Cl **00** *SC* **0** *P* *L* # 46

Brown, Matt AMCC

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

In many of the state machine figures, new transition criteria include comparison of boolean variable with boolean value (e.g., energy_detect = FALSE). This comparison is redundant and is inconsistent in style.

SuggestedRemedy

Replace all instances in draft as follows:
"<boolean_variable> = TRUE" with "<boolean_variable>"
"<boolean_variable> = FALSE" with "!<boolean_variable>"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Recommended change will be made where it does not, by itself, cause a change in the base text of the draft.

In places where this would create a change in the base text that is not required by the objectives of this task force, i.e., it is a service to humanity, the editors will use their discretion.

Cl **14** *SC* *P* **16** *L* # 120

Thompson, Geoff Nortel

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

I find no text added anywhere to clause 14 that states or even gives a hint of the compatibility between 10BASE-T and 10BASE-Te. How is a customer to know how to mix the two on a network?

SuggestedRemedy

Add a new subclause to clause 14 to address the topic of cross compatibility between 10BASE-T and 10BASE-Te, i. e. the two MDI can be freely mixed as long as the cabling meets the requirements for 10BASE-Te.

Proposed Response *Response Status* **O**

Cl **22** *SC* **22.2.2.6a** *P* **28** *L* **21** # 123

Traeber, Mario Infineon Technologies

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

Replace "MAC client" by "LPI agent" to be consistent with 35.2.2.6a

SuggestedRemedy

simply replace the text as suggested.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **22** *SC* **22.2.2.9a** *P* **28** *L* **52** # 124

Traeber, Mario Infineon Technologies

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

Replace "MAC client" by "LPI agent" to be consistent with 35.2.2.9a

SuggestedRemedy

simply replace the text as suggested.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **22** *SC* **22.7a.1** *P* **31** *L* **34** # 107

Grimwood, Michael Broadcom

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

To achieve consistency with related comments submitted against Clauses 35 and 46, change link_status from READY to OK. Clauses 40 and 55 and the associated link monitors do not have a “READY” state in their link monitor functions nor do they specify READY as an allowable value for link_status.

SuggestedRemedy

Change:

LPI_IDLE.request shall not be set to ASSERT unless the attached link is operational (i.e. link_status = READY, see 28.2.6.1.1). LP_IDLE.request shall remain to be set to DEASSERT for 1 second following link_status changing state to READY.

To:

LPI_IDLE.request shall not be set to ASSERT unless the attached link is operational (i.e. link_status = OK, see 24.3.3.2). LP_IDLE.request shall remain to be set to DEASSERT for 1 second following link_status changing state to OK.

Proposed Response *Response Status* **O**

Cl **24** *SC* **24.1.1** *P* **34** *L* **10** # 121

Thompson, Geoff Nortel

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

The text: “the PHY enters the low power idle mode during periods of low link utilization.” is, shall we say, mysterious. There is no “low link utilization” signal available within the PCS/PMA.

SuggestedRemedy

It would be more appropriate to say something like that the transmitter, and in turn the linked receiver transition into low power mode in response to a command sent across the MII that is expected when the transmitting station is expecting low link utilization.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Cl **25** *SC* **25.4.5** *P* **53** *L* **28** # 108

Grimwood, Michael Broadcom

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

For 100BASE-TX EEE, require that jitter specifications be met during low-power operation.

SuggestedRemedy

In subclause 25.4.5, after the sentence, “The jitter measurement specified in 9.1.9 of TP-PMD may be performed using scrambled IDLEs.”, add the following:

During Low Power operation, jitter shall be measured using scrambled SLEEP code groups transmitted during the TX_SLEEP state. Total transmit jitter with respect to a continuous unjittered reference shall not exceed 1.4 ns peak-to-peak with the exception that the jitter contributions from the clock transitions occurring during TX_QUIET and the first 5 usec of TX_SLEEP are ignored. The jitter measurement time period shall be not less than 100 msec and not greater than 1 second.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.21** *P* *L* **48** # 122

Thompson, Geoff Nortel

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

I don't understand what this attribute indicates. Is it the state of the standard at time of implementation? Or is it the PHYs for which the PCS and higher can support EEE operation?

SuggestedRemedy

Add text to clarify.

Proposed Response *Response Status* **O**

Cl **35** *SC* **35.2.2.4** *P* **66** *L* **6** # 4

Dietz, Bryan Alcatel-Lucent

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

Minor editorial change: replace semicolon with comma in list of "during the assersion of low power idle; carrier extend or carrier extend error code-groups." Semicolon is not appropriate in this context.

SuggestedRemedy

Replace semicolon with comma. It should read "during the assersion of low power idle, Carrier Extend or Carrier Extend Error code-groups."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Also change spelling to "assertion"

Cl **35** *SC* **35.5a** *P* **69** *L* **54** # 109

Grimwood, Michael Broadcom

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

A one second timer for LP_IDLE.request assertion was applied to Clause 22 but not globally to all PHYs since only Clause 22 defines LP_IDLE.request.

SuggestedRemedy

As has been done in 22.7a, add a section 35.5a entitled “LPI messages”. Modify that section for GMII compatibility.

In this new section, add the following requirement to the definition of LP_IDLE.request:

LPI_IDLE.request shall not be set to ASSERT unless the attached link is operational (i.e. link_status = OK, see 40.3.3.1). LP_IDLE.request shall remain to be set to DEASSERT for 1 second following link_status changing state to OK.

Proposed Response *Response Status* **O**

Cl **36** *SC* **36.2.5.1.3** *P* **72** *L* **32** # 47

Brown, Matt AMCC

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

What is an "enumerated variable"?

SuggestedRemedy

Change "enumerated" to "boolean".

Proposed Response *Response Status* **O**

Cl **36** *SC* **36.2.5.1.5** *P* **73** *L* # 13

Pillai, Velu Broadcom

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

During the adhoc/meetings, the decision was to have the wake timer to be for 1ms. But in the draft is point to TWR , which is only 10-11uSec. The purpose of this timer is to give the receiver a chance to gracefully recover from a wake time fault.

SuggestedRemedy

Add a row to Table 36-3b for Twtf and assign 1ms. In fact replace the TDA row for this.

Proposed Response *Response Status* **O**

Cl **36** *SC* **36.2.5.1.5** *P* **73** *L* **27** # 14

Pillai, Velu Broadcom

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

Wake_error_counter needs to be added to the counter section

SuggestedRemedy

Add the description and link to the Register

Proposed Response *Response Status* **O**

Cl **36** *SC* **36.2.5.2.1** *P* **73** *L* **44** # 41

Barrass, Hugh Cisco

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

Figure references wrong

SuggestedRemedy

Change "Figures 36-1 and 36-2" to "figures 36-5 and 36-6" (with active links).

Also, P.74, change figure title to "Figure 36-5"

Proposed Response *Response Status* **O**

Cl **36** *SC* **36.2.5.2.1** *P* **75** *L* **11** # 40

Barrass, Hugh Cisco

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

There needs to be a transition for tx_o_set = /LI/

SuggestedRemedy

Change "tx_o_set = /I/" to "tx_o_set = /I/ + /LI/"

Change state IDLE_I1B: "tx_code-group <= /D5.6/" to "if tx_o_set = /I/ then tx_code-group <= /D5.6/ else tx_code-group <= /D6.5/"

Change state IDLE_I2B: "tx_code-group <= /D16.2/" to "if tx_o_set = /I/ then tx_code-group <= /D16.2/ else tx_code-group <= /D26.4/"

Proposed Response *Response Status* **O**

Cl **36** *SC* **36.2.5.2.1** *P* **75** *L* **5** # 38

Barnette, James Vitesse Semiconducto

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

In Figure 36-6 PCS transmit code-group state diagram, there is no implementation of code-group generation for ordered-set tx_o_set=/LI/.

SuggestedRemedy

- Add 5 new states, LPI_DISPARITY_TEST, LPI_DISPARITY_WRONG, LPI_I1B, LPI_DISPARITY_OK, and LPI_I2B that have a similar flow as the 5 existing states, IDLE_DISPARITY_TEST, IDLE_DISPARITY_WRONG, IDLE_I1B, IDLE_DISPARITY_OK, and IDLE_I2B.
- Add a new arc from GENERATE_CODE_GROUPS to LPI_DISPARITY_TEST when tx_o_set=/LI/.
- Replicate the existing arcs that are in the IDLE_* states into the new LPI_* states includeing the exit to the common GENERATE_CODE_GROUPS state.
- Change the tx_code-group output in the new LPI_I1B and LPI_I2B states from /D5.6/ and /D16.2/ to /D6.5/ and /D26.4/, respectively

Proposed Response *Response Status* **O**

Cl **36** *SC* **36.2.5.2.8** *P* **80** *L* **23** # 42

Barrass, Hugh Cisco

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

The "loop" transitions for states TX_SLEEP, TX_QUIET and TX_REFRESH are all invalid because they would cause the timers to keep restarting (even if they didn't, they would be redundant since the state machine remains in the state unless an exit is valid.

SuggestedRemedy

Delete the "loop" transitions for states TX_SLEEP, TX_QUIET and TX_REFRESH.

Proposed Response *Response Status* **O**

Cl **36** *SC* **36.2.5.2.8** *P* **81** *L* **10** # 39

Barnette, James Vitesse Semiconducto

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

When detect_lpidle is asserted and the state transitions from RX_ACTIVE to RX_SLEEP, the next ordered set to be received is an LPI, which is /K28.5/D6.5/ or /K28.5/D26.4/. Then after /K28.5/ is received, detect_idle would be asserted using the definition from section 36.2.5.1.3 and the state would transition to RX_ACTIVE. When /D6.5/ or /D26.4/ is received then detect_lpidle is asserted, thus transitioning back to RX_SLEEP from RX_ACTIVE. This means, as long as the LPI ordered set is received then the state transitions back and forth between RX_ACTIVE and RX_SLEEP and that is clearly not the intended behavior.

SuggestedRemedy

To avoid toggling back and forth, while in RX_SLEEP active, detect_idle should be sampled only for every other code word. This way when an ordered set /K28.5//<some_code_word>/ is received, then detect_idle or detect_lpidle will go high appropriately after decoding <some_code_word>. One possible way to do this is to split RX_SLEEP into two states RX_SLEEP_1 and RX_SLEEP_2, both having the same functionality of the existing RX_SLEEP state.

When detect_lpidle is asserted, RX_ACTIVE/RX_WAKE/RX_WTF would transition into RX_SLEEP_1 state and as long as detect_lpidle is asserted state would always be RX_SLEEP_1. While in RX_SLEEP_1, detect_idle would transition to RX_SLEEP_2 state. If current state is RX_SLEEP_2 and detect_idle is asserted, then state transitions to RX_ACTIVE else if detect_lpidle is asserted then state transitions to RX_SLEEP_1. If signal_detect fails while either in state RX_SLEEP_1 or RX_SLEEP_2 then state transitions to RX_QUIET.

Proposed Response *Response Status* **O**

Cl **36** *SC* **Fig 36-7a** *P* **76** *L* **3** # 9

Pillai, Velu Broadcom

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

The variable rx_lpi_fail is not used any more.

SuggestedRemedy

Hence remove rx_lpi_fail = TRUE condition to enter LINK_FAILED

Proposed Response *Response Status* **O**

Cl **36** *SC* **Fig36-7a** *P* **76** *L* # 11

Pillai, Velu Broadcom

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

Transition from LPI_K to IDLE_D is not checking EVEN boundary

SuggestedRemedy

Change the transition condition to detect_idle * rx_lpi_active =FALSE * !EVEN

Proposed Response *Response Status* **O**

Cl **36** *SC* **Fig36-9b** *P* **81** *L* # 7

Pillai, Velu Broadcom

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

Arc from RX_QUITE to RX_WTF needs to be moved to RX_QUIET to RX_LINK_FAIL.Presently signal_detect=FAIL make it loop around from RX_WTF back to RX_QUIET. Once the rx_tq_timer_done is a link fail.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **36** *SC* **Fig36-9b** *P* **81** *L* # 6
Pillai, Velu Broadcom

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

Arc from RX_WTF to RX_SLEEP has !rx_tw_timer_done it should be rx_wf_timer_done

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **36** *SC* **Fig36-9b** *P* **81** *L* # 8
Pillai, Velu Broadcom

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

Arc from RX_WTF to RX_ACTIVE should be !detect_lpidle instead of detect_idle. Any recovery from RX_WTF is not guaranteed to be receiving idle codewords.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **36** *SC* **Fig36-9b** *P* **81** *L* **10** # 10
Pillai, Velu Broadcom

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

Transition out of RX_ACTIVE back to itself has a condition sync_status!= code_sync_status. But sync_status latches code_sync_status inside RX_ACTIVE. Hence this transition condition is meaning less.

SuggestedRemedy

Instead of the above, please use code_sync_status = FAIL

Proposed Response *Response Status* **O**

Cl **36** *SC* **Table36-3b** *P* **82** *L* # 12
Pillai, Velu Broadcom

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

There is a row for Tda. But there is no debounce state, hence no need for this timer value

SuggestedRemedy

Remove the entire row

Proposed Response *Response Status* **O**

Cl **40** *SC* **40.3.1.3.4** *P* **94** *L* **8** # 113
McIntosh, James Vitesse

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

In the main 802.3 document, the cext_errn definition is before the Sdn[1] definition. When the cext_errn definition change was added back to this document in D1.3, it was inadvertantly placed after the Sdn[1] definition.

SuggestedRemedy

Swap cext_errn and Sdn[1] definition changes.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **40** *SC* **40.6.1.2.5** *P* **106** *L* **42** # 114
McIntosh, James Vitesse

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

The states "WAIT_SILENT, QUIET, WAKE, and WAKE_SILENT" are listed with "WAIT_SILENT" in the list twice. I believe the first instance was intended to be "WAIT_QUIET".

SuggestedRemedy

Change list to "WAIT_QUIET, QUIET, WAKE, and WAKE_SILENT".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **40** *SC* **40.6.1.2.5** *P* **106** *L* **44** # 110
Grimwood, Michael Broadcom

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

For consistency with the text earlier in the subsection, eliminate the word “clock” from “unjittered reference clock”.

SuggestedRemedy

As outlined in comment above.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **46** *SC* **46.3.1.2** *P* **121** *L* **10** # 48
Brown, Matt AMCC

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

The 06 character is often referred to in subsequent sections as the LP_IDLE character so should have this label here.

SuggestedRemedy

Add "LP_IDLE" (all capitals) label under description in row with TXD = 06.

Proposed Response *Response Status* **O**

Cl **46** *SC* **46.5a** *P* **124** *L* **34** # 111
Grimwood, Michael Broadcom

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

A one second timer for LP_IDLE.request assertion was applied to Clause 22 but not globally to all PHYs since only Clause 22 defines LP_IDLE.request.

SuggestedRemedy

As has been done in 22.7a, add a section 46.5a entitled “LPI messages”. Modify that section for XGMII compatibility.
In this new section, add the following requirement to the definition of LP_IDLE.request:

LPI_IDLE.request shall not be set to ASSERT unless the attached link is operational (i.e. link_status = OK, see 55.4.5.1). LP_IDLE.request shall remain to be set to DEASSERT for 1 second following link_status changing state to OK.

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.3** *P* **126** *L* **30** # 49
Brown, Matt AMCC

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

The diagram shows XGMII and PCS encoding spanning all LPI states but labels only the WAKE cycle.

SuggestedRemedy

Label columns 1-2 and 16-18 as active time.
Label columns 3 to 15 as LPI time.
Label columns 3 to 9 and LPI sleep/quiet/refresh time.

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.4** *P* **127** *L* **29** # 50
Brown, Matt AMCC

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

Table 48-2 footnote (a) refers to "rules described below". Not clear to what it is referring.

SuggestedRemedy

Change "below" to "in 48.2.4.2".

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.4** *P* **127** *L* **53** # 51
Brown, Matt AMCC

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

Table 48-3 footnote (a) refers to "rules described below". Not clear to what it is referring.

SuggestedRemedy

Change "below" to "in 48.2.4.2".

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.4.2** *P* *L* # 2

McCulloch, Ewan Cadence Design Syste

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

The spec mentions that on receive, all ||I|| received during idle are translated to XGMII Idle control characters for transmission over the XGMII. All other !||I|| received during idle are mapped directly to XGMII data or control characters on a lane by lane basis, with the exception of /D20.5/ (Low Power Idle) being detected in any row and the rest of the rows in the same column being detected /K/ only or /R/ only, which will result in reporting LP_IDLE in all lanes.

This implies that ||A|| is always translated to normal XGMII Idle characters, even if the previous column was a low power idle stripe (/D20.5/ in one row and /K/ or /R/ in all other rows). Is this the intention ? This would make the received XGMII sequence quite different from the link partners transmitted XGMII, and complicate the detection of LPI in the MAC. I think the received ||A|| that is part of a stream of low power stripes of idles should be translated to LPI as well.

SuggestedRemedy

Change the spec to

Whenever sync_status=OK, all ||I|| received during idle are translated to XGMII Idle control characters for transmission over the XGMII. All other !||I|| received during idle are mapped directly to XGMII data or control characters on a lane by lane basis, with the following exceptions :
1. /D20.5/ (Low Power Idle) being detected in any row and the rest of the rows in the same column being detected /K/ only or /R/ only, which will result in reporting LP_IDLE in all lanes.
2. ||A|| being detected AND /D20.5/ (Low Power Idle) being detected in any row of the previous column and the rest of the rows in the previous column being detected /K/ only or /R/ only, which will result in reporting LP_IDLE in all lanes.

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.4.2** *P* **128** *L* **26** # 52

Brown, Matt AMCC

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

Clarify that this means LP_IDLE characters.

SuggestedRemedy

Change LP_IDLE to LP_IDLE characters.

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.4.2** *P* **128** *L* **4** # 54

Brown, Matt AMCC

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

Define low power idle ordered sets here rather than as alias in comment section.

SuggestedRemedy

Change title to "48.2.4.2 Idle (||I||) and Low Power Idle (||LPIDLE||)
Add the following the paragraph on line 38 of page 128 as follows:
"The low power idle ordered set ||LPIDLE|| is a special of ||I|| where low power idle is ..."
Also, deleted the defintion of ||LPIDLE|| in section 48.2.6.1.2 on page 128 line 47.

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.4.2.3** *P* *L* # 3

McCulloch, Ewan Cadence Design Syste

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

Should idle insertion or deletion via clock tolerance compensation be allowed to proceed during LPI, if we choose not to implement the low power state machines (i.e. if the PCS is simply transporting LPI for compatibility, but not entering a low power state itself).
48.2.4.2.3 states that Idle insertion or deletion may be performed on ||R|| in the encoded data stream, which will never be the case when transporting LPI (one of the characters in the stripe of /R/'s will be /D20.5/)

Our assumption is that clock rate compensation should be allowed to continue during LPI, as this is consistent with allowing the deskew and comma sync processes within the PCS RX to continue (using ||A|| and individual /K/ symbols respectively).

SuggestedRemedy

modify the spec to allow for clock rate compensation on a strpe that contained three /R/'s and one /D20.5/ in the encoded data stream

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.1.2** *P* **128** *L* **47** # 53

Brown, Matt AMCC

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

This is not an "alias". ||LPIDLE|| is not the same as ||I||.

SuggestedRemedy

Change definition of ||LPIDLE|| to ...
"Low power idle ordered sets are a special case of Idle ordered sets (||I||) transmitted during low power idle mode as described in 48.2.4.2."

Alternately, make changes suggested for 48.2.4.2 and delete this defition altogether.

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.1.3** *P* **129** *L* **10** # 56

Brown, Matt AMCC

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

What is an "enumerated variable"?

SuggestedRemedy

Change "enumerated" to "boolean".

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.1.3** *P* **129** *L* **10** # 57

Brown, Matt AMCC

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

When rx_lpi_active is FALSE it may not be "capable of receiver data" as there may be an input fault.

SuggestedRemedy

Change "capable of receiving data" to "is not in the LPI mode".

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.1.3** *P* **129** *L* **14** # 58

Brown, Matt AMCC

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

rx_lpi_fail also indicates that the link has failed during LPI.

SuggestedRemedy

Append the sentence with "or if the link has otherwise failed".

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.1.3** *P* **129** *L* **17** # 59

Brown, Matt AMCC

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

Need text to indicate the significance of rx_quiet.

SuggestedRemedy

Add the following sentence...
When this variable is TRUE it indicates that receive PCS and PMD may power-down non-essential functions.

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.1.3** *P* **129** *L* **20** # 60

Brown, Matt AMCC

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

Need text to indicate the significance of tx_quiet.

SuggestedRemedy

Add the following sentence...
When this variable is TRUE it indicates that transmit PCS and PMD may power-down non-essential functions.

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.1.3** *P* **129** *L* **6** # 55
Brown, Matt AMCC

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

deskew_align_status is the same as align_status used to be not as it is. Need to adopt old align_status definition for deskew_align_status and re-define align_status.

SuggestedRemedy

Delete current defintion of deskew_align_status.

Pull in definition from 802.3-2008 for align status and rename from "align_status" to "deskew_align_status":

deskew_align_status
A parameter set by the PCS Deskew process to reflect the status of the ane-to-lane code-group alignment.
Values:
FAIL; The deskew process is not complete.
OK; All lanes are synchronized and aligned.

Re-define align status as follows ...
align_status
Variable equivalent to deskew_align_status when not in LPI mode. During LPI mode align_status is overridden by the LPI receive state machine as specified in Table 48-9.

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.1.5** *P* **129** *L* **25** # 21
Pillai, Velu Broadcom

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

LPI_fail_timer is not needed anymore

SuggestedRemedy

Remove the timer.

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.1.5** *P* **129** *L* **26** # 61
Brown, Matt AMCC

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

LPI_fail_timer is no longer used in this section.

SuggestedRemedy

Delete LPI_fail_timer and description.

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.1.5** *P* **129** *L* **29** # 22
Pillai, Velu Broadcom

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

Rx_deact_timer is no longer used

SuggestedRemedy

Remove the timer

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.1.5** *P* **129** *L* **31** # 62
Brown, Matt AMCC

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

rx_deact_time is no longer used in this section.

SuggestedRemedy

Delete rx_deact_timer and description.

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.1.5** *P* **129** *L* **39** # 24

Pillai, Velu Broadcom

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

During the adhoc/meetings, the decision was to have the wake timer to be for 1ms. But in the draft is point to TWR , which is only 8-9uSec. The purpose of this timer is to give the receiver a chance to gracefully recover from a wake time fault.

SuggestedRemedy

Add a row to Table 48-10 for Twtf and assign 1ms. In fact replace the TDA row for this.

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.1.5** *P* **130** *L* **3** # 63

Brown, Matt AMCC

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

The tx_tq_timer is part of the PCS LPI transmit state machine not PMD receiver.

SuggestedRemedy

Change "PMD's receiver enters the TX_QUIET state" to "LPI transmit state machine enters the TX_QUIET state".

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.1.5** *P* **130** *L* **7** # 64

Brown, Matt AMCC

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

The tx_tr_timer is part of the PCS LPI transmit state machine not PMD receiver.

SuggestedRemedy

Change "PMD's receiver enters the TX_REFRESH state" to "LPI transmit state machine enters the TX_REFRESH state".

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.1.6** *P* **130** *L* **19** # 65

Brown, Matt AMCC

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

PMD_RXQUIET.request(rx_quiet) description not correct.

SuggestedRemedy

Delete current description and replace with the following:
"A boolean signal sent by the PCS to the PMD to indicate, when the value is TRUE, that the PMD may power down non-essential functions. The value of PMD_RXQUIET.request(rx_quiet) is equal to the rx_quiet variable as set in the LPI receive state machine.

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.1.6** *P* **130** *L* **22** # 66

Brown, Matt AMCC

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

PMD_TXQUIET.request(tx_quiet) description not correct.

SuggestedRemedy

Delete current description and replace with the following:
"A boolean signal sent by the PCS to the PMD to indicate when the value is TRUE that the PMD must disable the driver output and may power down non-essential functions. The value of PMD_TXQUIET.request(tx_quiet) is equal to the rx_quiet variable as set in the LPI receive state machine."

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.2.1** *P* **131** *L* **52** # 67

Brown, Matt AMCC

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

In the notes at the bottom of Figure 48-6...
/D20.5/ is replaced in one row not column.

SuggestedRemedy

Replace "one column is replaced" with "one row is replaced".

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.2.5** *P* **134** *L* **11** # 68
Brown, Matt AMCC

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

Redundant and out of style to equate variable to Boolean value.

SuggestedRemedy

Change "reset=TRUE" to "reset"

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.2.5** *P* **134** *L* **21** # 43
Barrass, Hugh Cisco

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

The "loop" transitions for states TX_SLEEP, TX_QUIET and TX_REFRESH are all invalid because they would cause the timers to keep restarting (even if they didn't, they would be redundant since the state machine remains in the state unless an exit is valid.

SuggestedRemedy

Delete the "loop" transitions for states TX_SLEEP, TX_QUIET and TX_REFRESH.

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.2.5** *P* **134** *L* **37** # 74
Brown, Matt AMCC

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

In the LPI receiver state diagram in Figure 48-3, the exit criteria from RX_WTF and RX_WAKE required detection of either ||LPIDLE|| or ||IDLE||. For the latter, the length of the wake sequence is not enforced by the PCS but rather depends upon the layer above to give the correct value. This layer may be on another device so compliance may not be easy to guarantee.

SuggestedRemedy

Make the following changes to the LPI transmit state machine.
Create new timer "tx_wake_timer" with terminal count equal to required wake time TWR.
In TX_REFRESH state add the action "Start tx_wake_timer".
Change the criteria for transition from TX_REFRESH to TX_ACTIVE to "TX != LPIDLE * tx_wake_timer_done".

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.2.5** *P* **135** *L* **10** # 70
Brown, Matt AMCC

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

In Figure 48-9b, in the transition from RX_ACTIVE state to itself the condition ||IDLE|| is unnecessary since the only purpose for this transition appears to be to keep align_status up to date.

SuggestedRemedy

Change "||IDLE|| + align_status != deskew_align_status" to "align_status != deskew_align_status".

Perhaps the intent was the following...
"!||LPIDLE|| * align_status != deskew_align_status"

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.2.5** *P* **135** *L* **13** # 73
Brown, Matt AMCC

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

In Figure 48-9b, it is possible to be stuck in RX_SLEEP state if the link partner driver continues to send anything other than ||IDLE|| and does not disable its output.

SuggestedRemedy

Create new timer rx_ts_timer with terminal time TSLRX slightly larger than TSL.
Define new timer in 48.2.6.1.5 as follows: "This timer is started when the LPI receive state machine enters the RX_SLEEP state. The timer terminal counter is set to TSLRX. When the timer reach the terminal count it will set rx_ts_timer_done = TRUE."
Add action to RX_SLEEP state "Start rx_ts_timer".
Add transition to RX_LINK_FAIL state with criteria "rx_ts_timer_done".

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.2.5** *P* **135** *L* **16** # 71
Brown, Matt AMCC

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

In Figure 48-9b, there are two instances of ||IDLE|| where the right-hand bars appear to be "II" (two "I's") not "||" (two bars).

SuggestedRemedy

Replace IIIDLE|| with ||IDLE||.

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.2.5** *P* **135** *L* **26** # 72

Brown, Matt AMCC

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

In Figure 48-9b, the transition from RX_WAKE to RX_QUIET when signal_detect=FAIL could be and endless loop in realitic failure conditions such as link partner driver soft failing where the signal level on the link is sporadic. The problem is caused by the timer being continually reset.

SuggestedRemedy

The suggested remedy is to create a new state that prevents the timer from being reset every time a false wake or refresh is detected.

Create a new state between RX_SLEEP and RX_QUIET.
Call the new state RX_QUIET_INIT (or other suitable name).
The transition criteria from RX_SLEEP to RX_QUIET_INIT will be "signal_detect=fail".
Within RX_QUIET_INIT state include the following action:
"Start rx_tw_timer"
The transition criteria from "RX_QUIET_INIT to "RX_QUIET" is UCT (unconditional transition).
In RX_QUIET state delete Start rx_tq_timer. (This is the key to letting the timer run.)

As a result, regardless of how many transitions occur between RX_QUIET and RX_WAKE or RX_WTF due to sporadic energy, the rx_tq_timer will time out and an fault will be detected.

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.2.5** *P* **135** *L* **7** # 77

Brown, Matt AMCC

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

rx_lpi_fail is not set to any value other than FALSE. Is this a necessary variable?

SuggestedRemedy

In RX_ACTIVE state delete "rx_lpi_fail".
Also, delete rx_lpi_fail definition on page 129.

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.2.5** *P* **135** *L* **8** # 69

Brown, Matt AMCC

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

In Figure 48-9b, need to initialize rx_quiet variable.

SuggestedRemedy

In RX_ACTIVE state add line...
"rx_quiet <= FALSE"

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.2.5** *P* **136** *L* **18** # 76

Brown, Matt AMCC

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

TDA defined in Table 48-10 is no longer used.

SuggestedRemedy

Delete row defining TDA.

Proposed Response *Response Status* **O**

Cl **48** *SC* **48.2.6.2.5** *P* **136** *L* **8** # 75

Brown, Matt AMCC

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

TUL definition in Table 48-9 is incorrect. TUL is used by TX state machine, but current definition sounds like a receiver specification.

SuggestedRemedy

Replace TUL definition with "Local refresh time from signal enable to signal disable."

Proposed Response *Response Status* **O**

Cl **48** *SC* **48-9b** *P* **135** *L* **96** # 15
Pillai, Velu Broadcom

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

IIIDLE needs to be ||IDLE||

SuggestedRemedy

This correction is needed at two places in this state diagram.

Proposed Response *Response Status* **O**

Cl **48** *SC* **Fig 48-9** *P* **132** *L* **23** # 20
Pillai, Velu Broadcom

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

rx_LPI_active = FALSE

SuggestedRemedy

rx_lpi_active = FALSE

Proposed Response *Response Status* **O**

Cl **48** *SC* **Fig 48-9b** *P* **135** *L* **43** # 17
Pillai, Velu Broadcom

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

Arc from RX_WTF to RX_LINK_FAIL should have !rx_wf_timer_done instead of rx_tw_timer_done.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **48** *SC* **Fig 48-9b** *P* **135** *L* **5** # 19
Pillai, Velu Broadcom

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

RX_ACTIVE state should set rx_quiet <= FALSE

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **48** *SC* **Fig48-9b** *P* **135** *L* # 16
Pillai, Velu Broadcom

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

Please flip [A] and [B] to be consistent with Fig 36-9b

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **48** *SC* **Fig48-9b** *P* **135** *L* **10** # 25
Pillai, Velu Broadcom

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

Transition out of RX_ACTIVE back to itself has a condition align_status!= deskew_align_status. But align_status latches deskew_align_status inside RX_ACTIVE. Hence this transition condition is meaning less.

SuggestedRemedy

Instead of the above, please use deskew_align_status = FAIL

Proposed Response *Response Status* **O**

Cl **48** *SC* **Fig48-9b** *P* **135** *L* **45** # 18
Pillai, Velu Broadcom

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

Arc from RX_WTF to RX_ACTIVE should be !||LPIDLE|| instead of ||IDLE||. Any recovery from RX_WTF is not guaranteed to be receiving idle codewords.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **48** *SC* **Table 48-10** *P* **136** *L* **18** # 23
Pillai, Velu Broadcom

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

There is a row for Tda. But there is no debounce state, hence no need for this timer value

SuggestedRemedy

Remove the entire row

Proposed Response *Response Status* **O**

Cl **49** *SC* **48.2.13.2.2** *P* **144** *L* **28** # 78
Brown, Matt AMCC

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

What is an "enumerated variable"?

SuggestedRemedy

Change "enumerated" to "boolean".

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.1.6** *P* **139** *L* **22** # 79
Brown, Matt AMCC

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

Signal from PMA is signal_detect not energy_detect.

SuggestedRemedy

Change energy_detect to signal_detect.

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.2.2** *P* **144** *L* **20** # 85
Brown, Matt AMCC

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

rx_block_lock is not accurate. rx_block_lock is equal to what was block-lock and block_lock depends on receive LPI state.

SuggestedRemedy

Replace rx_block_lock definition with the current block_lock definition:
"Boolean variable that is set true when receiver acquires block delineation."
Re-define block lock as follows:
"Boolean variable is set true when receiver acquires block delineation when receive LPI mode is not active and set based on the LPI receive state machine when receive LPI mode is active."

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.2.2** *P* **144** *L* **20** # 84
Brown, Matt AMCC

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

The energy_detect variable is derived from the message PMA_SIGNAL.indication(signal_detect). Define it as such.

SuggestedRemedy

Replace definition for energy_detect with ...
"A boolean variable that indicates when energy is detected at the receiver. Set to TRUE if PMA_SIGNAL.indication(signal_detect) = OK or FALSE if PMA_SIGNAL.indication(signal_detect) = FAIL."

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.2.2** *P* **144** *L* **32** # 86
Brown, Matt AMCC

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

Clarify rx_quiet definition.

SuggestedRemedy

Change "while in the RX_QUIET state" to "while the reciever is in the RX_QUIET state".

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.2.2** *P* **144** *L* **39** # 89
Brown, Matt AMCC

Comment Type **T** *Comment Status* **X**
Clarify scrambler_reset_enable definition.

SuggestedRemedy
Change "A variable used" to "A boolean variable used".

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.2.2** *P* **144** *L* **39** # 88
Brown, Matt AMCC

Comment Type **T** *Comment Status* **X**
Clarify scrambler_reset definition.

SuggestedRemedy
Change "this variable is used" to "the boolean variable is used".

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.2.2** *P* **144** *L* **40** # 87
Brown, Matt AMCC

Comment Type **T** *Comment Status* **X**
Clarify scrambler_reset definition.

SuggestedRemedy
Change "registers of the scrambler" to "bits of the scrambler delay line".

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.2.3** *P* **141** *L* **43** # 81
Brown, Matt AMCC

Comment Type **T** *Comment Status* **X**
LI is by definition here not a special case of C type, rather its a type on its own.

SuggestedRemedy
Replace "LI type is a special case of the C type where" with "LI type is supported where".

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.2.3** *P* **143** *L* **46** # 82
Brown, Matt AMCC

Comment Type **ER** *Comment Status* **X**
LI is by definition here not a special case of C type, rather its a type on its own.

SuggestedRemedy
Replace "LI type is a special case of the C type where" with "LI type is supported where".

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.2.5** *P* **145** *L* **22** # 28
Pillai, Velu Broadcom

Comment Type **TR** *Comment Status* **X**
During the adhoc/meetings, the decision was to have the wake timer to be for 1ms. But in the draft is point to TWR , which is only 11-12uSec (13-14uSec if FEC is ON). The purpose of this timer is to give the receiver a chance to gracefully recover from a wake time fault.

SuggestedRemedy
Add a row to Table 49-3 for Twtf and assign 1ms. In fact replace the TDA row for this.

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.2.5** *P* **145** *L* **7** # 26
Pillai, Velu Broadcom

Comment Type **ER** *Comment Status* **X**
Rx_deact timer is no longer used

SuggestedRemedy
Remove it

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.2.5** *P* **145** *L* **8** # 90
Brown, Matt AMCC

Comment Type **ER** *Comment Status* **X**
rx_deact_timer is no longer used

SuggestedRemedy
Delete rx_deact_timer and definition.

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.3** *P* **147** *L* **4** # 91
Brown, Matt AMCC

Comment Type **ER** *Comment Status* **X**
Incorrect use of /LI/.

SuggestedRemedy
In RX_LI state replace /LI/ with LI.

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.3.1** *P* **148** *L* **20** # 45
Barrass, Hugh Cisco

Comment Type **T** *Comment Status* **X**
The "loop" transitions for states TX_SLEEP, TX_QUIET and TX_REFRESH are all invalid because they would cause the timers to keep restarting (even if they didn't, they would be redundant since the state machine remains in the state unless an exit is valid.

SuggestedRemedy
Delete the "loop" transitions for states TX_SLEEP, TX_QUIET and TX_REFRESH.

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.3.1** *P* **148** *L* **5** # 92
Brown, Matt AMCC

Comment Type **ER** *Comment Status* **X**
Redundant and out of style to equate variable to Boolean value.

SuggestedRemedy
Change "reset=TRUE" to "reset"

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.3.1** *P* **149** *L* **11** # 98
Brown, Matt AMCC

Comment Type **T** *Comment Status* **X**
In Figure 49.17, in the transition from RX_ACTIVE state to itself the the criteria logic doesn't seem correct.

SuggestedRemedy
Change criteria to the following (changing OR to AND)
"R_TYPE(rx_coded) != LI * align_status != deskew_align_status"

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.3.1** *P* **149** *L* **21** # 97
Brown, Matt AMCC

Comment Type **T** *Comment Status* **X**
rx_lpi_fail is not set to any value other than FALSE and is not defined in this Clause. Is this a necessary variable?

SuggestedRemedy
In RX_ACTIVE state delete "rx_lpi_fail"

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.3.1** *P* **149** *L* **21** # 96

Brown, Matt AMCC

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

Incorrect variable name in transition criteria from RX_ACTIVE to RX_SLEEP in Fig 49-17.

SuggestedRemedy

Change "R_TYPE(rx_raw)" to "R_TYPE(rx_coded)".

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.3.1** *P* **149** *L* **21** # 95

Brown, Matt AMCC

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

Incorrect comparison in Fig 49-17. rx_block_lock is a boolean variable.

SuggestedRemedy

Replace all instances of "rx_block_lock=OK" with "rx_block_lock".

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.3.1** *P* **149** *L* **21** # 94

Brown, Matt AMCC

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

Redundant and out of style to equate variable to Boolean value.

SuggestedRemedy

Replace all instances of "energy_detect=false" with "!energy_detect".
Replace all instances of "energy_detect=true" with "energy_detect".
Replace "reset=TRUE" with "reset".

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.3.1** *P* **149** *L* **21** # 93

Brown, Matt AMCC

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

In Figure 49-17, the transition from RX_WAKE and RX_WTF to RX_QUIET when !energy_detect could be an endless loop in realitic failure conditions such as link partner driver soft failing where the signal level on the link is sporadic or taps at wrong value. The problem is caused by the timer being continually reset.

SuggestedRemedy

The suggested remedy is to create a new state that prevents the timer from being reset every time a false wake or refresh is detected.

Create a new state between RX_SLEEP and RX_QUIET.
Call the new state RX_QUIET_INIT (or other suitable name).
The transition criteria from RX_SLEEP to RX_QUIET_INIT will be "signal_detect=fail".
Within RX_QUIET_INIT state include the following action:
"Start rx_tw_timer"
The transition criteria from "RX_QUIET_INIT to "RX_QUIET" is UCT (unconditional transition).
In RX_QUIET state delete Start rx_tq_timer. (This is the key to letting the timer run.)

As a result, regardless of how many transitions occur between RX_QUIET and RX_WAKE or RX_WTF due to sporadic energy, the rx_tq_timer will time out and a fault will be detected.

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.3.1** *P* **149** *L* **8** # 101

Brown, Matt AMCC

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

In Figure 49-17, need to initialize rx_quiet variable.

SuggestedRemedy

In RX_ACTIVE state add line...
"rx_quiet <= FALSE"

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.3.1** *P* **150** *L* **10** # 44

Barrass, Hugh Cisco

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

It doesn't make sense that the refresh time is longer than the time that the receiver is allowed to recover a wake signal. This also poses problems for the receive LPI state machine.

SuggestedRemedy

Change T(ul) to 11uS

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.3.1** *P* **150** *L* **11** # 99

Brown, Matt AMCC

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

In Table 49-2, redefine TUL as transmitter variable.

SuggestedRemedy

Replace "from Signal_Detect asserted to" to "from start of TX_REFRESH state to start of".

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.13.3.1** *P* **150** *L* **28** # 100

Brown, Matt AMCC

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

In Table 49-3, TDA is no longer required.

SuggestedRemedy

Delete row specifying TDA.

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.4.4** *P* **139** *L* **22** # 83

Brown, Matt AMCC

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

Energy detect is indicated through PMA_SIGNAL.indication(signal_detect).

SuggestedRemedy

Remove energy_detect line and lable from figure.

Proposed Response *Response Status* **O**

Cl **49** *SC* **49.2.4.7** *P* **139** *L* **52** # 80

Brown, Matt AMCC

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

Clarify sentence.

SuggestedRemedy

Replace "idle control code 0x00 is replaced with 0x07" with "low power idle control character /LI/ (0x07) is sent continuously in place of /I/."

Proposed Response *Response Status* **O**

Cl **49** *SC* **Fig 49-16** *P* **148** *L* **19** # 30

Pillai, Velu Broadcom

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

SCR_RESET_2 is a redundant state as the transition out of that state is a UCT to TX_ACTIVE and scrambler_reset variable is set to false in TX_ACTIVE state. The original proposal had this state to assert 1uSec of IDLE codeword after the SCR_RESET_1 state. But that extra time is added to the T_wake Sys time budget. This serves the same purpose. Hence remove this state and rename the previous state from SCR_RESET_1 to SCR_RESET.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **49** *SC* **Fig 49-17** *P* **149** *L* **10** # 36
Pillai, Velu Broadcom

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

Transition out of RX_ACTIVE back to itself has a condition block_lock!= rx_block_lock. But block_lock latches rx_block_lock inside RX_ACTIVE. Hence this transition condition is meaning less.

SuggestedRemedy

Instead of the above, please use rx_block_lock = FAIL

Proposed Response *Response Status* **O**

Cl **49** *SC* **Fig 49-17** *P* **149** *L* **17** # 33
Pillai, Velu Broadcom

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

Transition from RX_SLEEP to RX_ACTIVE needs be R_TYPE(rx_coded) = IDLE and not R_TYPE(rx_coded != LI. When Transmitter deactivates, received codewords may not be LI.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **49** *SC* **Fig49-16** *P* **148** *L* **12** # 29
Pillai, Velu Broadcom

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

The arrow that goes out of TX_ACTIVE for the condition T_TYPE(tx_row) != LI needs to touch the Arc that goes back to TX_ACTIVE

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **49** *SC* **Fig49-17** *P* **149** *L* **27** # 32
Pillai, Velu Broadcom

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

LPI TX state diagram designed only to go through scrambler reset only during WAKE. Hence during refresh the PCS will not detect codewords, if FEC is ON. Which means the receiver will not take the arc from RX_WAKE to RX_QUIET shown in LPI receive state diagram. The refresh time for KR PHY is 17usec and rx_tw_timer timeout is 13-14usec, hence it is guaranteed that rx_tw_timer_done will be asserted during every refresh cycle.

SuggestedRemedy

A state is needed between RX_WAKE and RX_WTF when rx_tw_timer_done is asserted. This new state (RX_REFRESH_WITH_FEC), should set Start rx_wf_timer and the transition out of it needs to be
1. An arc to RX_QUITE for energy_detect = false.
2. And arc to RX_WTF for rx_rwt_timer_done + (R_TYPE(rx_coded != LI * rx_block_lock).

Remove the arc going from RX_WTF to RX_SLEEP and also to RX_QUIET. Remove setting Start rx_wf_timer.

Proposed Response *Response Status* **O**

Cl **49** *SC* **Fig49-17** *P* **149** *L* **7** # 31
Pillai, Velu Broadcom

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

RX_ACTIVE state should set rx_quiet <= FALSE

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **49** *SC* **Figure-49-15** *P* **147** *L* # 34
Pillai, Velu Broadcom

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

Rx PCS state machine resets to INIT state when rx_block_lock is lost. This can happen during Rx LPI state machine transitions into RX_QUIET state.

SuggestedRemedy

RX PCS should reset to INIT state only when (reset + r_test_mode + hi_ber + !block_lock This solution also handles the rx link fail state, where block lock is set to false.

Proposed Response *Response Status* **O**

Cl **49** *SC* **Table 49-2** *P* **150** *L* **12** # 35

Pillai, Velu Broadcom

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

Value of Twl is 17 us. This was the orginal value, before the proposel to use scrambler reset to handle FEC. And this value is also more than the total T wake sys.

SuggestedRemedy

Reduce this value to 12usec.

Proposed Response *Response Status* **O**

Cl **49** *SC* **Table 49-3** *P* **150** *L* **28** # 27

Pillai, Velu Broadcom

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

There is a row for Tda. But there is no debounce state, hence no need for this timer value

SuggestedRemedy

Remove the entire row

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.2.2** *P* **163** *L* **23** # 116

McClellan, Brett Solarflare

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

Both Clause 55 and Clause 49 share a common block encoder (64B/65B and 64B/66B). However the changes made for /LI/ are different between Clause 49 and 55. The control code for Clause 49 is 0x07 while the control code for Clause 55 ix 0x06. These clauses should maintain commonality as much as possible

SuggestedRemedy

Change the control code for /LI/ in Clause 55 to 0x07. Also make the associated changes to R_BLOCK_TYPE LI and T_BLOCK_TYPE LI.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.2.4** *P* **171** *L* **3** # 117

McClellan, Brett Solarflare

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

A new T_BLOCK_TYPE and R_BLOCK_TYPE of LI has been introduced for use in Figure 55-15a and Figure 55-16a. However the control code listed as 0x07 is incorrect. The control code for an idle control character in the 64B/65B encoder is 0x00.

SuggestedRemedy

Change the control code for LI from 0x07 to 0x00 on lines 3 and 32 on page 171.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.4** *P* **174** *L* **17** # 115

McClellan, Brett Solarflare

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

The creation of the T_BLOCK_TYPE I and separation of type I from type C when low power idle is supported has broken the transmit state diagram in Figure 55-15. Transitions that only call out C will not be taken when an I block is to be transmitted. For example from state TX_C there is no transition for a type I.

SuggestedRemedy

Change state machine transitions that originally included only C to include both C and I.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.4** *P* **176** *L* **17** # 118

McClellan, Brett Solarflare

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

The creation of the R_BLOCK_TYPE I and separation of type I from type C when low power idle is supported has broken the receive state diagram in Figure 55-16. Transitions that only call out C will not be taken when an I block is to be transmitted. For example from state RX_C there is no transition for a type I.

SuggestedRemedy

Change state machine transitions that originally included only C to include both C and I.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.5** *P* **209** *L* **9** # 102
Brown, Matt AMCC

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

Clarification of Tx target level. No need to specify "maximum" value. Also, the values are trained not negotiated.

SuggestedRemedy

Replace "greater than 90% of the negotiated maximum value" with "greater than 90% of the trained peak-to-peak value".

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.1** *P* **211** *L* **16** # 103
Brown, Matt AMCC

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

In table 72-6, fix deact time description.

SuggestedRemedy

Change description to "Transmitter deactivation time (TTD) from active to LPI quiet.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.1** *P* **211** *L* **18** # 104
Brown, Matt AMCC

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

In table 72-6, fix act. time description.

SuggestedRemedy

Change description to "Transmitter activation time (TTA) from LPI quiet to active.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.1** *P* **212** *L* **15** # 105
Brown, Matt AMCC

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

In Table 72.9, fix deact. time description.

SuggestedRemedy

Change description to "Signal detect deactivation time (TSD) from active to LPI quiet.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.1** *P* **212** *L* **18** # 106
Brown, Matt AMCC

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

In Table 72.9, fix act. time description.

SuggestedRemedy

Change description to "Signal detect activation time (TSA) from LPI quiet to active.

Proposed Response *Response Status* **O**

Cl **73A** *SC* *P* **250** *L* **32** # 37
Pillai, Velu Broadcom

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

The wording is not representative of the number of pages needed nor does it provide enough information for implementation. Suggested fix is similar to existing wording for other next pages defined in the existing annex.

SuggestedRemedy

Change wording from
"Multiple clauses use next page message code 10 to indicate that EEE technology will follow the transmission of this page [the initial, Message (formatted) next page] with at least one unformatted next pages that contain information defined in 45.2.7.13a."
to
"Multiple clauses use next page message code 10 as an identifier for EEE technology. The EEE technology code message shall consist of only a Message next page. The message code field, 000 0000 1010 shall be contained in bits 10:0 and 45.2.7.13.6:0 shall be contained in bits 22:16. The remaining field bits, 47:23 shall be sent as zero and ignored on receipt."

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.1.2** *P* **228** *L* **47** # 1

Fuller, John Lawrence Berkeley Na

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

LPI Client will need additional interfaces to control the Layer 2 LLDP negotiation of Transmit Tw and Receive Tw. There are cases within 802.1 AVB standards where LPI is desired but only if the negotiated transmit wait time is held to some maximum that may or may not be less than what the Ethernet implementation could otherwise support (when AVB streams are active on the link). Other upper layer technologies may have similar constraints that will be known to the LPI Client.

SuggestedRemedy

Add following primitives:

LP_MAX_TX_WAIT.request(time)
time in usec, 0 means no restriction imposed by LPI Client

LP_MAX_RX_Wait.request(time)
time in usec, 0 means no restriction imposed by LPI Client

LP_TX_WAIT.indication(time)
time is negotiated transmit wait time in usec

LP_RX_WAIT.indication(time)
time is negotiated receive wait time in usec

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.1.2.1.2** *P* **229** *L* **17** # 112

Grimwood, Michael Broadcom

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

A one second timer for LP_IDLE.request assertion was applied in Clause 22 for MII but not globally to all PHYs.

SuggestedRemedy

LPI_IDLE.request shall not be set to ASSERT unless the attached link is operational (i.e. link_status = OK, see 28.2.6.1.1). LP_IDLE.request shall remain to be set to DEASSERT for 1 second following link_status changing state to OK.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **78** *SC* **78.4.2.5** *P* **238** *L* **21** # 5

Dietz, Bryan Alcatel-Lucent

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

Suggestion to simplify language and eliminate "set of link partners".

SuggestedRemedy

The transmitting side controls the data placed on the medium connecting the transmit and receive link partners and enforces Tw_sys. The transmitting link partner shall wait for the time indicated by the Transmit Tw_sys after deasserting Low Power Idle at the xxMII before sending data frames.

The receiving link partner shall be ready to accept data based on (its echoed value of the) Transmit link partner's Tw_sys. This ensures that the link partners transition out of LPI mode and receive frames without loss or corruption.

Proposed Response *Response Status* **O**

Cl **99** *SC* *P* **1** *L* **30** # 119

Thompson, Geoff Nortel

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

The description on the front page is only a project description, not a draft description

SuggestedRemedy

Please expand the description to include where the draft was in the process and a result of what meeting. This sort of information has turned out to be tremendously helpful when it is necessary to go back and pull out old drafts. A macro textual description of what changes went into the particular draft is also very helpful.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Description will be expanded to include where the draft was in the process and the result of what meeting.

A macro textual description of what changes went into the particular draft may be too long to put into the abstract in general though this will be done if there are a few very significant changes.