layer 2 negotiated paramaeter references in C78.4, C79 and C30, where applicable and wherever else applicable

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.4** *P* **230** *L* **30** # 110

Diab, Wael Broadcom

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

Part of the adopted resolution to comment #110 on D2.1, a change in the assignment in the init state to be LOCAL INITIAL TX VALUE and LOCAL INITIAL RX VALUE. This inadvertantly had the opposite effect of what we were trying to do as it leaves the start values to the system instead of the times defined by table 78-4

SuggestedRemedy

There are two ways that could resolve this. Either:
(a) Rather than change assignments in init state, change Tw_phy to Tw_sys_tx in 78.4.2.2 PHY WAKE VALUE and 79 where it occurs. I believe this occurs in 3 places total (2 in 79 and 1 in 78.4.2.2).

or

(b) initializing everything to PHY WAKE VALUE

The second proposal maybe simpler as it reduces two constants in the draft. Nevertheless, I included both for discussion in case there was something missed

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.4** *P* **230** *L* **30** # 111

Diab, Wael Broadcom

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

Comment #111 on D2.1 requested a change so that the negotiated Tw_sys_tx parameter should be rounded up to the nearest integer usec to fit within the byte length fields available. This was necessary since there were no decimal points when we first introduced the parameters , however, the wake shrinkage adhic settled on numbers that had fractional ammounts which would eat up the length of the TLVs.

The issue with the adopted resolution is that it was specific to a sentence in that section. All negotiated and exchanged parameters in Layer 2 do not have fractional values and that should be clearly stated throughout any references to negotiated Tw_sys_tx.

SuggestedRemedy

For the purposes of Layer 2, all values need to be rounded to the nearest usec (i.e. not just for initialization params).

Statements can be inserted in C78.4, C79 and C30 where applicable and wherever else applicable

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.5** *P* **251** *L* **26** # 61

Grimwood, Michael Broadcom

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

[Tag: 10GBASE-T lpi_req during training]

If the 10GBASE-T PHY receives an LPI request while it is in PCS_TEST, it should defer acting upon this request until PCS_TEST is complete (A separate comment with the above tag proposes the mechanism by which the PHY ignores LPI requests while in the PCS_TEST state). With this mechanism, the LPI requestor may not know precisely when the PHY acted upon the LPI request and therefore there may be ambiguity with respect to whether or not the CASE-1 wake time may be used.

To avoid this ambiguity, state that the CASE-1 wake time only applies if the PHY has not indicated Local Fault for at least 10 msec. This time period allows enough time for PCS_TEST to complete.

SuggestedRemedy

Change:

Case-1 of the 10GBASE-T PHY applies when the PHY is requested to transmit the Wake signal before transmission of the Sleep signal to the Link Partner is complete.

To:

Case-1 of the 10GBASE-T PHY applies when the PHY is requested to transmit the Wake signal before transmission of the Sleep signal to the Link Partner is complete and if the PHY has not indicated Local Fault at any time during the previous 10 ms.

Proposed Response *Response Status* **O**