Cl **78** *SC* **78.6.3** *P* **270** *L* **6** # 1

Diab, Wael Broadcom Corporation

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

When we structured the PICs on the last draft we did that after closing the comment on having a PICs for AN. There needs to be a PICs for AN, however, it should match the way we did the other requirements like timing, where it is against the appropriate cluases with the normative text for each PHY. Note that in some cases this does exist like in C40 so its worthwhile to make it consistant throughout.

SuggestedRemedy

- Remove the PICs entry for AN from C78
- Adjust the text around the PICs to only reflect DLL requirements
- Remove the corresponding shall from 78.3
- In approproate clauses like 28C, 28D, 73A, 24, 40, 55, 73 and/or other appropriate clauses.
- In 78.3 point to the appropriate clauses from the step above
- Check that this is not consistant for all PHY types (e.g. right now there is a PICs in 78.3 and 40 - AN15 - that would affect 1000BASE-T for instance. Should really be in one place)

Proposed Response *Response Status* **O**

Cl **24** *SC* **24.4.1.4.3** *P* **49** *L* **47** # 2

Anslow, Peter Ciena Corporation

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

On page 49, line 47 (diff document) there is a reference to 25.4a.2 (link does not work) but 25.4a.2 does not exist in the draft.
)n page 50, line 14 there is a reference to 25.4a.1 (link does not work) but 25.4a.1 does not exist in the draft.
On page 53, line 47 is "Insert 25.4a at the end of 25.4 as shown below:". However, below this is subclause 25.5, followed by 25.50.1 etc. with no other editing instructions. These subclause numbers should presumably all be 25.4a.xxx
The clause numbering below this is also wrong. e.g. the PICS for clause 25 is 25.5 not 25.6

SuggestedRemedy

Correct clause numbering currently shown as 25.5 and 25.50 to 25.4a.
Change "Insert 25.4a at the end of 25.4 as shown below:" to "Insert 25.4a after 25.4 as shown below:"
Make sure links in 24.4.1.4.3 and 24.4.1.5.3 remain correct and work properly.
Also correct the clause numbering for the PICS section to 25.5 as per the editing instructions there.

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.2.2** *P* **171** *L* **53** # 3

Anslow, Peter Ciena Corporation

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

The editing instruction says "Insert new variables into 49.2.13.2.2, ..." but the heading beneth this is "49.2.9.2.2 Variables"

SuggestedRemedy

Change clause number in heading to 49.2.13.2.2

Proposed Response *Response Status* **O**

Cl **51** *SC* **51.1** *P* **191** *L* **4** # 4

Anslow, Peter Ciena Corporation

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

The editing instruction says "Insert the following row into table 51.7.3:", but table 51.7.3 does not exist.

SuggestedRemedy

Change "Insert the following row into table 51.7.3:" to "Insert the following row at the end of the table in 51.10.3:

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.2.2.11** *P* **201** *L* **10** # 5

Anslow, Peter Ciena Corporation

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

There is no editing instruction regarding 55.2.2.11 or 55.2.2.12

SuggestedRemedy

On page 200 change "Insert 55.2.2.9 and 55.2.2.10 after section 55.2.2.8 as shown below:" to "Insert 55.2.2.9, 55.2.2.10, 55.2.2.11 and 55.2.2.12 after section 55.2.2.8 as shown below:"

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.2.2.21** *P* **206** *L* **26** # 6

Anslow, Peter Ciena Corporation

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

"7.36us" should have a space between the number and its unit and the greek letter mu rather than u

SuggestedRemedy

change "7.36us" to have a space between the number and its unit (use ctrl space to make it non-breaking) and the greek letter mu rather than u

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.5.1** *P* **231** *L* **41** # 7

Anslow, Peter Ciena Corporation

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

2^9, 2^5 and 2^6, 2^4 on line 45 aren't in the same format as powers of two in the transition_count paragraph above.

SuggestedRemedy

change to using superscript for the power

Proposed Response *Response Status* **O**

Cl **71** *SC* **71.3** *P* **259** *L* **44** # 8

Anslow, Peter Ciena Corporation

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

On page 259 line 44 diff document (or page 237 line 37 in clean document) we have "PCS requirements for Auto-Negotiation (AN) service interface" clause 71.7 or 71.3 in the two docs respectively, but there are no editing instructions for clause 71.3
Also, the numbering above this in the diff document is 71.6 instead of 71.2. However the clen version is ok.

SuggestedRemedy

Either make changes to 71.3 "PCS requirements for Auto-Negotiation (AN) service interface" or remove this text.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.4** *P* **266** *L* **12** # 9

Anslow, Peter Ciena Corporation

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

The editing instruction says "Change the text in the 1st paragraph of section 72.6.4 to read a follows:" butb there are 4 paragraps of changed text.

SuggestedRemedy

Change editing instruction to "Change 72.6.4 as follows:"

Proposed Response *Response Status* **O**

Cl **74** *SC* **74** *P* **272** *L* **1** # 10

Anslow, Peter Ciena Corporation

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

802.3ba changed the title of clause 74 and also the title of 74.4.1

SuggestedRemedy

Change the title of 74 to "Forward Error Correction (FEC) sublayer for BASE-R PHYs" and the title of 74.4.1.to "Functional block diagram for 10GBASE-R PHYs"

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.4.1** *P* **272** *L* **5** # 11

Anslow, Peter Ciena Corporation

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

The editing instruction says "Change Figure 74--2 as shown below using the title from 802.3ba D2.3:", but 802.3ba is now approved. Also, 802.3ba changed the title of Figure 74-2 to "Functional block diagram for 10GBASE-R PHYs"

SuggestedRemedy

Change editing instruction to "In 74.4.1 as modified by IEEE Std 802.3ba, replace Figure 74--2 as shown below:" Also, change the title of Figure 74-2 to "Functional block diagram for 10GBASE-R PHYs"

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.5.1** *P* **276** *L* **18** # 12

Anslow, Peter Ciena Corporation

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

The text starting "If the optional Energy Efficient Ethernet (EEE) capability is supported ..." has been added, but is not shown in underline font. Also, the font size (9 pt) is wrong.

SuggestedRemedy

Show the inserted text in underline and the correct size.

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.5.1.4** *P* **276** *L* **22** # 13

Anslow, Peter Ciena Corporation

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

Subclauses 74.5.1.4 through 74.5.1.7 have been added with the insert instruction, so none of the text should be shown in underline font. However some is and some isn't underlined.

SuggestedRemedy

Remove the underline from subclauses 74.5.1.4 through 74.5.1.7

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.10.2.3** *P* **278** *L* **27** # 14

Anslow, Peter Ciena Corporation

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

The editing instruction is "Change 74.10.2.3 as shown below:" but only one of the three functions is shown.

SuggestedRemedy

Show the two unmodified functions in normal font.

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.11** *P* **279** *L* **1** # 15

Anslow, Peter Ciena Corporation

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

802.3ba changed the title of clause 74.11

SuggestedRemedy

In the title of 74.11 change "sublayer for 10GBASE-R PHYs" to "sublayer for BASE-R PHYs"

Proposed Response *Response Status* **O**

Cl **46** *SC* **46.3.2.4** *P* **142** *L* **52** # 16

Turner, Edward J Gnodal Ltd

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

There's no PICS entry for the shall in "The PHY shall restart RX_CLK so that at least one positive transition occurs before it deaserts LPI."

SuggestedRemedy

Add PICS entry.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.5.1** *P* **218** *L* **34** # 17

Turner, Edward J Gnodal Ltd

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

Use '2 superscript 9' rather than '2^9'.
Also apply to '2^5' and '2^6' and '2^4' on line 38.

SuggestedRemedy

As per comment.

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.2.1** *P* **231** *L* **48** # 18

Turner, Edward J Gnodal Ltd

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

Too much deletion has led to '.. may go into w power mode ..'

SuggestedRemedy

Change to '.. may go into low power mode ..'

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.1.4** *P* **244** *L* **31** # 19

Bennett, Michael Lawrence Berkeley Na

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

Submitted on behalf of Iain Robertson
This sub-clause discusses output amplitude requirements during LPI but makes no mention of common mode requirements. It should stipulate the amount by which the common mode can deviate from the non-LPI value.

SuggestedRemedy

Add a sentence, plus a spec in table 72-6. Suggested wording:
"During LPI, the common mode shall be maintained to within +/- TBDmV of the pre-LPI value"
Suggested spec in table 7-6:
"Common mode voltage deviation (max) during LPI: TBDmV"
Need discussion on the TBD value. For reference, PCI-E specs this as 100mV.

Proposed Response *Response Status* **O**

Cl **36** *SC* **36.2.5.2.2** *P* **88** *L* **48** # 20

Healey, Adam LSI Corporation

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

The transition from RX_WAKE_DONE to LPI_K in the PCS Receive state diagram (Figure 36-7c, the second one) should be UCT (unconditional transition) and not SUDI. SUDI will cause to PCS Receive state diagram to be out of synchronization.

SuggestedRemedy

Change the transition condition from SUDI to UCT.

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.2.5** *P* **175** *L* **52** # 21

Healey, Adam LSI Corporation

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

The definition of one_us_timer needs reference the parameter T_1U defined in Table 49-3 (which really should be replacing Table 49-2) in order to establish the bounds on the timer terminal count.

SuggestedRemedy

Change the definition of one_us_timer to: "This timer is used to count approximately 1 microsecond intervals. The timer terminal count is set to T1U. When the timer reaches terminal count it will set the one_us_timer_done = TRUE."

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.7.4.8** *P* **277** *L* **47** # 22

Healey, Adam LSI Corporation

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

I believe the actual requirement here is that the hold-off timer not expire before 13.7 microseconds have passed. It could be longer since the FEC would set signal_ok to TRUE after detecting two scrambled blocks.

SuggestedRemedy

Change the first sentence to: "When rx_lpi_active is TRUE and rx_mode is set to DATA, start a hold-off timer whose duration is greater than or equal to 13.7 microseconds and enable. . .". Also change item b (page 278, line 7) to: "Expiration of the hold-off timer."

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.76a** *P* **120** *L* **50** # 23

Barrass, Hugh Cisco Systems, Inc.

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

The resolution to comment #359 draft 3.0 was missed. This must be implemented to make sense of the changes to Clause 55.

SuggestedRemedy

Define a new register bit:
1.147.1 : Fast retrain signal type : 1 = send IDLE during fast retrain, 0 = send local fault during fast retrain
Insert 45.2.1.76a.2 Fast retrain signal type (1.147.1)
For PHYs that support fast retrain, this bit maps to lpi_fr_sigtype as defined in 55.4.5.1. When Fast retrain signal type is set to one, the PMA sends IDLE characters on the receive path during fast retrain. When Fast retrain signal type is set to zero, the PMA sends local fault on the receive path during fast retrain.

Proposed Response *Response Status* **O**

Cl **79** *SC* **79.3.a** *P* **271** *L* **28** # 24

Barrass, Hugh Cisco Systems, Inc.

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

Duplicated period at the end of the line

SuggestedRemedy

delete it..

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.3** *P* **258** *L* **50** # 25

Brown, Matthew Applied Micro (AMCC)

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

Draft 3.0 Comment #174 was not implemented.

SuggestedRemedy

Implement Draft 3.0 Comment #174.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.1.4** *P* **191** *L* **5** # 26

Brown, Matthew Applied Micro (AMCC)

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

Figure 55-4. PMA_FR_ACTIVE primitive is not required for EEE nor for normal operation.

SuggestedRemedy

Re-draw dashed rectangle to include only EEE signals. Employ another means to differentiate FR signals from normal and EEE signals. Add a note to indicate the signals relevant to FR.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.2.2.3.1** *P* **191** *L* **51** # 27

Brown, Matthew Applied Micro (AMCC)

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

New sentence is not indicates.

SuggestedRemedy

Add underline to sentence "For EEE, ... during LPI."

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.2.2.3.1** *P* **192** *L* **5** # 28

Brown, Matthew Applied Micro (AMCC)

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

Clean up list.

SuggestedRemedy

Create list starting each item i and ii on new line.
Alternately, but less favored, change "training ii)" "training and ii)".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.2.2.9.1** *P* **192** *L* **28** # 29
Brown, Matthew Applied Micro (AMCC)

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

When is alert_detect, set to NOT_DETECTED? Though the event DETECTED is obvious, it is not clear when alert_detect would be set to NOT_DETECTED. In fact, all of the definitions talk about the DETECTED event and the state machine really only requires the DETECTED event. Fixing this is somewhat complicated by the composite nature of the variable definition in 55.3.5.22.

SuggestedRemedy

Re-define alert_detect to have single value DETECTED sent when alert signal is detected, otherwise parameter value is undefined.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.2.2.10.1** *P* **193** *L* **4** # 30
Brown, Matthew Applied Micro (AMCC)

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

Not clear what rx_lpi_active is.

SuggestedRemedy

Change end of sentence to: "change in the rx_lpi_active variable as determined by the receive state diagram in Figure 55-16."

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.2.2.11.1** *P* **193** *L* **19** # 31
Brown, Matthew Applied Micro (AMCC)

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

Not clear what pcs_data_mode parameter is.

SuggestedRemedy

Add sentence... "The pcs_data_mode parameter reflects the value of the pcs_data_mode variable as specified in 55.3.5.2.2 ."

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.2.2.12** *P* **193** *L* **42** # 32
Brown, Matthew Applied Micro (AMCC)

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

Not clear what fr_active parameter is.

SuggestedRemedy

Add sentence ... "The fr_active parameter reflects the value of the fr_active variable specified in 55.3.5.2.2."

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.2** *P* **194** *L* **10** # 33
Brown, Matthew Applied Micro (AMCC)

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

Figure 55-5 is part of 55.3.2 and so should be placed appropriately.

SuggestedRemedy

Add heading 55.3.2 after 55.3 and move diagram to occur after 55.3.2.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.2** *P* **194** *L* **26** # 34
Brown, Matthew Applied Micro (AMCC)

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

Figure 55-5. fr_active parameter is not required for EEE nor for normal operation.

SuggestedRemedy

Re-draw dashed rectangle to include only EEE signals. Employ another means to differentiate FR signals from normal and EEE signals. Add a note to indicate the signals relevant to FR.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.2.2** *P* **194** *L* **42** # 35
Brown, Matthew Applied Micro (AMCC)

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

Figure 55-15 does not include states for EEE only and Figure 55-15a does not include dashed rectangles.

SuggestedRemedy

Restate as follows: State transitions within dashed rectangles in Figure 55-15 and all states and transitions in Figure 55.15a shall be supported by PHys with the EEE capability. PHYs without the EEE capability do not support these transitions.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.2.2** *P* **194** *L* **48** # 36
Brown, Matthew Applied Micro (AMCC)

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

Be clear about what is meant by "normal mode of operation".

SuggestedRemedy

Change start of sentence to: "After reaching the normal mode of operation (pcs_data_mode = TRUE), ..."

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.2.2.21** *P* **196** *L* **30** # 37
Brown, Matthew Applied Micro (AMCC)

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

Two variables cause transition to TX_NORMAL state.

SuggestedRemedy

Change start of sentence to: "When PCS_Reset is asserted or pcs_data_mode is not asserted ...".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.2.3** *P* **197** *L* **44** # 38
Brown, Matthew Applied Micro (AMCC)

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

Sentence almost sounds like LPI is triggered by completion of training. Also, successful training is indicated by pcs_data_mode.

SuggestedRemedy

Change end of sentence to: "after the PHY has successfully completed training as indicated by pcs_data_mode equals TRUE."

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.4a.1** *P* **199** *L* **27** # 39
Brown, Matthew Applied Micro (AMCC)

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

Make sure that active is associated with pair, not pair and refresh_active.

SuggestedRemedy

Change "active pair" to "active-pair".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.4a.3** *P* **199** *L* **36** # 40
Brown, Matthew Applied Micro (AMCC)

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

Relevant to initial or subsequent normal retrain.

SuggestedRemedy

Change "used for initial training" to "used for normal training". Alternately, "used for initial training or normal retraining".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.4a.3** *P* **200** *L* **50** # 41
Brown, Matthew Applied Micro (AMCC)

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

Sentence fragement.

SuggestedRemedy

Remove fragment or correct.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.2.2** *P* **201** *L* **29** # 42
Brown, Matthew Applied Micro (AMCC)

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

LPI is indicated by LPI client and RS not MAC

SuggestedRemedy

Change "MAC indicates" to "LPI client indicates".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.2.2** *P* **201** *L* **44** # 43
Brown, Matthew Applied Micro (AMCC)

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

Convention in this Clause is to use receiver not RX.

SuggestedRemedy

Replace "RX" with "receiver".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.2.2** *P* **201** *L* **49** # 44
Brown, Matthew Applied Micro (AMCC)

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

Grammar.

SuggestedRemedy

Replace comma at end of sentence with period.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.2.2** *P* **201** *L* **34** # 45
Brown, Matthew Applied Micro (AMCC)

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

Introduction of pcs_data_mode variable in state diagrams permits us to reduce alert_detect to simply indicated detection of the alert signal.

SuggestedRemedy

Reduce definition to include only detection of alert signal.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.2.2** *P* **201** *L* **44** # 46
Brown, Matthew Applied Micro (AMCC)

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

The portion of the definition relating to detection of alert signal is not really clear. It is clear that alert_detect is set TRUE when the alert signal is detected. The definition of the alert detection function on page 216 only specifies when alert_detect is set. It is not clear when (or if) the alert_detect variable is ever set to FALSE. This variable is more of an event, than a state. What is the right unambiguous way to specify this.

SuggestedRemedy

Provide a mechanism or description that explains how the alert_detect variable is set to FALSE after being set TRUE. One way to resolve this is as follows. (a) In Figure 55-16, add "alert_detect = FALSE" in states "RX_INIT" and "RX_W". Define alert_detect as being set to TRUE by ALERT detect process.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.2.2.9.1** *P* **192** *L* **26** # 47
Brown, Matthew Applied Micro (AMCC)

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

alert_detect parameter values do not match alert_detect variable.

SuggestedRemedy

Either change values to match or explain that alert_detect parameter is DETECTED when alert_detect variable is TRUE and NOT_DETECTED with alert_detect variable is FALSE.

Proposed Response *Response Status* **O**

Cl **55** SC **55.3.5.2.2** P **202** L **2** # 48
Brown, Matthew Applied Micro (AMCC)

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

For clarity, for a table for various definitions of lpi_tx_mode.

SuggestedRemedy

Create table for defining lpi_tx_mode. Two columns: value and condition. One row is used for each value.

Proposed Response *Response Status* **O**

Cl **55** SC **55.3.5.2.2** P **202** L **29** # 49
Brown, Matthew Applied Micro (AMCC)

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

Consistent terminology.

SuggestedRemedy

Change "that have the fast retrain" to "that support the fast retrain".

Proposed Response *Response Status* **O**

Cl **55** SC **55.3.5.2.2** P **202** L **32** # 50
Brown, Matthew Applied Micro (AMCC)

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

Given that lpi_fr_sigtype is defined in the previous line to exist only for PHYs that support FR, it is unnecessary and somewhat confusing to qualify the IDLE state with support of fast retrain.

SuggestedRemedy

Change first sentence to: "This variable is set to IDLE if 1.147.1 is set to 1."

Proposed Response *Response Status* **O**

Cl **55** SC **55.3.5.2.4** P **203** L **31** # 51
Brown, Matthew Applied Micro (AMCC)

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

Grammar.

SuggestedRemedy

Change "to the eight types" to "one of the eight types"

Proposed Response *Response Status* **O**

Cl **55** SC **55.3.5.2.4** P **203** L **36** # 52
Brown, Matthew Applied Micro (AMCC)

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

Edit instruction.

SuggestedRemedy

Add underline to "and /LI/."

Proposed Response *Response Status* **O**

Cl **55** SC **55.3.5.2.4** P **204** L **15** # 53
Brown, Matthew Applied Micro (AMCC)

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

Grammar.

SuggestedRemedy

Change "to the eight types" to "one of the eight types"

Proposed Response *Response Status* **O**

Cl **55** SC **55.3.5.4** P **205** L **26** # 54
Brown, Matthew Applied Micro (AMCC)

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

No states are unique to EEE.

SuggestedRemedy

Change "States and transitions" to "transitions".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.4** *P* **206** *L* **3** # 55

Brown, Matthew Applied Micro (AMCC)

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

Figure 55-14. LFER monitor state is active when training has not completed; it may start in PCS_Test mode. This constitutes a modification to the base standard, but improves the behavior.

SuggestedRemedy

Change open transition to LFER_MT_INIT, replacing "!block_lock" with "!pcs_data_mode".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.4** *P* **207** *L* **34** # 56

Brown, Matthew Applied Micro (AMCC)

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

Figure 55-15. Transition from TX_E to TX_L must be indicates as EEE only.

SuggestedRemedy

Add dashed rectangle around transition from TX_E to TX_L.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.4** *P* **209** *L* **3** # 57

Brown, Matthew Applied Micro (AMCC)

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

Figure 55-16. Last term in transition criteria on open transition to RX_INIT is incorrect. When not in PCS_Data mode send LF either if not in fast re-train or if in fast retrain only if lpi_fr_sigtype is not IDLE.

SuggestedRemedy

Change last term to : "((!(lpi_fr_sigtype==IDLE) * lpi_fr_active) + !lpi_fr_active) * ! pcs_data_mode"

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.4** *P* **209** *L* **3** # 58

Brown, Matthew Applied Micro (AMCC)

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

Figure 55-16. Last term in transition criteria on open transition to FR_RX_INIT could be clarified by adding brackets around comparison of lpi_fr_sigtype. Also, outer brackets are not required so they can be removed.

SuggestedRemedy

Change last term to : "((lpi_fr_sigtype==IDLE) * lpi_fr_active) * ! pcs_data_mode"

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.4** *P* **209** *L* **3** # 59

Brown, Matthew Applied Micro (AMCC)

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

Figure 55-16. Use of block_lock in open transition to RX_INIT and FR_RX_INIT is redundant since it is further qualified by pcs_data_mode.

SuggestedRemedy

Remove !block_lock term from open transition to RX_INIT and FR_RX_INIT.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.6.1** *P* **212** *L* **10** # 60

Brown, Matthew Applied Micro (AMCC)

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

Grammar.

SuggestedRemedy

Change "indicates that current" to "indicates the current".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.1** *P* **213** *L* **8** # 61
Brown, Matthew Applied Micro (AMCC)

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

Figure 55-17. fr_active parameter is not required for EEE nor for normal operation.

SuggestedRemedy

Re-draw dashed rectangle to include only EEE signals. Employ another means to differentiate FR signals from normal and EEE signals. Add a note to indicate the signals are relevant to FR.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.2.2** *P* **213** *L* **52** # 62
Brown, Matthew Applied Micro (AMCC)

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

lower power operation is not commonly used term

SuggestedRemedy

Change "normal and lower power operation" to "normal and LPI operation".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.2.2.1** *P* **214** *L* **20** # 63
Brown, Matthew Applied Micro (AMCC)

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

LDPC frames not being sent

SuggestedRemedy

Change "LPDC frames" to "LDPC frame periods".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.2.2.1** *P* **214** *L* **25** # 64
Brown, Matthew Applied Micro (AMCC)

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

Use normal form for primitive/parameter.

SuggestedRemedy

Change "PMA_CONFIG.indication parameter config" to "PMA_CONFIG.indication(config)".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.2.2.1** *P* **215** *L* **2** # 65
Brown, Matthew Applied Micro (AMCC)

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

Use normal form for primitive/parameter.

SuggestedRemedy

Change "PMA_CONFIG.indication parameter config" to "PMA_CONFIG.indication(config)".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.2.2.1** *P* **215** *L* **22** # 66
Brown, Matthew Applied Micro (AMCC)

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

The wake signal is not properly defined here. Either fix or refer to official definition.

SuggestedRemedy

Change sentence to: "The alert signal is followied by a wake signal as specified in 55.3.2.2.9a."

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.2.2.2** *P* **215** *L* **37** # 67
Brown, Matthew Applied Micro (AMCC)

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

Use normal form for primitive/parameter.

SuggestedRemedy

Change "PMA_CONFIG.indication parameter config" to "PMA_CONFIG.indication(config)".

Proposed Response *Response Status* **O**

Cl **55** SC **55.4.2.2.2** P **215** L **42** # 68
Brown, Matthew Applied Micro (AMCC)

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

Use normal form for primitive/parameter.

SuggestedRemedy

Change "PMA_CONFIG.indication parameter config" to "PMA_CONFIG.indication(config)".

Proposed Response *Response Status* **O**

Cl **55** SC **55.4.2.5.14** P **216** L **29** # 69
Brown, Matthew Applied Micro (AMCC)

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

Similar requirements exist for fast retrain.

SuggestedRemedy

Add sentence, "For PHYs that support fast retrain, further requirements for this transition are described in 55.4.2.5.15."

Proposed Response *Response Status* **O**

Cl **55** SC **55.4.2.5.14** P **216** L **39** # 70
Brown, Matthew Applied Micro (AMCC)

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

Similar requirements exist for fast retrain.

SuggestedRemedy

Add sentence, "For PHYs that support fast retrain, further requirements for this transition are described in 55.4.2.5.15."

Proposed Response *Response Status* **O**

Cl **55** SC **55.4.2.5.14** P **216** L **44** # 71
Brown, Matthew Applied Micro (AMCC)

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

Can also go to the LPI transmit mode.

SuggestedRemedy

Add the following "... and to the LPI transmit mode under control of the local LPI client.".

Proposed Response *Response Status* **O**

Cl **55** SC **55.4.2.5.15** P **216** L **53** # 72
Brown, Matthew Applied Micro (AMCC)

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

Grammar.

SuggestedRemedy

Change "THP turn" to "THP turns".

Proposed Response *Response Status* **O**

Cl **55** SC **55.4.2.5.15** P **217** L **6** # 73
Brown, Matthew Applied Micro (AMCC)

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

Reference to incorrect figure.

SuggestedRemedy

Change 55-13a to 55-13.

Proposed Response *Response Status* **O**

Cl **55** SC **55.4.2.5.15** P **217** L **7** # 74
Brown, Matthew Applied Micro (AMCC)

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

Relevant to initial or subsequent normal retrain.

SuggestedRemedy

Change "used for initial training" to "used for normal training". Alternately, "used for initial training or normal retraining".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.2.6a** *P* **217** *L* **38** # 75
Brown, Matthew Applied Micro (AMCC)

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

lower power mode is not commonly used term

SuggestedRemedy

Change "lower power receive mode" to "LPI receiver mode".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.5.1** *P* **218** *L* **33** # 76
Brown, Matthew Applied Micro (AMCC)

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

Use superscript for exponential terms.

SuggestedRemedy

For 2^9 and 2^4, use superscript for 9 and 4, respectively.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.5.1** *P* **218** *L* **37** # 77
Brown, Matthew Applied Micro (AMCC)

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

Use superscript for exponential terms.

SuggestedRemedy

For 2^6 and 2^4, use superscript for 6 and 4, respectively.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.76a.3** *P* **121** *L* **4** # 78
Brown, Matthew Applied Micro (AMCC)

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

What does it mean to disable this bit?

SuggestedRemedy

Change "disabling this bit" to "setting this bit to 0".

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.76a.3** *P* **120** *L* **36** # 79
Brown, Matthew Applied Micro (AMCC)

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

A RO status bit is not provided to indicate whether fast retrain was negotiated or not. 1.147.0 does not suffice, since it may be overwritten by the station manager.

SuggestedRemedy

Provide a RO status bit to indicate whether fast retraining was successfully negotiated or not. 1.147.1 is suggested. Name "Fast Retrain Negotiated". Description: "1 = Fast retrain was negotiated; 0 Fast retrain was not negotiated." R/W: "RO".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.5.1** *P* **219** *L* **18** # 80
Brown, Matthew Applied Micro (AMCC)

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

Common terminology.

SuggestedRemedy

Change "low power receive mode" to "LPI mode".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.6.1** *P* **220** *L* **33** # 81
Brown, Matthew Applied Micro (AMCC)

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

Figure 55-24. fr_maxwait_timer_done not defined

SuggestedRemedy

Define fr_max_wait_timer in 55.4.5.2

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.6.1** *P* **220** *L* **33** # 82
Brown, Matthew Applied Micro (AMCC)

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

Figure 55-27b. link_fail_sig_timer_done not defined

SuggestedRemedy

Define fr_max_wait_timer in 55.4.5.2

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.2.5.14** *P* **216** *L* **49** # 83
Brown, Matthew Applied Micro (AMCC)

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

The is a pile-on comment for Draft 3.0 comment #359. The response to comment #359 addresses incorrectly detecting a failed link by optionally replacing the local fault signal with the idle signal during fast retrain. The reponse did not address loss of data during a fast retrain. To prevent loss of data, a mechansm is required which informs the MAC to defer transmission; while not indicating a link failure, avoiding adverse effects on MAC clients.

SuggestedRemedy

Provide a mechanism to signal from the PHY to the RS a temporary interruption during fast retrain. Provide a mechanism in the RS to cause the MAC to defer transmission of packets while fast retrain is active, particular for a MAC which is connected to a PHY through a XAUI interface. To accomplish this create a new character, similar to /LI/, call tentatively /CRS/ (carrier sense). Send /CRS/ continuous to the RX XGMII while fast retrain is active. In the RS, while receiver /CRS/ from the RX XGMII set PLS_CARRIER.indication(CARRIER_STATUS) to CARRIER_ON.

Proposed Response *Response Status* **O**

Cl **46** *SC* **46.1.7.3** *P* **140** *L* **42** # 84
Brown, Matthew Applied Micro (AMCC)

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

CARRIER status has values CARRIER_ON and CARRIER_OFF.

SuggestedRemedy

Change "CARRIER_STATUS is set to false" to "CARRIER_STATUS is set to CARRIER_OFF".

Proposed Response *Response Status* **O**

Cl **46** *SC* **46.3a.2.2** *P* **145** *L* **28** # 85
Brown, Matthew Applied Micro (AMCC)

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

CARRIER status has values CARRIER_ON and CARRIER_OFF.

SuggestedRemedy

Change "CARRIER_STATUS = OFF" to "CARRIER_STATUS= CARRIER_OFF".

Proposed Response *Response Status* **O**

Cl **46** *SC* **46.3a.2.2** *P* **145** *L* **36** # 86
Brown, Matthew Applied Micro (AMCC)

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

CARRIER status has values CARRIER_ON and CARRIER_OFF.

SuggestedRemedy

Change "CARRIER_STATUS = ON" to "CARRIER_STATUS= CARRIER_ON".

Proposed Response *Response Status* **O**

Cl **49** *SC* **49** *P* **174** *L* **1** # 87
Horner, Rita Avago Technologies

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

TX_REFRESH state no longer exists

SuggestedRemedy

revmove the tx_tr_timer

Proposed Response *Response Status* **O**

Cl **49** *SC* **49** *P* **178** *L* # 88
Horner, Rita Avago Technologies

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

There is a potential dead-lock definition if the timer expires at the same time as tx_raw transitions from LI to !LI

SuggestedRemedy

Remove the !tx_ts_timer_done from the state transition TX_SLEEP to TX_ACTIVE

Proposed Response *Response Status* **O**

Cl **49** *SC* **49** *P* **178** *L* # 89
Horner, Rita Avago Technologies

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

The exit from TX_QUIET should be tx_timer_done or tx_raw !=LI

SuggestedRemedy

Remove the requirement of !tq_timer_done on the exit from TX_QUIET

Proposed Response *Response Status* **O**

Cl **49** *SC* **49** *P* **180** *L* **34** # 90
Horner, Rita Avago Technologies

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

Correct the defination for rx_fault

SuggestedRemedy

rx_fault should be changed to "receive fault" as it is referred to in the MDIO definition and in 49.2.14.1. PCS_status

Proposed Response *Response Status* **O**

Cl **46** *SC* **46.3a** *P* **144** *L* **5** # 91
Brown, Matthew Applied Micro (AMCC)

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

label "PLS_Service Primitives" only applies to primitives starting with PLS.

SuggestedRemedy

Change "PLS_Service Primitives" to "PLS Service Primitives" and move to a location within the set of PLS primitives. Add dashed rectangle around PLS service primitives to differentiate from the LPI client service primitives.

Proposed Response *Response Status* **O**

Cl **46** *SC* **46.3a.1** *P* **144** *L* **37** # 92
Brown, Matthew Applied Micro (AMCC)

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

Until 1 second after link_status is OK, effect of primitive is undefined regardless of its value.

SuggestedRemedy

Delete "or if LPI_REQUEST=ASSERT".

Proposed Response *Response Status* **O**

Cl **46** *SC* **46.3a.1** *P* **144** *L* **30** # 93
Brown, Matthew Applied Micro (AMCC)

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

While LPI_INDICATION is DEASSERT, all behavior is normal.

SuggestedRemedy

Delete "inter-frame".

Proposed Response *Response Status* **O**

Cl **36** *SC* **36.2.5.2.2** *P* **87** *L* **22** # 94
Healey, Adam LSI Corporation

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

The transition from LPI_K back to LP_IDLE_D is inconsistent with the equivalent legacy transition (RX_K to IDLE_D) when xmit != DATA. If xmit != DATA and SUDI([/KD5.6/]+[/D16.2/]), the state diagram would get stuck into the LPI_K state indefinitely. However, this is highly unlikely. What is more likely is that auto-negotiation is restarted while the receiver is detecting LPI. In this case, the state diagram would remain in the LPI_K state during the data code-group reception, and would transition into the RX_INVALID state (via "F") when the next /K28.5/ is received. At worst, this would force an Auto-Negotiation restart (via RUDI(INVALID)) but this seems like an unneccessary glitch with a straightforward work-around.

SuggestedRemedy

For the transition from LPI_K to LPI_IDLE_D, change the term xmit != DATA ∗ SUDI("member of set of" [/D/]∗![/D21.5/]∗![/D2.2/])) to xmit != DATA ∗ SUDI("member of set of" [/D/]∗![/D21.5/]∗![/D2.2/]*![D5.6]*![D16.2])). Also remove the term xmit = DATA from the transition from LPI_K to IDLE_D (via "C").

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.76a** *P* **120** *L* **19** # 95

Ganga, Ilango Intel Corporation

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

In order to advertise the fast retrain ability (45.7.10), the management needs to know if the PHY is capable of fast retrain. Also the management may choose not to advertise fast retrain ability, to the link partner, even if the local PHY is fast retrain capable. So define a bit to fast retrain ability bit to fast retrain control/status register. This bit will be set to one for PHYs that implement fast retrain capability.

SuggestedRemedy

Add a bit to 1.147, 10GBASE-T fast retrain status & control register, to indicate PHY fast retrain capability

Proposed Response *Response Status* **O**

Cl **46** *SC* **46.1.7.3** *P* **140** *L* **37** # 96

Ganga, Ilango Intel Corporation

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

The spirit of the EEE objectives is not to drop or corrupt frames; however fast retrain mechanism, as defined, has the potential to drop frames. Some of the upper layer protocols expect no packet drop characterestics and certain reliability at link level. Fast retrain condition may cause frame loss up to several ms. So implement a mechanism that has ability to defer frame transmission during fast retrain.

SuggestedRemedy

Set the PLS_CARRIER.inidication primitive when the PMA indicates fr_active (PMA_FR_ACTIVE.indication) to defer transmission during fast retrain. This will ensure no packet drop during fast retrain.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.2.2.9** *P* **195** *L* **10** # 97

Ganga, Ilango Intel Corporation

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

As per D3.1, either IDLE or Local Fault is generated during fast retrain. Currently local fault may be used to trigger link failure condition to the higher layers. At a system level such link failure conditions may be used to initiate link failover mechanisms for high availability. Asserting local fault does not unambiguously indicate if the local fault is due to link failure or fast retrain. Any timeout mechanisms to delay signaling link failure to higher layers may delay the highavailability/failover features to take effect. So it is best to define a separate control code to indicate fr_active (PMA_FR_ACTIVE.indication) to the RS sublayer. This could be used to signal a fast retrain condition.

SuggestedRemedy

1. Define a seprate control code to indicate fast retrain condition to the higher layers (RS sublayer). Providing fr active signal allows systems flexibility to implement failover/lossless characteristics. 2. For the PHYs that support fast retrain, specify an option to assert PLS_CARRIER.indication during fast retrain active that allows tx deferral.

Proposed Response *Response Status* **O**

Cl **46** *SC* **46.1.7.3** *P* **140** *L* **41** # 98

Ganga, Ilango Intel Corporation

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

Assertion of CARRIER_STATUS by the RS should be based upon LPI_REQUEST not LPI_INDICATE. i.e., it is based upon the transmit LPI state, not the receive side. This statement in 46.1.7.3 is inconsistent with the reference state diagram (46-10a) and the description in 78.1.3.1.

SuggestedRemedy

Change LPI_INDICATION to LPI_REQUEST

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.76a** *P* **120** *L* **20** # 99

Ganga, Ilango Intel Corporation

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

It appears that the response to Comment #359 has not been fully implemented. Implement the changes to Clause 45 as per response to #359

SuggestedRemedy

Also make the following changes to Clause 45:
Define a new register bit:
1.147.1 : Fast retrain signal type : 1 = send IDLE during fast retrain, 0 = send local fault during fast retrain
Insert 45.2.1.76a.2 Fast retrain signal type (1.147.1)
For PHYs that support fast retrain, this bit maps to lpi_fr_sigtype as defined in 55.4.5.1. When Fast retrain signal type is set to one, the PMA sends IDLE characters on the receive path during fast retrain. When Fast retrain signal type is set to zero, the PMA sends local fault on the receive path during fast retrain.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55** *P* **187** *L* # 100

Ganga, Ilango Intel Corporation

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

As per D3.1, there is an option in the PMA to either send IDLE or Local Fault during fast retrain. However it is possible for one link partner to enable IDLE and other link partner may enable to send Local Fault condition. So the link partners may have different settings at either end of the link and this may cause inconsistent behaviour at the link/system level.

SuggestedRemedy

One possibility is to provide a mechanism to advertise the fast retrain signal type along with fast retrain ability, so both link partner can enable this feature consistently. Alternatively do not provide an optional feature, just specify one mechanism to signal fast retrain active condition. This will ensure consistent behavior at the either end of the link.

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.1.3.2** *P* **256** *L* **8** # 101

Brown, Matthew Applied Micro (AMCC)

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

Use primitive/parameter name.

SuggestedRemedy

Change "the LPI_INDICATION parameter to ASSERT in the LP_IDLE indication primitive of the LPI Client service interface" to "LP_IDLE.indication(LPI_INDICATION) to ASSERT"

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.1.3.2** *P* **256** *L* **12** # 102

Brown, Matthew Applied Micro (AMCC)

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

Use primitive/parameter name.

SuggestedRemedy

Change "the LPI_INDICATION parameter is set to DE-ASSERT in the LP_IDLE indication primitive of the LPI Clinet service interface" to "LP_IDLE.indication(LPI_INDICATION) is set to DE-ASSERT"

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.1.4** *P* **257** *L* **26** # 103

Brown, Matthew Applied Micro (AMCC)

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

Table 78-1. All relevant clauses should be listed here. In particular, for 100BASE-TX clause 25 should be listed.

SuggestedRemedy

For 100BASE-TX list 24 and 25. For 1000BASE-KX list 70, 35. For 10GBASE-KX4 list 71, 48. For 10GBASE-KR list 72, 51, 49.

Proposed Response *Response Status* **O**