Cl **00** *SC* **0** *P* **1** *L* **1** # 10174

Frazier, Howard Broadcom Corporation

Comment Type **TR** *Comment Status* **A** *doc-structure*

This is a general comment regarding the structure of the draft amendment.

As an amendment to IEEE Std 802.3, the material in this draft will eventually be folded into the base standard. When this happens, the definitions for the 100BASE-X and 1000BASE-X Physical Coding Sublayers will be substantially
changed, and the changes will be difficult to discern. The definitions for the MII and GMII will also be substantially changed.

The 100BASE-X and 1000BASE-X PCSs are used for many other port types besides 100BASE-TX and 1000BASE-KX. Among these are 100BASE-FX, 100BASE-LX10, 100BASE-BX10, 1000BASE-SX, 1000BASE-LX, 1000BASE-CX, 1000BASE-LX10, 1000BASE-BX10, 1000BASE-PX10, 1000BASE-PX20, 10G/1GBASE-PRX-D/U1, 10G/1GBASE-PRX-D/U2, and 10G/1GBASE-PRX-D/U3.

These port types are not included in the set of objectives for P802.3az, and the specifications for the PCS and MII for these port types must not be changed or effected in any way by P802.3az. Each of these port types must have a current IEEE Std 802.3 PCS and MII to reference.

SuggestedRemedy

There are many ways to solve this problem. I prefer the following approach:

1. Preserve the definitions for the MII, GMII, 100BASE-X PCS, and 1000BASE-X PCS without change.

2. Define the changes required to support EEE in a set of normative annexes, i.e. Annex 24A for Clause 24, and Annex 25A for Clause 25, etc. Example text for Annex 24A and Annex 25A have been provided by me to the task force chair.

3. Refer to these normative annexes from the body of Clause 78.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to Comment #410

Cl **00** *SC* **0** *P* **1** *L* **1** # 10509

Booth, Brad AppliedMicro

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

In reading through the draft, I've noticed statements such as:

While RX_DV is de-asserted, the PHY may indicate that it is receiving low power idle by asserting the RX_ER signal while driving the value <01> onto RXD<7:0>.

May also implies may not. This method appears to be used multiple times throughout the draft to avoid the addition of PICS requirements associated with LPI. In the case of the statement above, the only way to indicate LPI across the GMII is to de-assert RX_DV, assert RX_ER and drive 0x01 onto RXD. The statement should be such to indicate a PHY with LPI capabilities shall use that signalling to indicate LPI detection across the GMII. And there should be a PICS entry for it.

SuggestedRemedy

This draft should be scrubbed to make sure that behaviors that differ between LPI and non-LPI have appropriate shall statements and PICS entries with an LPI capability associated with them. Otherwise, conformance testing this will be open to interpretation and confusion.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

This comment was not considered by the BRC and the above response is a proposed response.

This comment will be re-submitted for consideration at the Nov plenary along with all other comments received on D2.1.

Cl **00** *SC* **0** *P* **1** *L* **25** # 10190

ghiasi, ali Broadcom

Comment Type **TR** *Comment Status* **A** *doc-structure*

EEE is modifying some of the earlier 802.3 clauses adding optional EEE/LPI support, some of the state diagram are getting too complicated to know what is required and what is added for EEE

SuggestedRemedy

Propose to duplicate the state diagram in earlier clauses instead of changing them so it is clear what is optional EEE

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See response to comment #410

Cl **00** *SC* **0** *P* **27** *L* **50** # 10196

Grow, Robert Intel

Comment Type **ER** *Comment Status* **A** *editing instructions*

The style manual 21.2.1 isn't followed for numbering inserts, where for example, 22.2.2.6A would follow 22.2.2.6, it doesn't precede it and the draft insert instructions do not indicate a convention other than that of the style manual.

SuggestedRemedy

Don't insert a TX subclause in the middle of receive subclauses. If the style manual convention is being used, what is currently 22.2.2.6a should be 22.2.2.5A. If not following the style manual all change instructions need to be clear about the insertion point. Fix all inserts consistently.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Use explicit insert instructions. When the base text is from an approved amendment indicate the amendment in parenthesis.

Use lowercase alphabetic indication for a new subclause, table or figure to avoid disrupting the numbering of subsequent amendments.

When inserting a new subclause at a level it is x.x.0a

Coordinate numbering with 802.3ba. WG chair will help resolve any issues that arise from the coordination.

Cl **00** *SC* **0** *P* **4** *L* **13** # 28

Hajduczenia, Marek ZTE Corporation

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

IEEE Std 802.3av-2009 was approved, which means that the TM should be used as well.

SuggestedRemedy

Change "IEEE Std 802.3av-2009" to "IEEE Std 802.3avTM-2009". Scrub the text for any other missing "TM" marks.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **01** *SC* **1.4** *P* **14** *L* **28** # 1

Anslow, Peter Nortel Networks

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

There should be a space between a number and its unit. This should be a non-breaking space (ctrl space) to avoid the unit appearing on a different line from the number.

SuggestedRemedy

change "10Mb/s" to "10 Mb/s"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Also make the same change in any other places where the same error occurs.

Cl **14** *SC* **14.1.1** *P* **15** *L* **36** # 196

Chadha, Mandeep Vitesse Semiconducto

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

Figure 14-1 is unchanged from the base text

SuggestedRemedy

Delete figure 14-1

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **14** *SC* **14.1.1** *P* **15** *L* **36** # 171

Kasturia, Sanjay Teranetics

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

Delete Figure 1 as it is unchanged from the base text

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Duplicate of comment #196

Cl **14** *SC* **14.1.1** *P* **16** *L* **21** # 10511

Booth, Brad AppliedMicro

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

The note is a bit confusing. It appears to be talking about implementation strategies rather than conformance issues. The critical issue the note needs to call to attention is conformance and interoperability.

SuggestedRemedy

Change note to read:
NOTE - A 10BASE-Te PHY may not support operation with a 10BASE-T PHY unless the minimum cabling requirements for 10BASE-Te are met.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

This comment was not considered by the BRC and the above response is a proposed response.

This comment will be re-submitted for consideration at the Nov plenary along with all other comments received on D2.1.

The note was changed to clarify that support for 10BASE-T and 10BASE-Te in a single device is not expected. Interoperability between 10BASE-T and 10BASE-Te is addressed in 14.1.1.1 (i).

Cl **14** *SC* **14.1.1.1** *P* **17** *L* **15** # 10512

Booth, Brad AppliedMicro

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

TIA/EIA-568-A is obsolete and has been superceded by 568-B. From my understanding, unlike ISO/IEC, TIA Category 5 is unchanged between 568-A and 568-B.

SuggestedRemedy

Update reference to 568-B.

Update throughout Clause 14.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

This comment was not considered by the BRC and the above response is a proposed response.

The change will not be made in D2.1

This comment will be re-submitted for consideration at the Nov plenary along with all other comments received on D2.1.

Update references on
1) page 16, line 40
2) page 21, line 53
3) page 222, line 23 (clause 78)

Cl **14** *SC* **14.10.3** *P* **24** *L* **13** # 31

Hajduczenia, Marek ZTE Corporation

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

I think the purpose of this PICS item is to identify the MAU type included in the given PHY. Wouldn't it make more sense to have a separate row / entry for 10BASE-T and 10BASE-Te, so that someone reading this PICS can identify without any doubts immediately what type of MAU is used?

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Split PICS item into two separate lines, one for 10BASE-T and the second for 10BASE-Te

Cl **14** *SC* **14.10.4.5.12** *P* **24** *L* **28** # 3

Anslow, Peter Nortel Networks

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

TS2 is an added row so the subclause number and Req should also be in underline font.

Also applies to LS5 in 14.10.7.4.1

SuggestedRemedy

Show "14.3.1.2.1" and "C" in underline font
Show "LS5 row in underline font

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Also modify the editing instruction by changing the "insert" to a "change" as an insert does not require underlining.

Cl **14** *SC* **14.3.1.2.1** *P* **19** *L* **20** # 172

Kasturia, Sanjay Teranetics

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

Delete Figure 14-9 as it is unchanged from the base text. Also delelte Table 14-1 if it is unchanged from base text. Remove associated base text if it is unchanged.

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Duplicate of comment #198

Cl **14** *SC* **14.3.1.2.1** *P* **19** *L* **20** # 198

Chadha, Mandeep Vitesse Semiconducto

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

Figure 14-9 is unchanged from the base text

SuggestedRemedy

Delete figure 14-9

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **14** *SC* **14.3.1.2.1** *P* **19** *L* **36** # 199

Chadha, Mandeep Vitesse Semiconducto

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

Table 14-1 is unchanged from the base text

SuggestedRemedy

Delete table 14-1

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **14** *SC* **14.3.1.2.1** *P* **19** *L* **9** # 197

Chadha, Mandeep Vitesse Semiconducto

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

Figure 14-8 is unchanged from the base text.

SuggestedRemedy

Delete figure 14-8

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **14** *SC* **14.3.1.2.1** *P* **20** *L* **1** # 29

Hajduczenia, Marek ZTE Corporation

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

Title "Table 14-1-Voltage template values for Figure 14-9 (continued)<Default ¬¹ Font>" contains some garbage. Remove "<Default ¬¹ Font>"???

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Duplicate of comment #2

Cl **14** *SC* **14.3.1.2.1** *P* **20** *L* **1** # 2

Anslow, Peter Nortel Networks

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

Spurious "<Default-1 Font>" appears in title

SuggestedRemedy

remove "<Default-1 Font>"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Delete table per comment #199

Cl **14** *SC* **14.4** *P* **21** *L* **10** # 200

Chadha, Mandeep Vitesse Semiconducto

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

Figure 14-10 is unchanged from the base text

SuggestedRemedy

Delete figure 14-10

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **14** *SC* **14.4** *P* **21** *L* **11** # 173

Kasturia, Sanjay Teranetics

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

Page 21 line 11 Delete Fig 14-10 if unchanged from base text
Page 21, line 28 - Delete Fig 14-11 if unchanged from base text
Also delete associated text if unchanged from base text.

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Duplicate of comments #200 and #201

Cl **14** *SC* **14.4** *P* **21** *L* **28** # 201

Chadha, Mandeep Vitesse Semiconducto

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

Figure 14-11 is unchanged from the base text

SuggestedRemedy

Delete figure 14-11

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **14** *SC* **14.4.1** *P* **22** *L* **13** # 202

Chadha, Mandeep Vitesse Semiconducto

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

Figure 14-12 is unchanged from base text

SuggestedRemedy

Delete figure 14-12

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **14** *SC* **14.4.1** *P* **22** *L* **20** # 174

Kasturia, Sanjay Teranetics

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

Delete Fig 14-12 if unchanged from base text

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Duplicate of comment #202

Cl **14** *SC* **14.4.1** *P* **22** *L* **43** # 10457

Thompson, Geoff GraCaSI

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

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?
Further, the text in 14.4.1 is not correct in the current market and proposed context.. The word "Since is inappropriate. That is, it is no longer the case that we believe that "a significant number of 10BASE-T networks are expected to be installed utilizing in-place unshielded telephone wiring" rather, the market has evolved to the extent that most telephones and networks (especially autonegotiating multi-speed adapters) are expected to utilize Category 5 or better cabling.

SuggestedRemedy

Rewrite the introductory paragraph to better reflect both the current market AND still make provision for the historical context that made use of "left-over" telephone wiring. Also, 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.

Response *Response Status* **U**

REJECT.

Interoperability between 10BASE-T and 10BASE-Te is addressed in 14.1.1.1 (i).

The first paragraph in 14.4.1 is text from the original standard and was not future-proof when originally written. It is not the objective of this task force to correct such text.

There changes to 14 based on resolution of comment #356

Cl **14** *SC* **14.4.1** *P* **22** *L* **48** # 10458

Thompson, Geoff GraCaSI

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

This new text is in the wrong place. It is not "overview" text. (I do recognize that it was "stuck" here in order to avoid the sticky issue of restructuring and renumbering sub-clauses.)

SuggestedRemedy

Move to within the context of 14.4.2. I recognize that there may be restructuring necessary in order for this to end up as a clean, well-structured clause.

Response *Response Status* **U**

REJECT.

The text is consistent with the rest of the overview clause. Also, the text was revised based on resolution of comment #356 on D2.0.

Cl **14** *SC* **14.5.2** *P* *L* # 10460

Thompson, Geoff GraCaSI

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

14.5.2 mandates that any port that offers MDI-X connectivity shall be marked with an "X". That mandate makes no allowance for current technology in which many PHY implementations are not of a fixed configuration with respect to the cross-over function. I expect many implementations of 10BASE-Te to have automatic MDI-X correction.

SuggestedRemedy

Revise text so that the X labeling requirement only applies to ports with fixed MDI/MDI-X configuration. It would be nice if we could all agree on a single character width symbol for auto-correction.

Response *Response Status* **U**

REJECT.

This comment requests a change to the base standard that is not impacted by the changes made for 10BASE-Te.

It should be submitted as a maintenance request to the base standard.

Cl **14** *SC* **14.8** *P* **22** *L* **53** # 4

Anslow, Peter Nortel Networks

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

items c) and d) from thje base standard have been modified but no changes are shown

SuggestedRemedy

show changes to items c) and d) with underline and strikethrough font as appropriate.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **14** *SC* **14.8** *P* **23** *L* **1** # 30

Hajduczenia, Marek ZTE Corporation

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

"Which of the two specifications is implemented, i.e.' 10BASE-T or 10BASE-Te (not both)."

SuggestedRemedy

change "i.e.' 10BASE-T or 10BASE-Te (not both)." to ".e.' either 10BASE-T or 10BASE-Te."

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The language was changed in D2.1 to the current text based on a comment on D2.0 and was approved in its current form by the BRC.

Cl **22** *SC* **22.2.1** *P* **25** *L* **9** # 10516

Booth, Brad AppliedMicro

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

Inconsistent use of the term low power idle. For example, in 22.2.1 it is all in lower case. In 22.7a, it is Low Power Idle.

SuggestedRemedy

Scrub the draft to use low power idle in a consistent manner.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

This comment was against D2.0 - it should be resolved by responses to D2.0 comment # 260

Cl **22** *SC* **22.2.1** *P* **25** *L* **9** # 32

Hajduczenia, Marek ZTE Corporation

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

"The mapping is changed if EEE capability is supported, this is described in 22.7a." - suggest to reword to read "The mapping is changed if EEE capability is supported, as described in 22.7a."

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **22** *SC* **22.2.1.3.3** *P* **26** *L* **40** # 33

Hajduczenia, Marek ZTE Corporation

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

"diagram (see fig 22-21). The signal" should read "diagram (see Figure 22-21). The signal" Marek sure that the link is live

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

But make sure "Marek" is not in the draft!

Cl **22** *SC* **22.2.2.2** *P* **27** *L* **3** # 34

Hajduczenia, Marek ZTE Corporation

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

"when Clock stop enable is asserted" - should read "when the Clock stop enable bit is asserted"

SuggestedRemedy

per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **22** *SC* **22.2.2.4** *P* **27** *L* **42** # 10195

Grow, Robert Intel

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

Awkard and possibly misleading text.

SuggestedRemedy

The PHY shall interpret the combination of TX_EN deasserted, TX_ER asserted and TXD<3:0> equal to 0001 shown in Table 22-1 as a request to enter, or remain in low power idle. Other values of TXD<3:0> with this combinition of TX_EN and TX_ER shall have no effect upon the PHY.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Also change in the same style as suggested by comment #479

"For EEE capability, the RS shall use the combination of TX_EN deasserted, TX_ER asserted and TXD<3:0> equal to 0001 shown in Table 22-1 as a request to enter, or remain in low power idle. Other values of TXD<3:0> with this combinition of TX_EN and TX_ER shall have no effect upon the PHY."

Cl **22** *SC* **22.2.2.6a** *P* **28** *L* **46** # 10167

Frazier, Howard Broadcom Corporation

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

What do the little triangles in Figure 22-6a represent? The figure presents what appears to be a timing diagram that shows the relationship between various logical signals. How does an abstract service primitive fit into a logical timing diagram, and what does a triangle indicate?

SuggestedRemedy

Remove the abstract service primitive from the timing diagram, and then implement the Suggested Remedy in my general comment concerning the structure of the draft amendment.

Response *Response Status* **U**

REJECT.

The diagram is based on the proposal "law_01_1108" that was adopted as the baseline for this section.

The representation of PLS_CARRIER.indication adds clarity to the diagram without any ambiguity.

This diagram would be present regardless of the document structure chosen.

Cl **22** *SC* **22.2.2.7** *P* **28** *L* **30** # 35

Hajduczenia, Marek ZTE Corporation

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

"For EEE capability, the PHY indicates that it is receiving low power idle by asserting" > I thought all occurences of "low power idle" were to be replaced with "LPI" which is already defined in the inital section of this draft?

SuggestedRemedy

Per comment.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **22** *SC* **22.7a** *P* **30** *L* **5** # 36

Hajduczenia, Marek ZTE Corporation

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

(1) "and to the link partner that a break in the data stream is expected" - break has usually negative connotation. Use "interruption" or something in the lines.
(2) Missing space in line 8, page 30 in "specified only for 100<<HERE SHOULD BE A SPACE>>Mb/s operation"
(3) text under Figure 22-20a is strangely indented - fix it please.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **22** *SC* **22.7a** *P* **30** *L* **8** # 5

Anslow, Peter Nortel Networks

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

There should be a space between a number and its unit. This should be a non-breaking space (ctrl space) to avoid the unit appearing on a different line from the number.

SuggestedRemedy

change "100Mb/s" to "100 Mb/s"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **22** *SC* **22.7a.1** *P* **31** *L* **2** # 37

Hajduczenia, Marek ZTE Corporation

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

What is "The LPI_REQUEST parameter" ? Do you mean "The LP_IDLE.request parameter" ?? Please clarify.
The same in line 5, page 31.
Figure 22-21 seems to indicate that LP_IDLE.request is meant here

Similar comment applies to clause 46.4a.1.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The primitives should be written:

LP_IDLE.request(LPI_REQUEST)
LP_IDLE.indication(LPI_INDICATION)

Where LPI_REQUEST and LPI_INDICATION are the parameters passed by the primitives.

Fix the text in 2 locations appropriately.

Cl **22** *SC* **22.7a.2.2** *P* **31** *L* **26** # 38

Hajduczenia, Marek ZTE Corporation

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

"Condition that is true until such time as the power supply for the device that contains the RS has reached the operating region." - what is this "operating region" ? Do you mean "operating condition" ?

SuggestedRemedy

Please clarify per comment

Proposed Response *Response Status* **W**

PROPOSED REJECT.

This wording matches the definition used in Clause 46 (in 802.3-2008).

Cl **22** *SC* **22.7a.2.3** *P* **32** *L* **15** # 10165

Frazier, Howard Broadcom Corporation

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

A state diagram in the MII clause. Wow. Why can't the PHY assert/deassert the CRS signal to indicate when the transmit path is in LPI?

SuggestedRemedy

Take out the state diagram. The 100BASE-TX PHY with LPI should be responsible for asserting and deasserting CRS, and then implement the Suggested Remedy in my general comment concerning the structure of the draft amendment.

Response *Response Status* **U**

REJECT.

In favor of accepting the proposed reject:
Yes: 15
No: 0
Abstain: 7

The state machine in the Reconcilliation Sublayer was the cornerstone of the baseline (law_01_1108) that was adopted by the Task Force.

It was considered advantageous to have the control of the PLS_CARRIER.indication in the RS for a number of reasons:

1. It keeps the PHY receive and transmit paths separate (the PHY considers CRS to be part of the receive path).

2. It allows the PHY to go to sleep without having to maintain state & control the wake process.

3. It keeps the "data holdback" function close to the MAC and egress buffers, where it would be implemented in most designs.

4. It frees the PHY from having to participate in the wake time negotiation process (that is controled using LLDP frames).

5. It works for PHYs that operate at speeds greater than 1Gbps, so the same mechanism can be used for all speeds.

The state diagram would be present (or deleted according to the comment) whether the proposed changes to the document are accepted or not.

Cl **24** *SC* **24.1.1** *P* **34** *L* **10** # 10462

Thompson, Geoff GraCaSI

Comment Type **TR** *Comment Status* **A** *230*

There is mention of an "LPI agent" in this clause as the active element that causes the 100BASE-X PHY to go back and forth between LPI and normal operation. I find it strange that (a) there is no definition or specification of an LPI agent nor even any mention of it anywhere else in the draft, not even in the other clauses where one would expect a parallel use of such an agent to cause the same sort of switch for the other LPI PHYs (except 10BASE-Te)

SuggestedRemedy

Fully define and specify the operation and service interfaces for the activating function for LPI (be it an "LPI agent" or other mechanism). Further, have that mechanism act on each of the LPI PHYs in a manner that is architecturally consistent across the entire standard.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

(need help to respond)

Cl **24** *SC* **24.2.2.1** *P* **38** *L* **30** # 175

Kasturia, Sanjay Teranetics

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

Many of the rows are unchanged from base text. Delete most of these. Leave some if necessary to specify the insertion point/location of changes

SuggestedRemedy

per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **24** *SC* **24.2.2.5** *P* **39** *L* **20** # 98

CHOU, JOSEPH REALTEK SEMICOND

Comment Type **TR** *Comment Status* **D** *144*

There is a *LPC capability that is defined in the PICS list without the associated "shall" statement in the draft text.

SuggestedRemedy

Inserted the following statement at the end of this paragraph:

24.2.2.5 is required only for the EEE capability. If implemented, the operation of the PCS shall comply with the requirements in this subclause.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Please see the respons to comment #144.

The suggested statement is part of the text responded to the comment #144.

Cl **24** *SC* **24.2.2.5** *P* **39** *L* **20** # 144

Healey, Adam LSI Corporation

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

There are multiple issues with this subclause:

1. There are multiple references to an "LPI command". No such construct is defined in the draft. "Assert LPI" is signaled across the MII.

2. Item b) defining the Quiet state makes reference to a "Refresh" state which appears nowhere in the state diagrams in this clause.

3. Table 24-2 defines a wake time Tw which has no relation to the actual PHY wake time as described by the state diagrams in this clause. The 30 us time is the minimum transmit deferral time defined in Table 78-4 while 36 us is an arbitrary upper bound on the time to assert that a wake error occurred.

4. In item c) it is further implied that the PHY wake time is a negotiated parameter, which is not the case. It is the system wake time that is negotiated.

In general, this subclause seems to be a rehash of the system-level view of EEE already provided in Clause 78. It seems this subclause should define operation of EEE as it specifically applies to 100BASE-TX or could be deleted altogether in deference to the functional description of the capability that follows in Clause 24 and the material in Clause 78.

SuggestedRemedy

Correct the discrepancies or delete this subclause.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The response to this comment may be affected by the comment #102 since the wake time could be modified.

Rewrite the entire subclause 24.2.2.5 to emphasize on the EEE operation of 100BASE-TX as shown below:

24.2.2.5 EEE Capability

The 100BASE TX PCS enters the LPI mode upon receiving Assert LPI from MII (Table 22-1) and stays in the LPI mode until the Assert LPI is removed. In the LPI mode, the PCS generates several intermediate line states with timing parameters and signals as shown in Table 24-2. This subclause is an overview of the EEE function. If the EEE capability is implemented, the operation of the 100BASE TX PCS shall comply with the requirements in this subclause.

Table 24-2 Timing Parameters and Signals

Line State	Parameter Symbol	Parameter value (Transmitter)	Parameter value (Receiver)
Signal			
Sleep	Ts	200 us - 220 us	240 us - 260 us
SLEEP: 4B/5B code-group /P/			
Quiet	Tq	20 ms - 22 ms	24 ms - 26 ms
Ceased transmission on medium			
Wake	Tw	Minimum 20.5us	Maximum 20.5us
IDLE: 4B/5B code-group /I/			

The transmitter starts the LPI mode by sending a series of SLEEP code-groups for a duration denoted by Ts and then goes into the Sleep state. Following the Sleep state, the transmitter PCS sends a control signal to PMD through PMA to indicate the start of the Quiet state. Upon receiving the control signal, the PMD ceases the transmission by turning the output to a low power steady level (DC zero volt). The refresh function, which is used to maintain some internal parameters of the receiver of the remote link partner, such as those necessary for timing recovery and signal equalization, is accomplished by re-entering the Sleep state periodically from the Quiet state. The Quiet state is therefore not allowed to last longer than Tq before a Wake state or a Sleep state appears. At the end of the LPI mode, the stream is terminated by transmitting consecutive IDLE code-groups for duration Tw.

When the receiver of the link partner successfully receives and interprets the SLEEP code-groups, it enters the LPI mode. The receiver then sends Assert LPI across the MII (Table 22-2) to notify the upper layer of a change in mode of operation. When the receiver detects a Quiet state in the medium, it stops the receiver function and waits for reactivation. The reactivation is triggered by the wakeup process of PMD triggered by the incoming signal. If the receiver PCS interprets the signal as an IDLE signal it returns to the normal mode and stops sending the Assert LPI on MII. If the receiver PCS interprets the signal as an SLEEP signal it reenters the Sleep state to serve the refresh function. A continuous indication of signal detection on the channel through signal_status as communicated by the PMD_SIGNAL.indicate primitive controls the transitions among those receive states in the LPI mode as depicted in Figure 24-11b.

The timing parameter for each line state is specified in Table 24-2. The transmitter timing parameters control the sending of the signal while the receiver timing parameters set the watchdog timers to check the time-out condition of such a signal. Therefore, except for the wake time, the parameter value of the receiver is greater than that of the transmitter. In the case of wake time, the wake signal can be no shorter than the defined parameter value to ensure adequate time for the link partner to recover from the quiet state. The receiver uses this parameter to set the maximum recovery time by which its receiver function is fully operational. If the receiver is not fully operational, a wake error event is logged.

Cl **24** *SC* **24.2.2.5** *P* **39** *L* **21** # 40

Hajduczenia, Marek ZTE Corporation

Comment Type **TR** *Comment Status* **D** *144*

"Upon receiving the LPI command," in previous clauses, you speak of LPI assert / deassert very clearly, which is fine since it identifies what happens with signals. Here you start using LPI command, which is unclear as to what it carries and how signal assertion / deassertion is mapped into it.
Please clarify what an LPI command is, how it maps into specific LPI assert / deassert signals

SuggestedRemedy

Per comment.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Please see the response to comment #144.

Cl **24** *SC* **24.2.2.5** *P* **39** *L* **21** # 39

Hajduczenia, Marek ZTE Corporation

Comment Type **T** *Comment Status* **D** *144*

"PCS returns to the normal state when it detects the termination of an LPI command." - so it exits the LPI mode when it detects that the LPI asset is no longer active or when it detects that the LPI deassert was activated? In the latter case, the text should read "PCS returns to the normal state when it detects an LPI termination command."

SuggestedRemedy

Clarify please.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Please see the response to comment #144.

Cl **24** *SC* **24.2.2.5** *P* **39** *L* **32** # 6

Anslow, Peter Nortel Networks

Comment Type **E** *Comment Status* **D** *144*

The base standard uses "4B/5B" not "4b5b"

SuggestedRemedy

In Table 24-2 Change "4b5b" to "4B/5B" in two places

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Please see the response to comment #144.

Cl **24** *SC* **24.2.2.5** *P* **39** *L* **45** # 41

Hajduczenia, Marek ZTE Corporation

Comment Type **E** *Comment Status* **D** *144*

(1) "Tq before a Refresh or Wake state appears" - a state does not appear, it occurs.
(2) line 47, same page: "transmitted for default or negotiated amount of time denoted by Tw" > "transmitted for <<a>> default or negotiated amount of time denoted by Tw"
(3) line 51, same page: "to notify the upper layer the change of operation mode" > "to notify the upper layer <<about/on>> the change of operation mode"

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Please see the response to comment #144.

Cl **24** *SC* **24.2.2.5** *P* **39** *L* **50** # 42

Hajduczenia, Marek ZTE Corporation

Comment Type **T** *Comment Status* **D** *144*

"Upon successfully receiving SLEEP code-groups, the 100BASE-X PCS enters the LPI mode" - my idea was that only 100BASE-TX supports (page 34, point g) LPI. So why refer to generic 100BASE-X PCS type?

SuggestedRemedy

Clarify per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Please see the respons to comment #144.

The 100BASE-X is changed to 100BASE-TX.

Cl **24** *SC* **24.2.2.5** *P* **40** *L* **3** # 43

Hajduczenia, Marek ZTE Corporation

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

(1) "as depicted in Figure 24-11b" - link is not live
(2) line 11: "The following constants are required only for the optional EEE capability" > "The following constants are required to support the optional EEE capability. Similar changes in line 29, page 40 and line 17, page 41.
(3) line 13: "The SLEEP code-group (/P/) used for LPI state delineator, as specified in 24.2.2.1" > "The SLEEP code-group (/P/) used <<by the>> LPI state delineator, as specified in 24.2.2.1"

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

For item (2), do we need to change all instances of "required only for" to ""required to support" throughout the draft?

Cl **24** *SC* **24.2.3.1** *P* **40** *L* **16** # 44

Hajduczenia, Marek ZTE Corporation

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

The "0001" is a binary, hex or any other representation ? This is unclear in here, given that it is not clear what the variable is (TX_LP_IDLE, RX_LP_IDLE)

SuggestedRemedy

Please clarify per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change the "value 0001" to the "binary value 0001" in the following two places:

P.40, L.16
P.40, L.21

Cl **24** *SC* **24.2.3.4** *P* **41** *L* **23** # 45

Hajduczenia, Marek ZTE Corporation

Comment Type **TR** *Comment Status* **D** *144*

Some of the timers have a range of value which is acceptable. Who / What decides what the final value should be, how is such selection done and does that affect interoperabilty between devices i.e. what happens if the receivong side expect the maximum value nad the transmitter uses the minium value. Does this break operation of an EEE enabled link?

SuggestedRemedy

Please clarify questions in the comment.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Please see the response to comment #144.

There are new paragraphs explaining the meaning and the use of the value of timers.

Cl **24** *SC* **24.2.3.4** *P* **41** *L* **35** # 99

CHOU, JOSEPH REALTEK SEMICOND

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

There is a "shall" statement in LPI Link Fail condition without the associated PICS item.

SuggestedRemedy

Insert a new PICS entry for LPI Link Fail with the following comment:

"If the PHY fails to receive a valid Refresh or Wake signal before lpi_rx_tq_timer expires, the receiver shall assume a link failure."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **24** *SC* **24.2.3.4** *P* **41** *L* **48** # 117

CHOU, JOSEPH REALTEK SEMICOND

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

There is a "shall" statement in wake error counter of MMD register without the associated PICS item.

SuggestedRemedy

Insert a new PICS entry for the wake error counter with the following comment:

"For each transition of lpi_rx_tw_timer_done from false to true, the wake error counter shall be incremented."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **24** *SC* **24.2.3.4** *P* **41** *L* **50** # 143

Healey, Adam LSI Corporation

Comment Type **T** *Comment Status* **D** *102*

The duration of lpi_rx_tw_timer is required to be between 30 and 36 us. The lower limit here is superfluous. In addition, the PHY wake time allowance per Table 78-4 is 20.5 us and should be the gauge for correct operation of the PHY.

SuggestedRemedy

Change:
"The timer shall have a period between 30 us to 36 us

To:
"This timer shall have a period that does not exceed 20.5 us."

It should be noted that the 20.5 us upper limit may not be correct. The timer is started when signal_status = ON and hence the transmitter wake time shrinkage and signal detect assertion time have already passed when the receiver begins it count. The value of 20.5 us is offered for now due to a lack of a more detailed calculation.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The response to this comment may be affected by the comment #102 since the wake time could be modified.

Change
"The timer shall have a period between 30 us to 36 us"

to:
"This timer shall have a period that does not exceed 20.5 us."

Cl **24** *SC* **24.2.4.2** *P* **42** *L* **15** # 100

CHOU, JOSEPH REALTEK SEMICOND

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

The Transmit state diagram (Figure 24-8) has been modified. However, the text in the Transmit Process (subclause 24.2.4.2) does not have proper description explaining the modification of the function for EEE capability.

SuggestedRemedy

Change the first paragraph in 24.2.4.2 as shown below.
Note: text enclosed by the square bracket [ ] are new.

The Transmit process sends code-groups to the PMA via tx_bits and the Transmit Bits process. When initially invoked, and between streams (delimited by TX_EN on the MII), [except in the LPI mode for the optional EEE capability,] the Transmit process sources continuous Idle code-groups (/I/) to the PMA. Upon the assertion of TX_EN by the MII, the Transmit process passes an SSD (/J/K/) to the PMA, ignoring the TXD <3:0> nibbles during these two code-group times. Following the SSD, each TXD <3:0> nibble is encoded into a five-bit code-group until TX_EN is deasserted. If, while TX_EN is asserted, the TX_ER signal is asserted, the Transmit process passes Transmit Error code-groups (/H/) to the PMA. Following the de-assertion of TX_EN, an ESD (/T/R/) is generated, after which the transmission of Idle code-groups is resumed by the IDLE state.

[If EEE Capability is supported, upon the assertion of LPI on the MII (A binary value 0001 of TXD, together with the de-assertion of TX_EN and the assertion of TX_ER , see 22.2.2), the Transmit process enters the LPI mode and starts to source SLEEP (/P/) code-groups to the PMA. In the LPI mode, the Transmit process is controlled by various timers to switch between TX_SLEEP state and TX_QUIET state. The Transmit process returns to IDLE state whenever the MII de-asserts LPI.]

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **24** *SC* **24.2.4.2** *P* **43** *L* **22** # 102

CHOU, JOSEPH REALTEK SEMICOND

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

There is a corner case:

The transmitter may enter the TX_QUIET state very briefly, and return to the IDLE state anytime when it receives a De-assert LPI from MII.
The duration of transmitter staying in the TX_QUIET state may be too short to effectively assert the Signal_detection of the receiver at the remote link partner.
Therefore, the receiver Equalizer (EQ) and Clock Recovery logic (CR) may lose the track due to the period of "no-signal" in the received channel.
As a result, the receiver may stay in the RX_SLEEP state unable to decode the symbols correctly, and eventually move to LPI_LINK_FAIL state when the lpi_rx_ts_timer is up.

This scenario is a mistake and needs to change.

However, the fix will affect the wake shrinkage time. To reduce the impact, it's preferable to decrease the signal_detection time.

SuggestedRemedy

Modify the Transmit State Diagram (Fig 24-8):

Change the maximum Assert time and De-assert time of Signal_detection of PMD in LPI mode (refer to Table 25-3) to 1 microsecond

Add a new timer lpi_tx_tm_timer in TX_QUIET state with a value range between 1 to 1.5 microseconds, and start it when entering TX_QUIET state

Change the branch condition between TX_QUIET and IDLE from "sentCodeGroup.indicate ? (TX_EN = TRUE +TX_ER = FALSE + TXD[3:0] != TX_LP_IDLE)" to "sentCodeGroup.indicate ? lpi_tx_tm_timer_done * (TX_EN = TRUE +TX_ER = FALSE + TXD[3:0] != TX_LP_IDLE)"

Parameters are modified in the second row of Table 78-4 under the PHY type 100BASE-TX:
Tw_phy = 22
Tphy_shrink_tx = 6.5
Tw_sys_rx = 8.5

A presentaion will be made in the Nov. meeting.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Accept the suggested remedy except the Parameters modified in the second row of Table 78-4 under the PHY type 100BASE-TX :

Tw_phy = 18
Tphy_shrink_tx = 6.5
Tphy_shrink_rx = 11
Tphy_wake_rx = 11.5
Tw_sys_rx = 12.5

Please refer to the presentation chou_01_1109.pdf

Cl **24** *SC* **24.2.4.4** *P* **41** *L* **19** # 101

CHOU, JOSEPH REALTEK SEMICOND

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

The Receive state diagram (Figure 24-11) has been modified. However, the text in the Receive Process (subclause 24.2.4.2) does not have proper description explaining the modification of the function for EEE capability.

What is more, CONFIRM_K state has been replaced with IDENTIFY_JK state. Need to change the correspondent text.

SuggestedRemedy

Change the first paragraph in 24.2.4.4 as shown below:
Note: text enclosed by the square bracket [ ] are new.

The Receive process state diagram can be viewed as comprising two sections: prealigned and aligned. In the prealigned states, IDLE, CARRIER DETECT, and [IDENTIFY JK, except for the case of detection of SLEEP code-groups when supporting the optional EEE capability,] the Receive process is waiting for an indication of channel activity followed by a SSD. After successful alignment, the incoming code-groups are decoded while waiting for stream termination.

[If EEE Capability is supported, when the Receive process successfully aligns and decodes two consecutive SLEEP (/P/) code-groups, it enters the LPI mode and stays in LPI states until either the IDLE code-groups are received, where it leads the Receive process to the IDLE state, or a link failure condition in the LPI mode occurs, where it causes the Receive process to enter the RX_LPI_LINK_FAIL state and eventually move to the IDLE state.]

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **24** *SC* **24.3.1.8** *P* **46** *L* **15** # 46

Hajduczenia, Marek ZTE Corporation

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

"This primitive is generated by the Receive Process of PCS only for the EEE capability" - what does it mean "only for the EEE capability" ? Do you mean " only if EEE is supported" or something in the lines? The original language is somewhat strange.
Similar comment for line 36, subclause 24.3.1.9.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change all sentences with ".generated . only for the EEE capability..." to

".generated . only if the EEE is supported..."

in the following places:
P.46, L.15
P.46, L.36
P.50, L.31
P.50, L.51

Cl **24** *SC* **24.3.1.8.1** *P* **46** *L* **23** # 47

Hajduczenia, Marek ZTE Corporation

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

What happens when FALSE is sent ?
Also in 24.3.1.9.1, there is no description of what TRUE and FALSE mean, when asserted.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change total four places in the draft.

Change the text in P.46,L.23,24 to

"The lpi_link_fail parameter takes on one of two values: TRUE or FALSE, indicating whether a link failure condition has been set (TRUE) or not (FALSE)."

Change the text in P.46,L.43 to

"The rx_lpi parameter takes on one of two values: TRUE or FALSE, indicating whether the receiver is in LPI mode (TRUE) or not (FALSE)."

Change the text in P.50,L.38 to

The rx_quiet parameter takes on one of two values: TRUE or FALSE, indicating whether the receiver is in Quiet state (TRUE) or not (FALSE).

Change the text in P.51,L.5 to

The tx_quiet parameter takes on one of two values: TRUE or FALSE, indicating whether the transmitter is in Quiet state (TRUE) or not (FALSE).

Cl **24** *SC* **24.3.2.3** *P* **47** *L* **29** # 103

CHOU, JOSEPH REALTEK SEMICOND

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

There is a *LPM capability that is defined in the PICS list without the associated "shall" statement in the draft text.

SuggestedRemedy

Inserted the following statement at the end of this paragraph:

24.3.2.3 is required only for the EEE capability. If implemented, the operation of the PMA shall comply with the requirements in this subclause.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **24** *SC* **24.4.1** *P* **50** *L* **18** # 48

Hajduczenia, Marek ZTE Corporation

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

"100BASE-X supports LPI for the EEE capability" - seems that it is mandatory. Shouldn't it say "100BASE-X may support LPI for the EEE capability".

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **24** *SC* **24.4.1.4** *P* **50** *L* **31** # 49

Hajduczenia, Marek ZTE Corporation

Comment Type **T** *Comment Status* **D** *46*

Again, language "This primitive is generated by the Receive Process of PCS only for the EEE capability" should read "This primitive is generated by the Receive Process of PCS if the EEE capability is supported"
Similar comment against line 51, same page.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See the response of comment #46

Cl **24** *SC* **24.8** *P* **50** *L* **1** # 10518

Booth, Brad AppliedMicro

Comment Type **TR** *Comment Status* **D** *114*

There is a *LPI capability that is defined. This capability has a direct impact on the functions performed by the PCS and PMA, yet the only new PICS are for the timers.

SuggestedRemedy

Shalls are needed to help define the way the PCS and PMA functions operate in LPI mode. Scrub the clause to make sure that functions modified or impacted by LPI have a corresponding PICS capability entry.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

See the response to comment #114.

This comment was not considered by the BRC and the above response is a proposed response.

This comment will be re-submitted for consideration at the Nov plenary along with all other comments received on D2.1.

Cl **24** *SC* **24.8** *P* **52** *L* **1** # 114

CHOU, JOSEPH REALTEK SEMICOND

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

There is a *LPC capability that is defined. This capability has a direct impact on the functions performed by the PCS and PMA, yet the only new PICS are for the timers.

SuggestedRemedy

"Shalls" are needed to help define the way the PCS and PMA functions operate in LPI mode. Scrub the clause to make sure that functions modified or impacted by LPI have a corresponding PICS capability entry.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

"Shall"s and associated PICS entries are added in the draft per comment #98, #99, #103, and #117.

What is more, the following shall statements and associated PICS entries are added:

P.47, L.15: Change 'Far-End Fault is not generated when in the LPI mode." to "Far-End Fault shall not be generated when in the LPI mode."

P.48, L.12: Change 'If the EEE capability is supported, when the receiver is in the LPI mode, the assertion of lpi_link_fail sets the link_status to FAIL and eventually brings the receiver out of the LPI mode." to "If the EEE capability is supported, when the receiver is in the LPI mode, the assertion of lpi_link_fail shall set the Link Monitor to LINK DOWN state and eventually brings the receiver out of the LPI mode."

P.47, line 43 and 51:
Change "operates" to "shall operate" in the sentence of "In the absence of the optional EEE capability, the PHY operates as if the value of this variable is FALSE."

Cl **25** *SC* **25.4.11** *P* **53** *L* **41** # 10520

Booth, Brad AppliedMicro

Comment Type **ER** *Comment Status* **D** *115*

It would be better to promote the Ethernet Efficient Ethernet to its own heading2 level. The volume of information here probably should not be buried as an exception.

SuggestedRemedy

Promote 25.4.11 to be 25.5 and modify the PICS from 25.5 to 25.6.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

See the response to comment #115.

This comment was not considered by the BRC and the above response is a proposed response. The change will not be made in D2.1.

This comment will be re-submitted for consideration at the Nov plenary along with all other comments received on D2.1.

Cl **25** *SC* **25.4.11** *P* **53** *L* **45** # 10521

Booth, Brad AppliedMicro

Comment Type **TR** *Comment Status* **D** *104*

Sentence calls the subclause a clause and labels as optional. Given the volume of information and the need to conform with the information in 25.4.11, there should be a PICS entry associated with this.

SuggestedRemedy

Change sentence to read: This subclause only applies to the optional low power idle is implemented. If implemented, the operation of the PMD shall comply with the requirements in this subclause.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See the response to comment #104.

This may be partly resolved by changes being made to satisfy the response to comment #250

The response to #250 does not explicitly call out the needed shall.

This comment was not considered by the BRC and the above response is a proposed response.

This comment will be re-submitted for consideration at the Nov plenary along with all other comments received on D2.1.

Cl **25** *SC* **25.4.11** *P* **55** *L* **1** # 115

CHOU, JOSEPH REALTEK SEMICOND

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

The subclause number overlaps with the exisiting subclause 25.4.11 of IEEE Std 802.3-2008.

What is more, it would be better to promote the Ethernet Efficient Ethernet to its own heading2 level. The volume of information here probably should not be buried as an exception.

SuggestedRemedy

Promote 25.4.11 to be 25.5 and modify the clause number of PICS from 25.5 to 25.6.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **25** *SC* **25.4.11** *P* **55** *L* **1** # 108

CHOU, JOSEPH REALTEK SEMICOND

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

There are "shall" statements in the following area without associated PICS entries:

25.4.11.1, P.55, L.24
25.4.11.2, P.56, L.50
25.4.11.3, P.57, L.45
25.4.11.4, P.57, L.51
25.4.11.5, P.58, L.29
25.4.11.6, P.58, L.36
25.4.11.7, P.58, L.43
25.4.11.7, P.55, L.44

SuggestedRemedy

Add entries in the PICS list as suggested in the comment.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **25** *SC* **25.4.11** *P* **55** *L* **15** # 104

CHOU, JOSEPH REALTEK SEMICOND

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

Given the volume of information and the need to conform with the information in 25.4.11, there should be a "shall" statement associated with the PICS entry *LPI.

SuggestedRemedy

Insert the following statement at the end of this paragraph:

If the EEE capability is supported, the operation of the PMD shall comply with the requirements in this subclause.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **25** *SC* **25.4.11.1** *P* **55** *L* **20** # 51

Hajduczenia, Marek ZTE Corporation

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

what is this 'driver' ? It is used many times in this clause. Is this the laser driver or some other driver ?

SuggestedRemedy

Clarify per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Only clarification is made here. No change is recommended.

The term "driver" is used in the TP-PMD original text. It is the last part of the Transmit functional blocks. Apparently, the driver means to drive the TP cable.

The text in this draft already points to the source of reference:
".to the driver (see TP-PMD 7.1.3)."

The TP-PMD 7.1.3 has a single word title "Driver". The term "driver" (lower case) is used throughout the document of
ANSI+X3.263-1995.pdf.

Cl **25** *SC* **25.4.11.1** *P* **55** *L* **22** # 105

CHOU, JOSEPH REALTEK SEMICOND

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

Need proper descriptive text for the modification made on The Encoder state diagram (Figure 25-1) for EEE capability.

SuggestedRemedy

Insert the following statement at the end of this paragraph:

The output of Encoder is set to a value ZERO_VOLTAGE when the transmitter is in a quiet line state (TX_QUIET, see PCS Transmit state diagram, Figure 24-8).

Change the last sentence of tx_quiet at L.51, P.55 from
"It is also used to set the initial state of Encoder state diagram." to
"It sets the Encoder state diagram to an initial state of ZERO_V."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Refine the statements as follow:

The PMD Encoder function of the 100BASE-TX with EEE capability is identical to that of the TP-PMD except that the output of the Encoder is set to a value ZERO_VOLTAGE when the transmitter is in a quiet line state of the LPI mode (TX_QUIET, see PCS Transmit state diagram, Figure 24-8).

Cl **25** *SC* **25.4.11.1.1** *P* **55** *L* **30** # 50

Hajduczenia, Marek ZTE Corporation

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

"the NRZ bit" or "the nrz bit" - which is it then?

SuggestedRemedy

which is the correct capitalization ?

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Only clarification is made here. No change is recommended.

NRZ is an official acronym defined and used throughout the ANSI+X3.263-1995.pdf. It is also used in the original text of Clause 24 and 25.

Cl **25** *SC* **25.4.11.2** *P* **56** *L* **48** # 106

CHOU, JOSEPH REALTEK SEMICOND

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

Need proper descriptive text for the modification made on The Decoder state diagram (Figure 25-2) for EEE capability.

SuggestedRemedy

Insert the following statement at the end of this paragraph:

The output of Decoder is set to a value ZERO when the receiver is in a quiet line state (RX_QUIET, see PCS Receive state diagram, Figure 24-11b).

Change the last sentence of rx_quiet at L.23, P.57 from
"It is also used to set the initial state of Decoder state diagram." to
"It sets the Decoder state diagram to an initial state of ZERO_VALUE."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Refine the statements as follow:

The PMD Decoder function of the 100BASE-TX with EEE capability is identical to that of the TP-PMD except that the output of the Decoder is set to a value ZERO when the receiver is in a quiet line state of the LPI mode (RX_QUIET, see PCS Receive state diagram, Figure 24-11b).

Cl **25** *SC* **25.4.6** *P* **53** *L* **31** # 10519

Booth, Brad AppliedMicro

Comment Type **TR** *Comment Status* **D** *107*

25.4.6 has three shall statements and only one PICS entry.

SuggestedRemedy

Add other PICS entries or delete unnecessary shalls.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See the response to comment #107.

This may be partly resolved by changes being made to satisfy the response to comment #410 but clause 25 still needs to be scrubbed for consistency between the Shall statements and the PICS.

This comment was not considered by the BRC and the above response is a proposed response.

This comment will be re-submitted for consideration at the Nov plenary along with all other comments received on D2.1.

Cl **25** *SC* **25.4.6** *P* **54** *L* **40** # 107

CHOU, JOSEPH REALTEK SEMICOND

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

25.4.6 has three shall statements and only one PICS entry.

SuggestedRemedy

Add two more PICS entries as follows:

Code-groups used to measure jitter in the LPI mode shall be SLEEP code-group.

Jitter measurement time interval in the LPI mode shall be no less than 100 msec and no greater than 1 second.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **28C** *SC* **28C.12** *P* **243** *L* **18** # 192

Parnaby, Gavin Solarflare Communicat

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

Submitted on behalf of Todd Thompson, Solarflare.

Annex 28C and Clause 45.2.7.13a and Clause 45.2.7.14a require new EEE Next Pages and new message codes adding 1/2 second during autonegotiation. This time is largely wasted as the PHY must send bits for technologies it does not support and send many bits which are unused.

SuggestedRemedy

Use existing reserved bits in existing NP's defined in Clause 40.5 (to control EEE for 100M/1G) and XNP defined in Clause 55.6 (to control BASE-T EEE for 100M/1G/10G). Define existing reserved bits in Clause 22 (for 1000BASE-T) and Clause 45.2.7 (for 10GBASE-T) to control the advertising of BASE-T EEE and to report link partner's BASE-T EEE ability.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

There was extensive discussion regarding this topic during comment resolution in D2.0 and the conclusion was to define a new message code for next page.

The commenter should prepare a more detailed proposal, along with justification, for discussion during the comment resolution.

Cl **28D** *SC* **28D.7** *P* **244** *L* **1619** # 188

Parnaby, Gavin Solarflare Communicat

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

Submitted on behalf of Todd Thompson, Solarflare.

In Annex 28D.7, it states that extended next pages "may" be used to reduce auto-negotiation time. This statement is not normative. It's an informative note. It's also incorrect. For 10GBASE-T, extended next pages are required.

SuggestedRemedy

Option 1 (preferred): Remove this informative note.
Option 2: Clarify that for those technologies requiring XNP's (such as 10GBASE-T), an XNP must be sent which is formatted based on the BASE-T EEE message page/unformatted message page as defined in Clause 78 (as suggested in another comment).

Proposed Response *Response Status* **W**

PROPOSED REJECT.

This text is part of 802.3-2008. It describes the extended next page operation. Specific PHYs may require mandatory use of extended next pages, such mandates are in the respective PHY clauses.

Cl **30** *SC* **30.12.2.1.22** *P* **62** *L* **19** # 52

Hajduczenia, Marek ZTE Corporation

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

"LocTxSystemValue as defined in 78.4.2.3" - link is not live
Similar comment in line 33, same page.
Similar comment in line 44, same page.
Similar comment in line 4, page 63.
Similar comment in line 16, page 63.
Similar comment in line 26, page 64
Similar comment in line 40, page 64
Similar comment in line 51, page 64
Similar comment in line 13, page 65
Similar comment in line 25, page 65

In line 32, there is space missing in "DLL receiver state diagram.This attribute maps to the"
> "DLL receiver state diagram.<< >>This attribute maps to the"
Similar missing space in line 19, same page
Similar missing space in line 45, same page
Similar missing space in line 4, page 63
Similar missing space in line 26, page 64
Similar missing space in line 39, page 64
Similar missing space in line 51, page 64
Similar missing space in line 12, page 65
Similar missing space in line 25, page 65

SuggestedRemedy

per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **30** *SC* **30.5.1.1.21** *P* **61** *L* **6** # 10463

Thompson, Geoff GraCaSI

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

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

Revise "BEHAVIOUR DEFINED AS:" text to clarify.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

"A read-only list of the possible PHY types for which the underlying system supports Energy Efficient Ethernet as defined in Clause 78."

Cl **35** *SC* **35.2.1** *P* **66** *L* **17** # 53

Hajduczenia, Marek ZTE Corporation

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

"The mapping is changed for EEE capability, this is described in 35.4a" > "The mapping is changed for EEE capability, as described in 35.4a"

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **35** *SC* **35.2.2.4** *P* **66** *L* **42** # 164

Koenen, David Hewlett-Packard

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

Incorrect reference for 22.2.2.4

SuggestedRemedy

Should be 35.2.2.4

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **35** *SC* **35.2.2.4** *P* **67** *L* # 55

Hajduczenia, Marek ZTE Corporation

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

"For EEE capability, the RS shall use the combination of TX_EN de-asserted, TX_ER asserted and TXD<7:0> equal to 0x01 shown in Table 35-1 as a request to enter, or remain in low power idle"
should read
"For EEE capability, the RS shall use the combination of TX_EN de-asserted, TX_ER asserted and TXD<7:0> equal to 0x01<<, as>> shown in Table 35-1 as a request to enter, or remain <<in the LPI mode.>>"

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **35** *SC* **35.2.2.4** *P* **67** *L* **2** # 54

Hajduczenia, Marek ZTE Corporation

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

"The use of TXD<7:0> to signal LPI transitions is described in 35.2.2.6a" - missing "." at the end

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **35** *SC* **35.2.2.9a** *P* **70** *L* **33** # 56

Hajduczenia, Marek ZTE Corporation

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

"While the PHY device is indicating LPI the PHY device may halt the RX_CLK as shown in (figure 35-9a) if and only if the Clock stop enable bit is asserted (45.2.3.1.3a)."
should read
"While the PHY device is indicating LPI the PHY device may halt the RX_CLK as shown in (<<Figure 35-9a>>) if and only if the Clock stop enable bit is asserted (<<see 45.2.3.1.3a>>)."

SuggestedRemedy

Per comments

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **35** *SC* **35.4a.3.1** *P* **72** *L* **49** # 165

Koenen, David Hewlett-Packard

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

Two instances of MII instead of GMII in this paragraph.

SuggestedRemedy

Prefix MII with a G.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **36** *SC* **36.2.4.12a** *P* **75** *L* **49** # 58

Hajduczenia, Marek ZTE Corporation

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

"For the EEE capability this variable is affected by the LPI receive state diagram. Without the EEE capability this variable is identical to code_sync_status controlled by the synchronization state diagram"
should read
"If EEE is supported, this variable is affected by the LPI receive state diagram. If EEE is not supported, this variable is identical to code_sync_status controlled by the synchronization state diagram"

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **36** *SC* **36.2.4.7** *P* **75** *L* **12** # 57

Hajduczenia, Marek ZTE Corporation

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

"The ability to transmit or receive /LI/, /
LI1/ and /LI2/ is an option for certain PHYs to support Energy Efficient Ethernet (see Clause 78)."
there is a line break in /LI1/ is a kind of awkward

SuggestedRemedy

per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **36** *SC* **36.2.4.7** *P* **75** *L* **28** # 150

Healey, Adam LSI Corporation

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

Encoding notation for /LI1/ and /LI2/ are missing leading and trailing forward slashes.

SuggestedRemedy

Change /LI1/ encoding to "/K28.5/D6.5/".
Change /LI2/ encoding to "/K28.5/D26.4/".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **36** *SC* **36.2.5.1.2** *P* **76** *L* **3** # 59

Hajduczenia, Marek ZTE Corporation

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

"The following constant is used only for the EEE capability."
there are several entries which say "... for the EEE capability." - suggest to reword that to read "... if the EEE capability is supported." Scrub the draft, including subsections of 36.2.5.1

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED REJECT.

This wording was agreed during the comment resolution for D2.0.

Cl **36** *SC* **36.2.5.1.3** *P* **76** *L* **15** # 145

Healey, Adam LSI Corporation

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

The assert_lpidle variable is defined to be an alias for:

(xmit=DATA*TX_OSET.indicate*TX_EN=FALSE*TX_ER=TRUE*(TXD<7:0> =0x01))

a) The TX_OSET.indicate message should be removed from this definition. Otherwise the state diagram in Figure 36-5 would exit the XMIT_LPIDLE state immediately after entering it since TX_OSET.indicate will not be set. The transitions conditions in the XMIT_LPIDLE state should then be changed to:

XMIT_DATA to XMIT_LPIDLE: assert_lpidle*TX_OSET.indicate
XMIT_LPIDLE to XMIT_LPIDLE: assert_lpidle*TX_OSET.indicate
XMIT_LPIDLE to XMIT_DATA: !assert_lpidle*TX_OSET.indicate

b) The XMIT_DATA state, and thus the XMIT_LPIDLE state, can only be reached when xmit=DATA. Therefore, the xmit=DATA could also be removed in the assert_lpidle definition.

SuggestedRemedy

Per comment.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **36** *SC* **36.2.5.1.3** *P* **76** *L* **24** # 147

Healey, Adam LSI Corporation

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

The aliases detect_lpidle and detect_idle could be asserted during data reception therefore the LPI Receive state diagram (Figure 36-9b) could bounce between RX_ACTIVE and RX_SLEEP states during normal operation.

A transition to RX_SLEEP will result in "Rx LPI indication" and "Rx LPI received" from being falsely asserted during normal operation. This is not likely what is intended.

SuggestedRemedy

Implement the state diagram changes recommended in healey_01_1109.pdf.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The state machine needs to ensure that "detect_lpidle" is only tested following a /K28.5/.

Add a state LPI_K. Transition from RX_ACTIVE to LPI_K - "SUDI([/K28.5/] * EVEN)"

Then transition from LPI_K to RX_SLEEP - "detect_lpidle * sync_status = code_sync_status"; transition from LPI_K back to RX_ACTIVE - "!detect_lpidle + sync_status != code_sync_status"

Cl **36** *SC* **36.2.5.1.3** *P* **76** *L* **35** # 167

Koenen, David Hewlett-Packard

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

rx_lpi_active is defined and appears in the state diagram, but doesn't appear to be used anywhere.

SuggestedRemedy

Remove rx_lpi_active definition and it's appearance in state diagrams, or use it somewhere.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

rx_lpi_active is used, but there is a typo - change rx_lp_active to rx_lpi_active (as per comment #149.

Cl **36** *SC* **36.2.5.1.5** *P* **76** *L* **50** # 146

Healey, Adam LSI Corporation

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

Issues with counter definitions:

a) With the excpetion of the wake_error_coutner, are these truly counters, or timers as their names and usage suggests?

b) With the exception of rx_wf_timer, timer descriptions begin with "This timer is started when the PMD receiver enters the..." In some cases this should actually refer to the transmitter and in any case should refer to the PCS and not the PMD.

SuggestedRemedy

a) Move definitions of *_timer to "36.2.5.1.7 Timers" (note that the subclause heading needs to be changed from "Timer" to "Timers").

b) For all instances of rx_*_timer, change the definition to read "PCS receiver" instead of "PMD receiver". For all instances of tx_*_timer, change definition to reach "PCS transmitter" instead of "PMD receiver."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **36** *SC* **36.2.5.2.2** *P* **80** *L* **1** # 151

Healey, Adam LSI Corporation

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

The editing instruction for Figure 36-7a is wedged below the figure and an assoicated not on page 81. Move the instruction to be below the subclause heading. It might be helpful to note that there was no change to Figure 36-7b and it is only included in this amendment for ease of reference.

SuggestedRemedy

Per comment.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **36** *SC* **36.2.5.2.2** *P* **81** *L* **11** # 149

Healey, Adam LSI Corporation

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

Note that this comment refers to Figure 36-7a.

There is no exit condition from LPI_K in the event a configuration ordered_set (/C/) is received. The link partner could potentially restart Auto-Negotiation at any time, in which case it could start sending /C/ ordered_sets and no /I/ or /LI/ ordered_sets would be sent. That would cause that the state diagram gets stuck in the LPI_K state.

Figure 36-7a requires the LPI Receive state diagram (Figure 36-9b) to break it out of this deadlock. If /C/ ordered_sets are received while the receiver is in RX_SLEEP, then rx_tq_timer will eventually expire and the transition to the RX_LINK_FAIL state will be taken. This will set sync_status to FAIL which will pop the Receive state diagram into the LINK_FAILED state. From here, the receiver may recover and Auto-Negotiation can proceed normally.

If /C/ ordered_sets are received while the receiver is in the RX_QUIET or RX_WAKE states, rx_tw_timer_done will eventually expire and the transition to the RX_WTF state will be taken. This will increment wake_error_counter (it is debatable whether this is appropriate or not) and move the RX_ACTIVE state. At this point, the receiver is deadlocked.

A more graceful handling of /C/ ordered_sets is desired.

SuggestedRemedy

Implement the state diagram changes recommended in healey_01_1109.pdf.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The PCS transmit ordered set state machine does not permit sending /C/ during LPIDLE.

Cl **36** *SC* **36.2.5.2.2** *P* **81** *L* **7** # 148

Healey, Adam LSI Corporation

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

Note that this comment refers to Figure 36-7a. There are multiple errors in this figure.

1. In the LP_IDLE state, "RUDI(/L/I/)" should be "RUDI(/LI/)". However, it is not clear why RUDI(/LI/) is even an action here since RX_UNITDATA.indicate is used by the Clause 37 Auto-Negotiation process which does not understand /LI/. It likely should just be removed.
2. Transitions to F and C should be qualified by the term "rx_lpi_active" and not "rx_lp_active" as shown.

SuggestedRemedy

Per comment.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Remove RUDI(/L/I/)

Change rx_lp_active to rx_lpi_active

Cl **36** *SC* **36.2.5.2.8** *P* **86** *L* **16** # 152

Healey, Adam LSI Corporation

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

The duration of rx_tw_timer is specified to be TWR which in Table 36-3b is given a range of between 10 to 11 us. A lower limit here is superfluous. It implies that there is lower limit on the wake time.

SuggestedRemedy

In the definition of rx_tw_timer change:
"The timer terminal count is set to TWR."

To:
"The timer terminal count shall not exceed the maximum value of TWR in Table 36-3b."

Remove TWR(min) from Table 36-3b.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

If TWR is set too low then the receiver may falsely assert wake time fault.

Cl **36** *SC* **36.2.5.2.9** *P* **86** *L* **28** # 60

Hajduczenia, Marek ZTE Corporation

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

"and transmit directions using the status variables shown in Table 36-3c" - link is not live to "Table 36-3c"

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **36** *SC* **36-7** *P* **81** *L* # 14

Sela, Oren Mellanox

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

In 36-7a there is a missing exit condition for LPI_K - SUDI([/D21.5/] + [/D2.2/])

SuggestedRemedy

Add and arch from LPI_K to RX_CB (C) when SUDI([/D21.5/] + [/D2.2/])

Proposed Response *Response Status* **W**

PROPOSED REJECT.

There is no support for configuration updates during LPI.

Cl **36** *SC* **Fig 36-9b** *P* **85** *L* **16** # 139

Pillai, Velu Broadcom

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

Modify the following transition coniditons
for RX_SLEEP to RX_ACTIVE
from detect_idle * ODD
to !rx_tq_timer_done * code_sync_status = OK * detect_idle * ODD

For the self loop for RX_SLEEP should be
!rx_tq_timer_done * detect_lpidle

And for RX_SLEEP to RX_QUIET
!rx_tq_timer_done * signal_detect=FAIL

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **36** *SC* **Fig 36-9b** *P* **85** *L* **31** # 136

Pillai, Velu Broadcom

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

I think we should rename RX_WTF to RX_EXW (Extended wake)
or at least add a "K", which will make it RX_WKTF (Wake time fault)

Which ever way we decide, all the reference to WTF needs to be changed too.

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Changing the name will effect multiple lines in multiple clauses.

Cl **40** *SC* **40.1.4** *P* **90** *L* **34** # 61

Hajduczenia, Marek ZTE Corporation

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

"mode. In LPI mode, the PCS is directed to generate only idle code groups encoded with LPI request and"
Sometimes it is written "IDLE code-groups", sometimes "idle code groups" - which is it finally?

SuggestedRemedy

Is this caused by the specific captitalization rules in the given clause? Otherwise it should be uniformly formatted throughout all clauses.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Lower case "idle code groups" is used throughout Clause 40 and is consistent with its usage in the base document. There is no apparent need to make the capitalization consistent between clauses since, for example, Clause 40 "idle code groups" are not the same as Clause 24 "IDLE code groups."

Cl **40** *SC* **40.12.4** *P* **111** *L* **17** # 65

Hajduczenia, Marek ZTE Corporation

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

Not entirely sure why the value/comment field in PCT18 and PCT19 needs to have 'shall' statements in them.
The same comment against item PCR5 and PMF24 through PMF37.
The same comment against item PME71 through PME77.
The same comment against item AN15.

SuggestedRemedy

Remove shall statements from the PCT18, PCT19, PCR5 PICS items.
Remove shall statements from the PPMF24 through PMF37 PICS items.
Remove shall statements from the PME71 through PME77 PICS items.
Remove shall statements from the AN15 PICS items.
Scrub the rest of the draft for the same issue i.e. shall statements in PICS.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

In the base document, PICS do incorporate the keyword "shall" in the "Feature" and/or "Value/Comment" fields. Clause 40 does this to excess. While this may appear to be unusual, there is no rule (to the editor's knowledge) that prohibits it.

However, there is a difference in the style of the EEE-related PICS and the PICS in Clause 40 of the base document. For better or worse, it preferred to consistent with the base document style.

Update the PICS to be consistent with the style of existing Clause 40 PICS.

Cl **40** *SC* **40.2.12.1** *P* **92** *L* **30** # 62

Hajduczenia, Marek ZTE Corporation

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

"is in progress hence 1000BTtransmit (see 40.3.3.1) will also be FALSE"
should be reworded to
"is in progress hence the variable 1000BTtransmit (see 40.3.3.1) will also be set to FALSE"

SuggestedRemedy

per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

It may also be helpful to clarify how the 1000BTtransmit is set to FALSE.

Change text to:
".hence 1000BTtransmit (see 40.3.3.1) will be set FALSE by the PCS Transmit state diagram."

Cl **40** *SC* **40.4.3** *P* **98** *L* **12** # 160

Healey, Adam LSI Corporation

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

In Figure 40-9, it is not necessary to enforce entry into the LOC_LPI_REQ_OFF state when link_status != OK. Per 22.7a.1, LP_IDLE.request should remain de-asserted for 1 second after link_status = READY so this requirement is redundant.

In addition, it should be made clear that, the for optional EEE capability, the PHY should be able to successfully complete training per Figure 40-15a even when loc_lpi_req and/or rem_lpi_req are set to TRUE. This is due to the fact that a 1000BASE-T link may re-train without setting link_status != OK. This implies that the LPI client will be unware that the link is re-training and may present "Assert LPI" at the GMII.

SuggestedRemedy

Remove link_status != OK term from the transition into the LOC_LPI_REQ_OFF state and add clarifying text to 40.4.2.4 per the comment.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change Figure 40-9 per comment.

Add the following paragraph at the end of the text to be inserted in 40.4.2.4:

"When the PHY supports the optional EEE capability, it is possible for loc_lpi_req to be set to TRUE during re-training initiated in response to unsatisfactory receiver performance (i.e. transition from SEND IDLE OR DATA to SLAVE SILENT). This will correspond to the detection of rem_lpi_req = TRUE in the idle code-groups received during training. The PHY shall not be impeded from successfully completing training (e.g. acquisition of descrambler state) when rem_lpi_req = TRUE is encoded in received idle code-groups."

Cl **40** *SC* **40.4.5.2** *P* **103** *L* **29** # 109

CHOU, JOSEPH REALTEK SEMICOND

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

The duration of lpi_postupdate_timer has a period between 2.0us to 2.2us.
It does not have a comfortable margin for the field application.

The increase of this lpi_postupdate_timer has no impact on the wakeup time.

SuggestedRemedy

Change the duration of lpi_postupdate_timer as follows:

Duration: This timer shall have a period between 4.0 microseconds to 4.4 microseconds

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **40** *SC* **40.4.6.1** *P* **105** *L* **1** # 63

Hajduczenia, Marek ZTE Corporation

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

Several smaller issued with Figure 40-15a
(1) different font sizes for e.g. "SEND_I"
(2) text in some boxes is misaligned within the boxes e.g. "DISABLE 1000BASE-T TRANSMITTER" and others

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

These issues exist in the base document. However, since the state diagram is being modified by this amendment, the editor will correct the font size and text alignment issues.

Cl **40** *SC* **40.5.1.1** *P* **108** *L* **22** # 248

Grimwood, Michael Broadcom

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

Clock stop capable is a status bit and therefore should be RO not R/W.

SuggestedRemedy

Change the Clock stop capable Type field entry from R/W to RO

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **40** *SC* **40.5.1.1** *P* **108** *L* **31** # 191

Parnaby, Gavin Solarflare Communicat

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

Submitted on behalf of Todd Thompson, Solarflare.

Clause 40.5 previously only referred to control/status bits in Clause 22. This section refers to a mixture of Clause 22 and Clause 45.2.7 bits. This require implementation of both Clause 22 registers and the MMD 7 register in Clause 45.2.7 to control the advertisement/status of EEE.

SuggestedRemedy

Add EEE control/status bits into Clause 22 and make Clause 40.5 refer to these control/status bits instead of the bits in Clause 45.2.7.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The current management structure has been in place since the first Task Force review (July 2008) and subject to multiple subsequent reviews. The rationale behind the current management structure is:

1. There is little usable space in the Clause 22 register to support the control and status bits for 100BASE-TX and 1000BASE-T. The wake error counter requires another 16-bit register.
2. Clause 22 supplies a means to access the Clause 45 management space via registers 13 and 14. Since a EEE-capable PHY is a new PHY, the additional of this feature was expected to contribute little additional disruption.

The commenter does not provide a sufficiently detailed suggested remedy (i.e. specific modifications to the Clause 22 register map) to consider a change to the draft.

Cl **40** *SC* **40.6.1.2.7** *P* **109** *L* **40** # 64

Hajduczenia, Marek ZTE Corporation

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

"40.6.1.2.7 Transmitter operation during WAKE"
should read
"40.6.1.2.7 Transmitter operation during the WAKE state"

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

This subclause defines transmitter operation following a transition from the QUIET state to the WAKE state. It is not limited to the WAKE state only.

Change heading to:
"40.6.1.2.7 Transmitter operation following a transition from the QUIET to the WAKE state"

Cl **45** *SC* **45.2.3** *P* **112** *L* **16** # 10183

Ganga, Ilango Intel

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

The table 45-83 and other tables in Clause 45 have been modified by P802.3ba. So the editing instructions should include the appropriate source document where the source is other than IEEE Std 802.3-2008. Also the table numbers should be changed to indicate the latest renumbered table numbers from previous amendment(s).

Also other PCS registers have been modified by the P802.3ba document (or other amendments e.g. P802.3av). So update the editing instructions and the change text as per the draft P802.3ba/D2.2.
For example change editing instruction as follows:
45.2.3.1 PCS control 1 register
Change Table 45-83 (IEEE P802.3ba/D2.2) for LPI clock control:
Update the table such that the base text is from the above source.

SuggestedRemedy

Update the Editing instrucitons and Table numbers to indicate appropriate source for base text and use the renumbered table number from appropriate amendment to 802.3-2008. Also update the base text as appropriate as per the source document (for example IEEE P802.3ba/D2.2).

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See comments #39, 40, 41, 42, 43

Cl **45** *SC* **45.2.3** *P* **115** *L* **21** # 7

Anslow, Peter Nortel Networks

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

In Table 45-83 before the 802.3az changes we have a row:
3.16 through 3.23 Reserved
In the added rows you have:
3.21 Reserved

You should therefore show the row for 3.16 through 3.23 as modified to be:
3.16 through 3.19 Reserved

SuggestedRemedy

Show the row for 3.16 through 3.23 as modified to be:
3.16 through 3.19 Reserved

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change the edit instruction:

Change Table 45-83 (as renumbered by 802.3av) to add the following rows and change the reserved rows accordingly:

Cl **45** *SC* **45.2.3.1** *P* **116** *L* **10** # 8

Anslow, Peter Nortel Networks

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

In Table 45-84 the name for bit 3.0.10 is "Clock stop enable". However in 45.2.3.1.3a the nane is given as "Clock stoppable".
Making these names different is a source of confusion.

SuggestedRemedy

change the names so that they are the same.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change to Clock stop enable.

Cl **45** *SC* **45.2.3.1.3a** *P* **116** *L* **21** # 66

Hajduczenia, Marek ZTE Corporation

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

There are still occurences of "low power idle" which have not been replaced with LPI as defined at the initial section of the draft. Scrub the draft accordingly.

SuggestedRemedy

Per comment.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change line 21 to LPI

Also page 117, line 29

Cl **45** *SC* **45.2.3.1.3a** *P* **116** *L* **23** # 67

Hajduczenia, Marek ZTE Corporation

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

"see 22.2.2.9a, 35.2.2.9a, 46.3.2.4a"
should read
"see 22.2.2.9a, 35.2.2.9a, and 46.3.2.4a"

Similar on page 117, line 31
"see 22.2.2.9a, 35.2.2.9a, 46.3.2.4a"
should read
"see 22.2.2.9a, 35.2.2.9a, and 46.3.2.4a"

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.3.2** *P* **116** *L* **47** # 142

Healey, Adam LSI Corporation

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

The value of clock stop capable bit (3.1.6) is determined by the PHY, i.e. either the PHY supports this feature or not. The value cannot be changed by the MAC. The clock stop capable bit should be RO, not R/W.

SuggestedRemedy

Change the "R/W" column for bit 3.1.6 to "RO". Also modify 40.5.1.1 Table 40-3 accordingly.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Same as comment #249

Note change to Clause 40.

Cl **45** *SC* **45.2.3.2** *P* **116** *L* **47** # 249

Grimwood, Michael Broadcom

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

Clock stop capable is a status bit and therefore should be RO not R/W.

SuggestedRemedy

Change the Clock stop capable R/W field entry from R/W to RO.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.3.2.2a** *P* **117** *L* **29** # 68

Hajduczenia, Marek ZTE Corporation

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

"If bit 3.1.6 is set to 1"
in some instances, you write "set to 1/0" etc. In other instances, you write "set to a zero/a one". Pick one nomenclature and use consistently, unless there is anything in the IEEE style guidelines to define what style should be used.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change 1 to one.

Cl **45** *SC* **45.2.3.9a.1** *P* **118** *L* **33** # 69

Hajduczenia, Marek ZTE Corporation

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

"If the device supports EEE operation for 10GBASE-KR as defined in 72.1 this bit shall be set to 1."
is missing a comma before "this bit ... "
Similar in lines 37, 41, 45, 49, 53 on the same page

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.7.13a** *P* **119** *L* **32** # 189

Parnaby, Gavin Solarflare Communicat

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

Submitted on behalf of Todd Thompson, Solarflare.

Clause 45.2.7.13a and 45.2.7.14a are inconsistent with the rest of the standard in that the format of NP and XNP are partially defined in this clause. In the rest of the standard, the formats of NP and XNP are separated from the control/status registers controlling and reporting the status of what's to be advertised/been advertised. (See Clause 40.5 for 1G and 55.6 for 10G). The current definition is more difficult to read/follow than the way pages have been previously defined in the standard. It is not clear from the text in 45.2.7.13a and 45.2.7.14a how many pages are being sent, whether these pages are regular next pages or extended next pages, and what the format of those pages is to be.

SuggestedRemedy

Option 1 (preferred): Use existing reserved bits for previously defined Next Pages and Extended Next Pages as defined in Clause 40.5 and 55.6 and remove this new message code/format.
Option 2: Separate the definition of the message page/unformatted page out of Clause 45.2.7.13a and 45.2.7.14a and put the format of these pages and mapping of these bits into the EEE Clause 78 to make this consistent to the way 1G and 10G has been done previously. Insert tables into Clause 78 which define the number and format of NPs and/or XNP's similar to Clause 40.5 and 55.6.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

These registers are consistent with other registers in 45.2.7 for autonegotiation.

Cl **45** *SC* **45.2.7.13a** *P* **120** *L* **12** # 190

Parnaby, Gavin Solarflare Communicat

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

Submitted on behalf of Todd Thompson, Solarflare.

Tables 45-157a and 45-157b have multiple bits with the same designation without a clear indication of how the bits map to the pages. For example, in Table 45-157a there are multiple D0, D1 and D2. In Table 45-157b there are multiple U0, U1, and U2 bits. There's no indication how these bits are mapped to the individual bits in the next pages. It's not clear how many unformatted pages are being sent nor how multiple bits in the control register map to the same bits in the unformatted page/pages.

SuggestedRemedy

Option 1 (preferred): Use existing reserved bits for previously defined Next Pages and Extended Next Pages as defined in Clause 40.5 and 55.6 and remove this new message code/format.
Option 2: Separate the definition of the NP and XNP out of Clause 45.2.7.13a and 45.2.7.14a and put the format of these pages and mapping of these bits into the EEE Clause 78 to make this consistent to the way 1G and 10G has been done previously. Insert tables into Clause 78 which define the number and format of NPs and/or XNP's similar to Clause 40.5 and 55.6.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The clause reference denotes whether the bits are sent as part of a Clause 28 or Clause 73 next page.

Cl **45** *SC* **45.2.7.13a** *P* **120** *L* **12** # 193

Parnaby, Gavin Solarflare Communicat

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

Submitted on behalf of Todd Thompson, Solarflare.
Also Page 122 Lines 12-33

Tables 45-157a and 45-157b use different indicators for the bits in the unformatted message page. Table 45-157b uses U0-U2 while Table 45-157a uses D0-D1.

SuggestedRemedy

Both should use U0-U2.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.7.14a** *P* **121** *L* **16** # 194

Parnaby, Gavin Solarflare Communicat

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

Submitted on behalf of Todd Thompson, Solarflare.
Also Ppage 122 line 5.

The name of Register 7.61 in Clause 45.2.7 is inconsistent with the names of other similar autonegotiation registers in Clause 45.2.7 and Clause 22. Outgoing/control registers are called "advertisement" registers while link partner/incoming status registers are called "ability" registers.

SuggestedRemedy

Change the name of register 7.61 from "EEE link partner advertisement" to "EEE link partner ability". Change any reference to this register to this new name (such as in Clause 40.5 Page 108 Line 34).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.7.14a** *P* **121** *L* **18** # 70

Hajduczenia, Marek ZTE Corporation

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

"All of the bits in the EEE LP advertisement register are read only."
should read "All of the bits in the EEE LP advertisement register are <<read-only>>."

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **46** *SC* **46.1.3.2** *P* **126** *L* **12** # 219

Brown, Matt AppliedMicro (AMCC)

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

Should be more specific about use of 06.

SuggestedRemedy

Change "Decription" to ...
"Only valid on all four lanes to request LP_IDLE."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

"Only valid on all four lanes simultaneously to request LP_IDLE."

Cl **46** *SC* **46.1.7** *P* **125** *L* **17** # 71

Hajduczenia, Marek ZTE Corporation

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

(1) "mapping changes slightly when LPI signaling is in operation" - how much is slightly? Either it changes or not.
Remove "slightly"
(2) "LPI_IDLE.request shall not be set to ASSERT unless the attached link is operational (i.e. link_status = OK, according to the underlying PCS/PMA). LP_IDLE.request shall remain to be set to DEASSERT for 1 second following link_status changing state to OK."- this block of text is written in smaller font than the rest of the paragraph

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

1) "The mapping is changed if EEE capability is supported."

2) fix font size.

Cl **46** *SC* **46.1.7** *P* **125** *L* **20** # 24

Marris, Arthur Cadence

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

"LP_IDLE.request shall remain to be set to DEASSERT for 1 second following link_status changing state to OK" reads awkwardly.

SuggestedRemedy

Delete this sentence and change previous sentence to:

LPI_IDLE.request shall not be set to ASSERT unless the attached link has been operational for one second (i.e. link_status = OK, according to the underlying PCS/PMA).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

LPI_IDLE.request shall not be set to ASSERT unless the attached link has been operational for at least one second (i.e. link_status = OK, according to the underlying PCS/PMA).

Cl **46** *SC* **46.1.7** *P* **125** *L* **20** # 179

Estes, Dave UNH - IOL

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

"shall remain to be set to" should be "shall remain set to"

SuggestedRemedy

Change "shall remain to be set to" to "shall remain set to"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Sentence reworded by comment #24.

Cl **46** *SC* **46.3** *P* **125** *L* **45** # 72

Hajduczenia, Marek ZTE Corporation

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

"RX_CLK may be halted according to 46.3.2.4a" is written in larger font than the res of the paragraph.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **46** *SC* **46.3.1.5a** *P* **126** *L* **21** # 240

Brown, Matt AppliedMicro (AMCC)

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

Throughout this sub-clause there are references to the LPI client. The LPI client is the MAC and this section describes RS Transmit functionality.

The LPI client indicates LPI request through LP_IDLE.request. This section descript LPI request through the XGMII.

SuggestedRemedy

Change all instances of "LPI Client" to "RS".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **46** *SC* **46.3.1.5a** *P* **126** *L* **22** # 73

Hajduczenia, Marek ZTE Corporation

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

(1) "LPI state by asserting TXC and setting TXD to 06 (in all lanes)." - that value 06 is decimal, hexadecimal or in some other encoding. Similar comment to 46.3.2.4a, line 20, page 127
(2) "shown in Figure 46-7a if and only if the clock stop capable bit is asserted [45.2.3.2.2a]." - why is the reference in square brackets? change "[45.2.3.2.2a]" to "(see 45.2.3.2.2a)" and make sure that the link is live. Similar comment to 46.3.2.4a, line 25, page 127

SuggestedRemedy

(1) Probably 0x06 is meant, which corresponds to 0000 0110 in binary, correct ? Make sure that it is clear what encoding is used.
(2) per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **46** *SC* **46.3.1.5a** *P* **126** *L* **42** # 221

Brown, Matt AppliedMicro (AMCC)

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

In Figure 46-7a, it would be instructive to show the LP_IDLE.request that triggers the assertionof LP_IDLE on the XGMII.

SuggestedRemedy

Add a signal showing the LP_IDLE.request assert message and indicate it as the impetus for asserting LP_IDLE on the XGMII.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Other diagrams do not show message transitions - e.g. PLS_DATA.request or PLS_DATA.indication.

Cl **46** *SC* **46.3.2.2** *P* **127** *L* **37** # 222
Brown, Matt AppliedMicro (AMCC)

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

In Figure 46-8a, it would be instructive to show the LP_IDLE.indication that results upon detection of LP_IDLE on the XGMII.

SuggestedRemedy

Add a signal showing the LP_IDLE.indicate assert message and indicate it results from receipt of LP_IDLE on the XGMII.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Other diagrams do not show message transitions - e.g. PLS_DATA.request or PLS_DATA.indication.

Cl **46** *SC* **46.3.2.2** *P* **127** *L* **8** # 220
Brown, Matt AppliedMicro (AMCC)

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

Should be more specific about use of 06.

SuggestedRemedy

Change "Decription" to ...
"Only valid on all four lanes to indicate LP_IDLE is asserted."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

"Only valid on all four lanes simultaneously to indicate LP_IDLE is asserted."

Cl **46** *SC* **46.3.2.4a** *P* **127** *L* **18** # 241
Brown, Matt AppliedMicro (AMCC)

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

Throughout this sub-clause there are references to the LPI client. The LPI client is the MAC and this section describes RS Receive functionality.

The LPI client receives LPI indication through LP_IDLE.indication. This section describes LPI indication through the XGMII.

SuggestedRemedy

Change all instances of "LPI Client" to "RS".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **46** *SC* **46.3.2.4a** *P* **127** *L* **33** # 203
Brown, Matt AppliedMicro (AMCC)

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

LP_IDLE on XGMII is not always followed by IDLE (4x07h control characters). If the PHY is Clause 55, then LP_IDLE might be followed by Local Fault ordered sets. This section should at least mention this.

Note that another comment requests that error control characters be sent instead or that only idles follow LP_IDLE. A different remedy than specified below may be required.

SuggestedRemedy

Add note that LP_IDLE may be followed by local fault ordered sets rather than IDLE.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Add a second note:

"Note: In some instances, LPI may be followed by characters other than IDLE during the wake time."

Cl **46** *SC* **46.4a.1** *P* **128** *L* **40** # 223
Brown, Matt AppliedMicro (AMCC)

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

LPI indication goes to LPI client.

SuggestedRemedy

Change "station management entity" to "LPI client".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **48** *SC* **48.2.4.2** *P* **134** *L* **3** # 75
Hajduczenia, Marek ZTE Corporation

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

Personally, I think "||LPIDLE||" should be "||LPI_IDLE||", which is what it is i.e. it is an LPI IDLE. Do not remove that extra I from within the acronym.

SuggestedRemedy

Suggest a change per comment. Scrub draft as needed.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

LPI stands for Low Power Idle, therefore a second "I" would be unnecessarily redundant.

Cl **48** *SC* **48.2.6.1.2** *P* **135** *L* **40** # 76

Hajduczenia, Marek ZTE Corporation

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

Missing space between "specified in 48.2.4.2.3" and "For EEE capability".

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **48** *SC* **48.2.6.1.2** *P* **135** *L* **49** # 180

Estes, Dave UNH - IOL

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

||LI|| is currently defined as "The column of four Idle Sync or Skip code-groups consisting of either 3 lanes of ||K|| and one lane
of /D20.5/ or three lanes of ||R|| and one lane of /D20.5/ as specified in 48.2.4.2."

||LI|| should also be indicated for the reception of an ||A|| which is preceded by a column of three /K/ and one /D20.5/ or three /R/ and one /D20.5/ as defined in 48.2.4.2.

Additionally, the ||x|| designation is used to describe a full column and should not be used for only three characters of /K/ or /R/.

SuggestedRemedy

Change the definition of ||LI|| from:
"The column of four Idle Sync or Skip code-groups consisting of either 3 lanes of ||K|| and one lane of /D20.5/ or three lanes of ||R|| and one lane of /D20.5/ as specified in 48.2.4.2."

To:
"The column consisting of three /K/ characters and one of /D20.5/, or three /R/ characters and one /D20.5/, or a column of ||A|| preceded by a column containing three /K/ characters and one /D20.5/ or three /R/ characters and one /D20.5 as specified in 48.2.4.2."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **48** *SC* **48.2.6.1.3** *P* **136** *L* **5** # 74

Hajduczenia, Marek ZTE Corporation

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

"For EEE capability, this variable is affected by the LPI receive state diagram. Without EEE capability this variable is identical to deskew_align_status controlled by the deskew state diagram"
change to
"If EEE capability is supported, this variable is affected by the LPI receive state diagram. Otherwise, this variable is identical to deskew_align_status controlled by the deskew state diagram"

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The "capability" wording was agreed after very long discussions during comment resolution for D2.0.

Cl **48** *SC* **48.2.6.1.4** *P* *L* # 259

Horner, Rita Avago

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

check_end function is not defined in 802.3az. When LPI is enabled in the device, there is a possibility that /D20.5/ will apear in the column following ||T||.

SuggestedRemedy

Check_end
Prescient Terminate function used by the PCS Receive process to set the RXD<31:0> and RXC<3:0> signals to indicate Error if a running disparity error was propagated to any Idle code-groups in ||T||, or to the column following ||T||. The XGMII Error control character is returned in all lanes less than n in ||T||, where n identifies the specific Terminate ordered-set ||Tn||, for which a running disparity error or any code-groups other than /A/ or /K/ or /D20.5/ are recognized in the column following ||T||. The XGMII Error control character is also returned in all lanes greater than n in the column prior to ||T||, where n identifies the specific Terminate ordered-set ||Tn||, for which a running disparity error or any code group other than /K/ is recognized in the corresponding lane of ||T||. For all other lanes the value set previously is retained.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **48** *SC* **48.2.6.1.6a** *P* **137** *L* **10** # 155

Healey, Adam LSI Corporation

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

With the exception of the rx_wf_timer, each timer definition mistakenly refers to the "PMD's" receiver or transmitter when it should refer to the "PCS" transmitter or receiver.

SuggestedRemedy

Per comment.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **48** *SC* **48.2.6.1.6a** *P* **137** *L* **9** # 261

Horner, Rita Avago

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

rx_tq_timer is not precise. Not clear about the "enter RX_SLEEP" state.

SuggestedRemedy

rx_tq_timer: This timer is started when the PMD's receiver enters the RX_SLEEP state. The timer is restarted everytime ||LPIDLE|| is received, sig_detect=1 and !rx_tq_timer_done while in RX_SLEEP state. The timer terminal counter is set to TQR. When the timer reaches terminal count it will set the rx_tq_timer_done=TRUE.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The state diagram conventions make it clear that the action (start rx_tq_timer) is performed each time the state is entered (or re-entered).

Cl **48** *SC* **48.2.6.2** *P* **140** *L* **24** # 217

Brown, Matt AppliedMicro (AMCC)

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

Remove comparisons to logical values.

SuggestedRemedy

Change "rx_lpi_active = FALSE" to "!rx_lpi_active".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **48** *SC* **48.2.6.2.5** *P* **141** *L* **30** # 77

Hajduczenia, Marek ZTE Corporation

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

"when true. The receive LPI" - sometimes you capitalize true, sometimes you do not. Which is it? It does not seem to be consistent even within a single clause.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

There is only one instance of "true" - change to "TRUE"

Cl **48** *SC* **48.2.6.2.5** *P* **143** *L* # 262

Horner, Rita Avago

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

Figure 48-9b
In Figure 48-9b-LPI Receive state diagram page 143,

RX_ACTIVE transitions to RX_SLEEP when following condition is satisfied:

||LPIDLE|| * align_status = deskew_align_status

Is it possible that the transition occurs when both align_status=FAIL and deskew_align_status=FAIL?

In another word, is it possible for ||LPIDLE|| to be detected when deskew_align_status=FAIL and how the MAC/RS interpret the ||LFAULT|| (as a result of align_status=FAIL) when the XGXS Receive is in low power mode?

This should be prevented otherwise the Rx portion of the design will go into low power state when the received ||LPIDLE|| column validity is questionable and continue to indicate ||LFAULT|| on the RXC/RXD instead of ||LPIDLE||.

SuggestedRemedy

Change criteria for RX_ACTIVE to RX_SLEEP, to "||LPIDLE|| * align_status = OK * deskew_align_status = OK"

Proposed Response *Response Status* **W**

PROPOSED REJECT.

If alignment is lost, the PCS receive state diagram will prevent the decode function from operating.

Cl **48** *SC* **48.2.6.2.5** *P* **143** *L* # 257

Horner, Rita Avago

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

Figure 48-9b
Figure 48-9b transitions fom RX_WAKE are ambiguous

SuggestedRemedy

Chagne criteria for RX_WAKE to RX_QUIET, to "(signal_detect=FAIL) * !rx_tw_timer_done
Change criteria for RX_WAKE to RX_ACTIVE, to "(signal_detect=OK) * !rx_tw_timer_done * deskew_align_status=OK * ||IDLE||
Chagne criteria for RX_WAKE to RX_SLEEP, to "(signal_detect=OK) * !rx_tw_timer_done * deskew_align_status=OK * ||LPIDLE||

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **48** *SC* **48.2.6.2.5** *P* **143** *L* # 256

Horner, Rita Avago

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

Figure 48-9b

Figure 48-9b transitions from RX_SLEEP are ambiguous.

SuggestedRemedy

Change criteria for RX_SLEEP to RX_SLEEP, to "||LPIDLE|| * !rx_tq_timer_done *(sig_detect=OK)"
Change criteria for RX_SLEEP to RX_ACTIVE, to "||IDLE|| * !rx_tq_timer_done *(sig_detect=OK)"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **48** *SC* **48.2.6.2.5** *P* **144** *L* **14** # 260

Horner, Rita Avago

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

Table 48-10. TQR definition is not precise. The tq timer done is also used in RX_SLEEP state.

SuggestedRemedy

TQR : Time to wait for remote partner transmitter to refresh after it's disabled.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The definition that is in the table is accurate.

Cl **48** *SC* **48.2.6.2.5** *P* **144** *L* **16** # 153

Healey, Adam LSI Corporation

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

The duration of rx_tw_timer is specified to be TWR which in Table 48-10 is given a range of between 8 to 9 us. A lower limit here is superfluous. It implies that there is lower limit on the wake time.

SuggestedRemedy

In the definition of rx_tw_timer change:
"The timer terminal count is set to TWR."

To:
"The timer terminal count shall not exceed the maximum value of TWR in Table 48-10."

Remove TWR(min) from Table 48-10.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

If TWR is set too low then the receiver may falsely assert wake time fault.

Cl **48** *SC* **48.2.6.2.6** *P* **144** *L* # 258

Horner, Rita Avago

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

The convention is to have similar register map for PCS, PHY XS and DTE XS. PHY and DTE LPI management registers are not defined in AZ.

SuggestedRemedy

Add PHY XS LPI managment registers 4.1.11, 4.1.10, 4.1.9,4.1.8, 4.22
Add DTE XS LPI managment registers 5.1.11, 5.1.10, 5.1.9, 5.1.8, 5.22

Proposed Response *Response Status* **W**

PROPOSED REJECT.

There is no current definition for the use of LPI along with XGXS.

Cl **48** *SC* **Fig 48-9b** *P* **143** *L* **16** # 135

Pillai, Velu Broadcom

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

To make the trasnition from RX_SLEEP to RX_ACTIVE more robust, the condition should be changed from

|| IDLE || * !rx_tq_timer_done

to

|| IDLE || * !rx_tq_timer_done * deskew_align_status = OK

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **48** *SC* **Fig 48-9b** *P* **143** *L* **30** # 138

Pillai, Velu Broadcom

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

I think we should rename RX_WTF to RX_EXW (Extended wake)
or at least add a "K", which will make it RX_WKTF (Wake time fault)

Which ever way we decide, all the reference to WTF needs to be changed too.

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Changing the name will effect multiple lines in multiple clauses.

Cl **49** *SC* **48.2.6.2** *P* **138** *L* **52** # 218

Brown, Matt AppliedMicro (AMCC)

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

Transitions are on ordered_sets not code groups.

SuggestedRemedy

Change code-groups to ordered_sets. (yeah, that underscore's supposed to be there)

Proposed Response *Response Status* **W**

PROPOSED REJECT.

This wording is used in 802.3-2008. The operations in this state machine are on code-groups.

Cl **49** *SC* **49.1.5** *P* **146** *L* **28** # 161

Healey, Adam LSI Corporation

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

"If the optional Energy Efficient Ethernet (EEE) capability is supported (see Clause 78) then the interface with the PMA sublayer (or FEC sublayer) includes rx_quiet and tx_quiet to control power states in lower sublayers and energy_detect that indicates whether the PMD sublayer has detected a signal at the receiver."

In the case of the FEC sublayer, it also includes rx_lpi_active.

SuggestedRemedy

Amend the paragraph accordingly.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Append the sentence:

If the PHY includes an FEC sublayer the interface includes rx_lpi_active to indicate that the LPI receive state diagram is not in RX_ACTIVE state.

Cl **49** *SC* **49.1.6** *P* **147** *L* **22** # 125

Dawe, Piers Independent

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

Without the underlines it would not be sufficiently clear what "EEE only" applies to.

SuggestedRemedy

These signals should be dotted as in Figure 51-3; so should the "Data output when scrambler_bypass is true" of Figure 49-5.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Place dotted box around the signals.

Also around the "Data output." of Figure 49-5.

Cl **49** *SC* **49.2.13.2.5** *P* *L* # 154

Healey, Adam LSI Corporation

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

The duration of rx_tw_timer is specified to be TUL. This should be TWR. In Table 49-3 TWR is given a range between 11 to 12 us when scrambler_bypass_enable is FALSE and a range between 13 and 14 us when scrambler_bypass_enable is TRUE. A lower limit here is superfluous. It implies that there is lower limit on the wake time.

SuggestedRemedy

In the definition of rx_tw_timer change:
"The timer terminal count is set to TUR."

To:
"The timer terminal count shall not exceed the maximum value of TWR in Table 49-3."

Remove TWR(min) from Table 49-3.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

If TWR is set too low then the receiver may falsely assert wake time fault.

Cl **49** *SC* **49.2.13.2.5** *P* **153** *L* **14** # 178

Healey, Adam LSI Corporation

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

The definition of rx_tq_timer states that it is started in the RX_QUIET state. Referring to the LPI Receive state diagram (Figure 49-17) it appears that it is actually started in the RX_SLEEP state.

SuggestedRemedy

Update the definition.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **49** *SC* **49.2.13.3** *P* **146** *L* **18** # 10545

Brown, Matt AppliedMicro (AMCC)

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

This comment reports an issue similar to that reported in comment #93 in CL 55. It relates to the state machine in Figure 49-14 and the definition of T_BLOCK_TYPE LI on pages 142 and 143. T_BLOCK_TYPE LI is specified as including cases with either 8 /LI/ or 4x/LI/+4x/I/. As the state machine in Figure 49-14 is currently defined this allows and requires transition to low power mode (TX_LI state) if either is detected. Transition to low power mode upon detection of 4x/LI/+4x/I/ should not be permitted. However, provision is required to allow for this special case while in the TX_LI state.

SuggestedRemedy

Define LII as...
"LII: If the optional Low Power Idle function is supported then LII occurs when the vector contains four /LI/ control characters followed by four /I/ control characters."
Re-define LI as...
"LI: If the optional Low Power Idle function is supported then the LI type occurs when the vector contains eight control characters of /LI/."
In Figure 49-14...
Change the criteria for transition for the following transition to include LII:
TX_C to TX_E
TX_INIT to TX_E
TX_D to TX_E
TX_E to TX_E
TX_T to TX_E
Change the criteria for transition from TX_LI to TX_LI (loop) to "T_TYPE(tx_raw)=(LI+LII)".
Alternately, change the criteria for transition from TX_L to TX_C to "T_TYPE(tx_raw)=(I+LII)".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

This comment against draft 2.0 was received late and not processed at the task force meeting.

This should be resolved by the response to D2.0 comments #99 and #456

Cl **49** *SC* **49.2.13.3** *P* **154** *L* **46** # 237

Brown, Matt AppliedMicro (AMCC)

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

It relates to the state machine in Figure 49-14 and the definition of T_BLOCK_TYPE C and LI on pages 150 and 151. T_BLOCK_TYPE LI is specified as including cases with either 8 /LI/ or 4x/LI/+4x/I/. As the state machine in Figure 49-14 is currently defined this allows and requires transition to low power mode (TX_LI state) if either is detected. Transition to low power mode upon detection of 4x/LI/+4x/I/ should not be permitted. However, provision is required to allow for this special case while in the TX_LI state. Also, 4x/I/+4x/LI/ is a valid block and should not result in an error block.

SuggestedRemedy

Define LII as...
"LII: If the optional Low Power Idle function is supported then LII occurs when the vector contains either (a) four /LI/ control characters followed by four /I/ control characters or (b) four /I/ control characters followed by four /I/ control characters."
Re-define LI as...
"LI: If the optional Low Power Idle function is supported then the LI type occurs when the vector contains eight control characters of /LI/."
Re-define first criteria of C as...
eight valid control characters other than /O/, /S/, /T/, /E/ and /LI/.

In Figure 49-14...
Change the transition criteria as follows:
TX_INIT to TX_C: T_TYPE(tx_raw)=(C+LII)
TX_C to TX_C: T_TYPE(tx_raw)=(C+LII)
TX_D to TX_E: T_TYPE(tx_raw)=(E+C+S+LI+LII)
TX_E to TX_C: T_TYPE(tx_raw)=(C+LII)
TX_T to TX_C: T_TYPE(tx_raw)=(C+LII)
TX_LI to TX_LI: T_TYPE(tx_raw)=(LI+LII)

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The current definition for C includes the cases with less than 8 /LI/, the definition for LI is restricted to all 8 /LI/.

This covers all of the corner cases.

Cl **49** *SC* **49.2.13.3** *P* **155** *L* **11** # 216

Brown, Matt AppliedMicro (AMCC)

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

Remove comparisons to logical values.

SuggestedRemedy

Change "rx_lpi_active = FALSE" to "!rx_lpi_active", two instances.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **49** *SC* **49.2.13.3.1** *P* **148** *L* **3** # 10224

Gustlin, Mark Cisco

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

It would help to put in a text description of the behavior of each state machine, 49-16 and 49-17, what is each SM accomplishing at a high level.

SuggestedRemedy

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Comment #455 may satisfy this.

Cl **49** *SC* **49.2.13.3.1** *P* **149** *L* **18** # 10546

Brown, Matt AppliedMicro (AMCC)

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

It is possible to be caught in RX_SLEEP state. The only exit conditions are detection of IDLE blocks or detection of no energy at PMA. It is possible that with a compromised signal that neither !signal_ok or IDLE will be detected.

SuggestedRemedy

Move the "start rx_tq_timer" from RX_QUIET state to the RX_SLEEP state (as proposed in Comments #425 and #448) and add a transition to RX_LINK_FAIL on "rx_tq_timer_done * signal_ok". Note that this transition is already included in the CL 49 LPI RX SM.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

This comment against draft 2.0 was received late and not processed at the task force meeting.

This should be resolved by the response to D2.0 comments #99 and #456

Cl **49** *SC* **49.2.13.3.1** *P* **156** *L* **26** # 166

Koenen, David Hewlett-Packard

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

Missing arrow head on line from RX_QUIET to RX_LINK_FAIL.

SuggestedRemedy

Add arrow head.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **49** *SC* **49.2.13.3.1** *P* **156** *L* **43** # 238

Brown, Matt AppliedMicro (AMCC)

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

Transition from RX_REF_SCR_BYPASS or RX_REF_SCR_ON to TX_WAKE will cause result in far end receiver transitting to RX_ACTIVE state the receiving random behaviour when local TX is in SCR_BYPASS state (should be labelled TX_WAKE_SCR_BYPASS).

SuggestedRemedy

Change SM as follows:
(1) change transition "TX_REFRESH_SCR_BYPASS-TX_WAKE" to TX_REFRESH_SCR_BYPASS-TX_ACTIVE
(2) For (1) change criteria from "T_TYPE(tx_raw)=I" to "(T_TYPE(tx_raw)=I)*one_us_timer_done"
(3) change transition "TX_REFRESH_SCR_ON-TX_WAKE to TX_REFRESH_SCR_ON-TX_ACTIVE"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See comment #132

Cl **49** *SC* **49.2.13.3.1** *P* **156** *L* **43** # 215

Brown, Matt AppliedMicro (AMCC)

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

For clarity and consistency re-name SCR_BYPASS to TX_WAKE_SCR_BYPASS.

SuggestedRemedy

Re-name SCR_BYPASS to TX_WAKE_SCR_BYPASS.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **49** *SC* **49.2.13.3.1** *P* **156** *L* **8** # 18

Mark, Gustlin Cisco

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

Clean up the overlap in the text and state machine lines in figure 49-16.

SuggestedRemedy

as above.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **49** *SC* **49.2.13.3.1** *P* **157** *L* **19** # 232

Brown, Matt AppliedMicro (AMCC)

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

Transition criteria from RX_SLEEP to RX_ACTIVE or RX_SLEEP not consistent with rest of SM. R_TYPE is elsewhere anded with rx_block_lock.

SuggestedRemedy

Simple fix.
Change "R_TYPE(rx_coded) = IDLE" to "(R_TYPE(rx_coded) = IDLE) * rx_block_lock".
Alternately.
Consider/define (R_TYPE(x) = y) being TRUE to include the condition that rx_block_lock = TRUE. In which case, we can clean up the SM by removing the rx_block_lock condition from the following transitions:
RX_WAKE to RX_SLEEP
RX_WAKE to RX_ACTIVE
RX_WTF to RX_SLEEP
RX_WTF to RX_ACTIVE
RX_ACTIVE to RX_SLEEP

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Use the simple fix.

Cl **49** *SC* **49.2.4.7** *P* **148** *L* **7** # 187

Parnaby, Gavin Solarflare Communicat

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

The response to comment #466 (on Clause 55) on draft 2.0 said that the control code for /LI/ in clause 49 would be changed to 0x06.

This was missed in the draft update.

SuggestedRemedy

Change the /LI/ control code to 0x06 in clause 49 as agreed in the response to comment #466 on draft 2.0.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **49** *SC* **49.2.4.7** *P* **148** *L* **7** # 181

Estes, Dave UNH - IOL

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

Comment #130 was accepted but not all of the text was changed.

SuggestedRemedy

Change "0x07" to "0x06" on page 148 line 7 and on page 149 line 42 to fulfill the changes accepted in comment #130.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **49** *SC* **49.2.6** *P* **148** *L* **25** # 15

Mark, Gustlin Cisco

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

"Change 49.2.6 for scrambler reset" is out of date, should be bypass.

SuggestedRemedy

Change to:
"Change 49.2.6 for scrambler bypass"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **49** *SC* **49.2.6** *P* **149** *L* **1** # 182

Estes, Dave UNH - IOL

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

scrambler_reset was removed in comment #456

SuggestedRemedy

Remove the text "To aid block synchronization in the receiver when the optional LPI function is supported, the registers ofscrambler shall be held at logic zero while scrambler_reset is TRUE."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See comment #239

Cl **49** *SC* **49.2.6** *P* **149** *L* **1** # 16

Mark, Gustlin Cisco

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

I believe this statement should be deleted:
"To aid block synchronization in the receiver when the optional LPI function is supported, the registers of
scrambler shall be held at logic zero while scrambler_reset is TRUE."

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See comment #239

Cl **49** *SC* **49.2.6** *P* **149** *L* **1** # 239

Brown, Matt AppliedMicro (AMCC)

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

I think this sentence was unintentionally retained. Scrambler reset is no longer required and has been replaced by scrambler bypass.

SuggestedRemedy

Replace sentence with...
"To aid block synchronization in the receiver when optional LPI function is supported, a scrambler bypass will be provided. When scrambler_bypass = true the scrambler bypass is used and the scrambler will otherwise continue to operate normally."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The change to draft 2.0 was implemented incorrectly. The paragraph on p. 149 l. 1 should have been replaced by the paragraph that was placed on p. 149 l. 15.

The paragraph that is in d2.0 p.141 .15 was incorrectly replaced.

Move paragraph from p.149 l.15 to l.1 (replacing the current). Move paragraph from D2.0 p.151 l.15 to p.149 l.15 (to repair the error).

Cl **49** *SC* **49.2.6** *P* **149** *L* **2** # 120

Dawe, Piers Independent

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

"while scrambler_reset is TRUE": I can't find any other occurrence of "scrambler_reset".

SuggestedRemedy

?

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See comment #239

Cl **49** *SC* **49.2.9** *P* **149** *L* **15** # 17

Mark, Gustlin Cisco

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

This statement says the the scrambler will be bypassed to aid synchronization, but I think this is only need if FEC is enabled, state this condition. I

SuggestedRemedy

Clarify the statement that this only applies if FEC is used.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See comment #239

add "when Clause 74 FEC is in use"

Cl **49** *SC* **49.2.9** *P* **149** *L* **2** # 122

Dawe, Piers Independent

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

"the scrambler input will bypass": "will" is deprecated (except in Clause 30 and as described in style manual)

SuggestedRemedy

shall? (with PICS) "bypasses"?
Scrub the draft.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See comment #239

Change will to shall

Cl **49** *SC* **49.2.9** *P* **150** *L* **28** # 127

Dawe, Piers Independent

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

The Lock state diagram, which I don't think is optional, uses the variable "rx_block_lock" where the current standard has "block_lock". Yet 49.2.13.2.2 says "The following variables are used only for the EEE capability... rx_block_lock". Problem - and there may be similar problems e.g. in Clause 36. So I'm piling on to D2.0 comment 190 and 174, we need to preserve the non-EEE material in an undamaged state, by use of annexes like 4A, duplicate state diagrams or other means. Otherwise, users will go back to 802.3-2008 for non-EEE product, and any future maintenance to affected areas will be ignored.

SuggestedRemedy

Preserve the non-EEE material in an undamaged state, by use of annexes like 4A, duplicate state diagrams or other means.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

This was discussed at length during the resolution of comments against draft 2.0.

Cl **49** *SC* **49.2.9** *P* **152** *L* **37** # 126

Dawe, Piers Independent

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

Lines 22, 29, 33, 47 "A boolean"
Line 37 "An boolean"
Line 40 "this Boolean"

SuggestedRemedy

See online editors' guidance (capital B for Mr Boole) and correct. Scrub the draft.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **49** *SC* **Fig 49-13** *P* **151** *L* **2** # 129

Pillai, Velu Broadcom

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

When the transmitter goes through activation or deactivation, the receiver will see invalid code words. hi_ber might get set before rx_block_lock becomes false (Page 151, line31). This will cause the receive SM (fig 49-15) to transit from RX_LI to RX_INIT (because of Page 155, line 3).

SuggestedRemedy

Change the transition to BER_MT_INIT (Page 151, line 2)
from reset + r_test_mode + !rx_block_lock
To reset + r_test_mode + rx_lpi_active.

This will make it consistent with Clause 55: fig 55-14 (LFER monitor state diagram).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The block lock is still required.

reset + r_test_mode + !rx_block_lock + rx_lpi_active

Cl **49** *SC* **Fig 49-16** *P* *L* # 140

Pillai, Velu Broadcom

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

Presently in CL49 LPI receive state machine, the transition from RX_QUIET to RX_WAKE is enabled by energy_detect. Energy detect is more susceptible to noise and cross talks. This will unnecessarily make the LPI RX State machine transition out of the RX_QUIET state. Several comments and concerns were put forward against Draft 2.0 during the September interim. Changes were made to the CL49 LPI transmit and receive state diagrams to handle this appropriately during false energy detect. These changes still does not address the vulnerability of the Energy Detect.

SuggestedRemedy

Pillai_1109_01.pdf addresses this issue and proposes a solution in detail. The idea is for the Transmitter to send out a pattern as a prequel before the refresh or wake sequence. During EEE mode, Energy detect function may use this alert pattern to detect electrical energy at the receiver.

The proposed pattern is a repeating "0XFF00" (eight "1"s and eight "0") for 1 usec.

Change to fig 49-16, LPI TX state diagram and all the other edits needed are show in Pillai_1109_01.pdf.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Unnecessary transitions out of RX_QUIET because of noise will cause a waste of power but will not cause any malfunction. Any method used to improve the quality of energy_detect will improve the power savings but will not require changes to this state diagram.

Cl **49** *SC* **Fig 49-16** *P* **156** *L* **16** # 132

Pillai, Velu Broadcom

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

If the FEC is enabled, then the transitions from
TX_SLEEP to TX_WAKE, TX_REF_SCR_BYPASS to TX_WAKE and TX_RE_SCR_ON to TX_WAKE will cause the state transitions to go through SCR_BYPASS state. But by this time the LP receiver has gone to RX_ACTIVE state, because:
In the case of TX_SLEEP to TX_WAKE: the receiver never went to RX_QUIET.
And in the other two cases, the FEC did see a determinist frame and would have locked to it.

But if the LPI TX SM again asserts Scrambler bypass in any of the above three cases, then this may cause the FEC decoder to de-assert FEC_block_lock and PCS to assert local fault at the XGMII side.

SuggestedRemedy

The way to avoid this is by modifying the LPI transmit state diagram from entering SCR_BYPASS state during these three scenarios.

Each of the above three transitions needs to be modified to

TX_SLEEP to TX_ACTIVE, TX_REF_SCR_BYPASS to TX_ ACTIVE and TX_RE_SCR_ON to TX_ ACTIVE, respectively.

Pillai_1109_01.pdf also addresses these changes.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Transition from TX_SLEEP: T_TYPE(tx_raw) != LI, goes to TX_ACTIVE

Transition from TX_REF_SCR_BYPASS: T_TYPE(tx_raw) != LI * one_us_timer_done, goes to TX_ACTIVE

Transition from TX_REF_SCR_ON: T_TYPE(tx_raw) != LI, goes to TX_ACTIVE

(the last one doesn't need to wait for the timer).

Cl **49** *SC* **Fig 49-16** *P* **156** *L* **4047** # 141

Pillai, Velu Broadcom

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

Both the conditions out of TX_REF_SCR_BYPASS and TX_REF_SCR_ON should be qualified with one_us_timer_done.

SuggestedRemedy

Modify the transition condition from

T_TYPE(tx_raw) != LI
to
T_TYPE(tx_raw) != LI * one_us_timer_done

for both these states.

pillai_1109_01.pdf also addresses this change.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The transitions from the refresh states to TX_WAKE do not neet to wait because the scrambler bypass will be held for 1 uS in state SCR_BYPASS.

Cl **49** *SC* **Fig 49-17** *P* **157** *L* **18** # 131

Pillai, Velu Broadcom

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

To make the transition from RX_SLEEP to RX_ACTIVE more robust, we should change transit condition from

!rx_tq_timer_done * R_TYPE(rx_coded)= IDLE

To

!rx_tq_timer_done * rx_block_lock * R_TYPE(rx_coded) = IDLE

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **49** *SC* **Fig 49-17** *P* **157** *L* **34** # 137

Pillai, Velu Broadcom

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

I think we should rename RX_WTF to RX_EXW (Extended wake)
or at least add a "K", which will make it RX_WKTF (Wake time fault)

Which ever way we decide, all the reference to WTF needs to be changed too.

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Changing the name will effect multiple lines in multiple clauses.

Cl **49** *SC* **Table 49-1** *P* **148** *L* **7** # 128

Pillai, Velu Broadcom

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

Resolution on Comment #130 against draft D2.0 was to change control code to 0x06, but it is still 0x07.

SuggestedRemedy

Change the control code to 0x06 at these loctions.
Page 148, line 7
Page 149, line 42

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **49** *SC* **Table 49-3** *P* **158** *L* **28** # 130

Pillai, Velu Broadcom

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

The transmitter can get a wake command while it is in TX_REFRESH, which means the LPI TX SM will go through the following state changes.

TX_ENERGY_ALERT -> TX_REFRESH -> TX_WAKE -> TX_WAKE_SCR_BYPASS and then to TX_ACTIVE.

Which means 1usec + 14usec + 12usec + 1usec + 1usec = 29usec.

The receiver wake timer is only 17 usec, hence the LPI RX SM will transition to RX_WTF state. But the above scenario is a valid wake. The way to avoid this is to increase the rx_tw_timer value.

Please note that the comment shows TX_ENERGY_ALERT state which is coming from a solution for a different comment. And its solution is addressed through pillai_1109_01.pdf. Now even without it, the issue exists.

SuggestedRemedy

Increase the timeout for RX wake timer to 29us (min) to 30us (max).
The following are the changes that are required.

1. sub clause: 49.2.13.2.5, page 153, Line 19 Change TUL to TWR.
2. table 49-3, page 158, line 28: Change the values to 29us (min) to 30us (max).
3. table 49-3, page 158, line 31: Remove this line. There is no need for two TWR.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

If scrambler_bypass is not used then the wake time may be shorter.

1. as written

2. 26uS, 27 uS

3. 29uS, 30uS

Cl **51** *SC* **51.2** *P* **162** *L* **1** # 168

Koenen, David Hewlett-Packard

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

rx_lpi_active appears in Figure 49-4 & Figure 74-2 going to the PMA, but does not appear in the PMA diagram or signal definitions.

SuggestedRemedy

Either add it to the PMA diagram and definitions or delete from the other figures and definitions.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The signal should not be shown going to the PMA in Figure 74-2.

In Figure 49-4 add "(FEC sublayer only)"

Cl **51** *SC* **51.4** *P* **162** *L* **29** # 124

Dawe, Piers Independent

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

Optional

SuggestedRemedy

should be "optional" (4 times in this diagram) Bug in base document: compare Figure 52-7 (which has its own bugs, but that's off topic).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **51** *SC* **51.4** *P* **162** *L* **3** # 123

Dawe, Piers Independent

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

Subclause heading for Table 51-3 is missing

SuggestedRemedy

Insert "51.4 Sixteen-Bit Interface (XSBI)"

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The change instruction names the figure.

Cl **55** *SC* **0** *P* **0** *L* **0** # 236

Brown, Matt AppliedMicro (AMCC)

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

In many figures, there is a statement "... mandatory for EEE." This doesn't say that its not required by non-EEE PHYs and might be interpreted as saying that its optional for non-EEE PHYs.

SuggestedRemedy

Wherever there is statement "...mandatory for EEE capablity" or similar statement also indicate something like "...mandatory for EEE-capable PHYs and is not required for non-EEE PHYs".

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Adding 'not required for non-EEE PHYs' does not change the normative requirements of the text so it is not necessary.

However, the wording will be changed to match that in other clauses (see e.g. page 89 of draft 2.1), for consistency (though this doesn't seem to address the meat of the comment, which is why the proposed response is reject):
NOTE--Signals and functions shown with dashed lines are only required for the EEE capability.

The editor also notes that in at least one state diagram a new variable has been added which are not defined for non-EEE PHYs - in Figure 55-14 lpi_rx_wake_timer_done is used. Add a note to this figure that states
'NOTE- The variable lpi_rx_wake_timer_done is only required for the EEE capability and should be treated as if the value of this variable is TRUE otherwise.'

Cl **55** *SC* **0** *P* **0** *L* **0** # 206

Brown, Matt AppliedMicro (AMCC)

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

Many instances of both "EEE capability" and "LPI capability", but both have the same meaning. The latter is used only in Clause 55.

SuggestedRemedy

Change "LPI capability" to "EEE capability".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55** *P* **182** *L* **29** # 244
Brown, Matt AppliedMicro (AMCC)

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

LI and LII are defined as RBLOCKS not TBLOCKS.

SuggestedRemedy

Redefine LI and LII T_BLOCK types for XGMII.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See comments 253, 251

Cl **55** *SC* **55.1.1** *P* **167** *L* **33** # 9
Anslow, Peter Nortel Networks

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

"a LPI" should be "an LPI"

SuggestedRemedy

change "a LPI" to "an LPI"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Make change identified at location in comment as well as in other places in Clause 55

Cl **55** *SC* **55.2.2.10** *P* **172** *L* **39** # 205
Brown, Matt AppliedMicro (AMCC)

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

Add reference to figure.

SuggestedRemedy

Change "Receive 64B/65B state diagram" to "64B/65B receive state diagram in Figure 55-16".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55.2.2.3.1** *P* **171** *L* **47** # 224
Brown, Matt AppliedMicro (AMCC)

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

Description of pma_unitdata.request is not consistent with ALERT request. Changing the description will resolve this problem.

Note: This seems like an awkward way to request an action. A more consistent approach would be to use a request signal, e.g., PCS_TX_ALERT.request(alert). When alert = TRUE, PMA sends alert, else PMA sends data from PMA_UNITDATA.request.

SuggestedRemedy

Change description to...
"During transmission, ... and BI_DD. For EEE capable PHYs, the vector also requests the PMA to send the ALERT signal during LPI. The tx_symb_vector parameter takes on the form:"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55.3.2.2** *P* **173** *L* **52** # 207
Brown, Matt AppliedMicro (AMCC)

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

wording

SuggestedRemedy

Change "MAC across the XGMII" to "MAC via the XGMII".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55.3.2.2.0** *P* **174** *L* **38** # 226

Brown, Matt AppliedMicro (AMCC)

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

Use lp_idle to indicate lp idle characters. Also, "/LI/s" seems like bad syntax.

SuggestedRemedy

Change "/LI/s may be added following LPI" to "/LI/ control characters may be added following lp_idle".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The '/LI/s' terminology was used to maintain consistent bad-syntax with non-EEE PHYs - '/I/s' are used in 55.3.2.2.9 in the existing standard. The new subclause parallels 55.3.2.2.9 with' /I/s' replaced with '/LI/s'.

Change the sentence to
'/LI/s may be added follow low power idle control characters'.

Cl **55** *SC* **55.3.2.2.1** *P* **174** *L* **7** # 225

Brown, Matt AppliedMicro (AMCC)

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

Blocks and frames have as much or as little significance in LPI mode as in any other mode. Also, LPDC frame boundaries delimit LPI cycles. So retain, legacy wording and change new sentence.

SuggestedRemedy

Change two sentences from "Outside the LPI ... and alert times." to "Blocks and frames are unobservable and have no meaning outside the PCS. During the LPI mode, LDPC frame boundaries delimit sleep, wake, refresh, quiet and alert cycles."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55.3.2.2.21** *P* **175** *L* **47** # 227

Brown, Matt AppliedMicro (AMCC)

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

It is not clear what these two sentences are saying. Are they saying that there are two wake timer values for the transmitter depending on when the wake is requested? Or are they talking about the maximum time that the receive requires to wake up in each of the two modes. The use of the word maximum seems to have two meanings here.

It would clear things up immensely to give different variable names to the timer values for "during sleep" and "after sleep".

SuggestedRemedy

On page 175, line 46--48
Change ...
"The maximum PHY wake time, lpi_wake_timer, is 7.36 us (lpi_wake_timer=Tw_phy as defined by Clause 78), which occurs only when wake is requested before sleep has been transmitted. Typically, wake will be requested after the sleep signal is transmitted and in this case the maximum PHY wake time value is 4.48 us."
To...
"Typically, wake will be requested after the sleep signal is transmitted and in this case the maximum PHY wake time, phy_wake_timer, is 4.48 us. When wake is requested before sleep has been transmitted the maximum PHY wake time, is 7.36 us to allow extra time at the receiver for the sleep sequence to complete. In either case, the wake signal will be sent for a minimum time as indicated by phy_wake_timer."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

If accepted this changes the response to 229

Cl **55** *SC* **55.3.2.2.21** *P* **175** *L* **9** # 233

Brown, Matt AppliedMicro (AMCC)

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

Presumably, the scrambler continues to run as well.

SuggestedRemedy

Change sentence to:
"After the sleep signal is transmitted, LP_IDLE characters shall be input to the PCS scrambler continuously and the scrambler shall continue to operate until the transmit LPI mode ends."

Proposed Response *Response Status* **W**

PROPOSED REJECT.

There is no text saying that the scrambler is disabled.

Stating that it runs continuously is not necessary.

Cl **55** *SC* **55.3.2.2.21** *P* **176** *L* **25** # 234

Brown, Matt AppliedMicro (AMCC)

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

The last two sentences are not very clear and are incorrect.

SuggestedRemedy

Change...
"The /LI/ ... normal operation."
To...
"The PHY receive sends /I/ to the XGMII for 9 LDPC frame periods then resumes normal operation decoding received 64B/65B blocks and sending the decoded values to the XGMII."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

"The PCS receive function sends /I/ to the XGMII for 9 LDPC frame periods then resumes normal operation."

Cl **55** *SC* **55.3.2.2.21** *P* **176** *L* **3** # 228

Brown, Matt AppliedMicro (AMCC)

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

Header in column 1 is incorrect.

SuggestedRemedy

Change "lpi_tx_wake_time" to "lpi_wake_time".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55.3.2.2.21** *P* **176** *L* **3** # 229

Brown, Matt AppliedMicro (AMCC)

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

Fix wording in headers of columns 2 and 3.

SuggestedRemedy

Change "lpi_wake_timer during sleep" to "lpi_wake_timer when wake starts before sleep signal is complete".
Change "lpi_wake_time after sleep" to "lpi_wake_time when wake starts after sleep signal is complete [or during quiet/refresh]."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

(If comment #277 is accepted then

Change "lpi_wake_timer during sleep" to "phy_wake_timer when wake starts before sleep signal is complete".
Change "lpi_wake_time after sleep" to "phy_wake_time when wake starts after sleep signal is complete [or during quiet/refresh].")

Cl **55** *SC* **55.3.2.2.9** *P* **174** *L* **23** # 183

Estes, Dave UNH - IOL

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

Table 55-1

The 8B/10B codes provided for lp_idle are for the lp_idle used in Clause 36. They should be the 8B/10B codes for lp_idle used in Clause 48.

SuggestedRemedy

Change "K28.5/D6.5, K28.5/D26.4" to "K28.0 or K28.3 or K28.5 or D20.5".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55.3.2.2.9** *P* **174** *L* **23** # 204

Brown, Matt AppliedMicro (AMCC)

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

In Table 55-1, 8B/10B column is for codes used in 10GBASE-X not 1000BASE-X. For instance, the idle row lists K28.0, K28.3, K28.5 which are used in 10GBASE-X for idle as opposed to /K28.5/D5.6/ and /K28.5/D16.2/ used for 1000BASE-X.

SuggestedRemedy

Delete "K28.5/D6.5" and "K28.5/D26.4" and replace with "K28.0, or K28.3, K28.5 with D20.5"
Add idle row and change 8B/10B column to "K28.0, K28.3, or K28.5 without D20.5".
Add footnote to both rows "Use of idle and lp_idle ordered set per 48.2.4.2."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55.3.4a.1** *P* **177** *L* **27** # 243

Brown, Matt AppliedMicro (AMCC)

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

Loop timing in slave mode is never explicitly stated as a requirement for EEE.

SuggestedRemedy

Change ...
"Non-loop timed links are not supported by EEE."
To...
"An EEE capable PHY shall support loop timing and loop timing shall be enabled."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55.3.4a.1** *P* **177** *L* **41** # 230

Brown, Matt AppliedMicro (AMCC)

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

symmetric low power mode is not defined

SuggestedRemedy

change
"during the symmetric low power mode"
to
"when both transmit and receive are in LPI mode."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55.3.4a.3** *P* **179** *L* **18** # 208

Brown, Matt AppliedMicro (AMCC)

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

"alert" and "refresh" are signals

SuggestedRemedy

Change....
"then the alert shall be transmitted in place of the refresh."
To...
"then the alert signal shall be transmitted in place of the refresh signal."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

I think we need to be careful with the distinction between the 4 frames of alert signal and the alert sequence. The text shouldn't imply that the 4 frames of refresh are replaced by 4 frames of alert if the overlap is only partial (e.g. refresh starts 3 frames earlier).
Use
"then alert signalling shall be transmitted in place of the refresh signalling where the signals overlap."

Cl **55** *SC* **55.3.5.2.2** *P* **179** *L* **33** # 185

Parnaby, Gavin Solarflare Communicat

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

Separate the eee definitions. Applies to variables, constants, timers, functions, counters.

SuggestedRemedy

As comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55.3.5.2.3** *P* **181** *L* **18** # 235

Brown, Matt AppliedMicro (AMCC)

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

Defintion of "lpi_rx_wake_timer" does not match SM.

SuggestedRemedy

Change defintion to...
"This timer defines the time the receiver continues to send IDLE and/or LF blocks after the ALERT signal is detected."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

See also 242 as that may change whether LF are transmitted in the TX_WE state

Cl **55** *SC* **55.3.5.2.4** *P* **181** *L* **34** # 247

Grimwood, Michael Broadcom

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

Simplify the definition of R_BLOCK_TYPE C to be consistent with the new definition for T_BLOCK_TYPE C proposed in another comment.

SuggestedRemedy

Change:

C; The vector contains a data/ctrl header of 1 and one of the following:
a) A block type field of 0x1E and eight valid control characters, none of which are /E/ and, if the low power idle function is supported, none of which are /LI/;

To:

C; The vector contains a data/ctrl header of 1 and one of the following:
a) A block type field of 0x1E and eight valid control characters other than /E/ and /LI/;

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55.3.5.2.4** *P* **181** *L* **49** # 255

Grimwood, Michael Broadcom

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

In the existing PCS state diagram, certain normally occurring control blocks are considered as error (e.g. 4/I/ followed by 4/LI/). Redefine LII and add this type to state transitions currently conditioned on C.

SuggestedRemedy

Redefine the LII block type as follows:

LII: If the optional Low Power Idle function is supported then the vector contains a data/ctrl header of 1, a block type field of 0x1E, and one of the following:
a) four control characters of /LI/ followed by four control characters of /I/;
b) four control characters of /I/ followed by four control characters of /LI/.

In Figure 55-16 on page 187 add LII to the following state transitions:

RX_INIT to RX_C: Change C to C + LII
RX_C to RX_C: Change C to C + LII
RX_D to RX_T: Change (S + C + LI) to (S + C + LI + LII)
RX_D to RX_E: Change (E + C + LI + S) to (E + C + LI + LII + S)
RX_E to RX_T : Change (S + C) to (S + C + LI + LII)
RX_T to RX_C: Change C to C + LII
RX_E to RX_C: Change C to C + LII

Note that the change to the transition from RX_E to RX_T also includes LI in order to be consistent with allowing LI to follow T, such that the transition from RX_E to RX_T should include LI in the R_TYPE_NEXT.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55.3.5.2.4** *P* **182** *L* **14** # 252

Grimwood, Michael Broadcom

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

In the T_BLOCK_TYPE definition, type C conflicts with LII. Redefine type C to eliminate conflict (another comment addresses LII by redefining it).

SuggestedRemedy

Change:

C; The vector contains one of the following:
a) eight valid control characters other than /O/, /S/, /T/ and /E/ and, if the LPI function is supported, less than eight valid control characters of /LI/ and less than eight valid control characters of /I/;

To:

C; The vector contains one of the following:
a) eight valid control characters other than /O/, /S/, /T/, /E/, and /LI/.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55.3.5.2.4** *P* **182** *L* **28** # 251

Grimwood, Michael Broadcom

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

The definition of LI needs to be consistent with the wording for a 72-bit tx_raw vector (as opposed to 65-bit RX block).

SuggestedRemedy

Change:
LI: If the optional Low Power Idle function is supported then the LI type occurs when the vector contains a data/ctrl header of 1, a block type field of 0x1e, and eight control characters of /LI/.

To:
LI: If the optional Low Power Idle function is supported then the vector contains eight control characters of /LI/.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55.3.5.2.4** *P* **182** *L* **31** # 253

Grimwood, Michael Broadcom

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

In the T_BLOCK_TYPE definition, type C conflicts with LII. Redefine LII to eliminate conflict (another comment addresses C).

SuggestedRemedy

Change:

LII: If the optional Low Power Idle function is supported then the LII type occurs when the vector contains a data/ctrl header of 1, a block type field of 0x1e, and four control characters of /I/ followed by four control characters of (/LI/);

To:

LII: If the optional Low Power Idle function is supported then the vector contains one of the following:
a) four control characters of /LI/ followed by four control characters of /I/;
b) four control characters of /I/ followed by four control characters of /LI/.

Also on page 182 line 6, add LII to the list of types.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55.3.5.2.4** *P* **182** *L* **8** # 250

Grimwood, Michael Broadcom

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

Clarify which of the five types T_BLOCK_TYPE may be classified if LPI is not supported.

SuggestedRemedy

Change: "...one of the five types..." to: "...one of the first five types..."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55.3.5.2.4** *P* **182** *L* **9** # 209

Brown, Matt AppliedMicro (AMCC)

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

wording

SuggestedRemedy

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

Proposed Response *Response Status* **W**

PROPOSED REJECT.

C and I overlap, so the type can be classified as more than one type, as indicated by the next sentence in the draft, so the suggested change would not be correct.

Cl **55** *SC* **55.3.5.2.5** *P* **182** *L* **47** # 210

Brown, Matt AppliedMicro (AMCC)

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

wording
counts when frames are not being transmitted

SuggestedRemedy

On line 47
change
"that counts transmitted LDPC frames"
to
"that counts transmit LPDC frame periods"

On line 53
change
"that counts received LDPC frames"
to
"that counts receive LPDC frame periods"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55.3.5.4** *P* **183** *L* **10** # 231

Brown, Matt AppliedMicro (AMCC)

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

What is a sleep block?

SuggestedRemedy

Change
"from the time that the 64B/65B receiver detects a sleep block"
To
"from the time that the 64B/65B receiver enters TX_L state"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55.3.5.4** *P* **184** *L* # 186

Parnaby, Gavin Solarflare Communicat

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

Link monitoring and recovery during the LPI state needs more study.

In the current draft the criteria used to drop the link during LPI is not specified. Since PHYs can monitor link quality only during refreshes (and then only for 4 LDPC frames (~1.2us)) and since some PHYs may choose not to wake for all refreshes, it may take multiple refresh cycles before link drop is detected by both sides of the link. Then both sides need to go through a complete training sequence, taking up to 2s, to return to the normal operation mode.

If the link is disturbed during LPI the ability of the PHY to recover is limited by the quiet-refresh signaling since only 4 LDPC frames out of 512 can be used for equalizer/echo training. It would be extremely valuable to include a method by which EEE-10GBASE-T PHYs are able to recover a disturbed link without a full retrain.

SuggestedRemedy

See presentation.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.5.4** *P* **185** *L* **7** # 254

Grimwood, Michael Broadcom

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

When LPI is supported, Valid sets of control characters and should not trigger transitions to TX_E and subsequent transmission of the Error control block. Currently, 4/LI/ followed by 4/I/ causes transitions to TX_E.

SuggestedRemedy

Eliminate LII from the following transitions:

TX_INIT to TX_E
TX_C to TX_E
TX_E to TX_E
TX_T to TX_E

Add LII to the following transitions: (Outside of TX_L, act upon LII exactly as C)

TX_INIT to TX_C
TX_C to TX_C
TX_E to TX_C
TX_T to TX_C

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55.3.5.4** *P* **186** *L* **24** # 242

Brown, Matt AppliedMicro (AMCC)

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

In Figure 55-15a state TX_WE, local fault blocks are sent to indicate that the link has failed. It is previously sent only form transmit when transmit is in reset mode and from receive when receive is in reset or the input has failed (e.g., loss of block lock). A stream of local faults generates a local fault alarm at the RS and indicates that a link is failed and triggers re-calculation of routing tables at higher layers. Also, the state is wake error not wake fault :).

Normally, error characters or blocks are used to convey that an error event has occurred. In TX_WE state, send error blocks instead of local faults.

SuggestedRemedy

In TX_WE state, change "tx_coded <= LBLOCK_T" to "tx_coded <= EBLOCK_T".

On page 175, line 42, change "local fault 64B/65B blocks" to "64B/65B error blocks".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Local faults sent by the LPI state machine will be converted to errors by the rx state machine in the link partner, so local faults will not be seen at higher system layers with the present state diagrams.

Neither error or local fault helps the link in any way - they force the receiving LPI PHY to exit the LPI state with an error condition due to a problem with MAC-PHY signaling on its link partner, which is undesirable.

A better solution is to transmit IDLEs in the WE state. Then the PHY enforces 9 frames of IDLEs which gives the receiving PHY the best chance to return to the normal operational mode without errors. Also use a counter to count error events on wake on both tx and rx sides.
See comment 195

Cl **55** *SC* **55.3.5.4** *P* **188** *L* **23** # 195

Parnaby, Gavin Solarflare Communicat

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

There are no means to monitor RX wake errors in the current draft. Wake errors are monitored in 1000BASE-T.

There are no means to monitor TX wake errors in the current draft.

SuggestedRemedy

Add a counter which increments in the RX_W rx wake on error condition and the management to support this counter.
Add a counter which increments in the TX_WE tx wake on error condition and the management to support this counter.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Add counters

lpi_txw_err_cnt
lpi_rxw_err_cnt

lpi_txw_err_cnt increments in a delayless state added to the transition between TX_WE and TX_C
lpi_rxw_err_cnt increments in a delayless state added to the transition between RX_W and RX_E

Cl **55** *SC* **55.3.5.4** *P* **189** *L* **23** # 184

Estes, Dave UNH - IOL

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

Comment #141 was accepted but the text to define ldpc_frame_done was not added.

SuggestedRemedy

Add the text from comment #141.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55.3.5.4** *P* **189** *L* **8** # 211

Brown, Matt AppliedMicro (AMCC)

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

comparison to boolean value redundant

SuggestedRemedy

Change "tx_lpi_req=true" to "tx_lpi_req".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55.4.2.4** *P* **192** *L* **38** # 212

Brown, Matt AppliedMicro (AMCC)

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

alert is a 4 frame signals comprised of 3.5 frame periods (7 repeats) of 128-symbol xpr_master or xpr_slave sequence followed by 0.5 frame periods (128 symbols) of zero.

SuggestedRemedy

Change "(3.5 LDPC ... silence)"
to "(3.5 LDPC frame periods of xpr_master or xpr_slave sequence and 0.5 frame periods of zero symbols)"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change "(3.5 LDPC ... silence)"
to "(3.5 LDPC frame periods of xpr_master or xpr_slave sequence and 0.5 frame periods of zero symbols)"

Cl **55** *SC* **55.4.2.4** *P* **192** *L* **40** # 214

Brown, Matt AppliedMicro (AMCC)

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

Last sentence refers to deleted state diagram. The functionality was moved to the PCS state diagram.

SuggestedRemedy

Delete sentence...
"The receive state ... signalling sleep."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55.4.2.5.14** *P* **193** *L* **11** # 213

Brown, Matt AppliedMicro (AMCC)

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

Last sentence refers to deleted state diagram.

SuggestedRemedy

Delete sentence...
"PHYs with the EEE ... figure 55-27a."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55.4.2.5.14** *P* **193** *L* **18** # 245

Brown, Matt AppliedMicro (AMCC)

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

The MDI/MDIX function should apply to the ALERT signal as well.
Sentence should be re-worded, regardless.

SuggestedRemedy

Change sentence to...
For EEE capable PHYs, the MDI/MDIX function shall apply to refresh and alert signalling.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **55** *SC* **55.5.3.5** *P* **193** *L* **45** # 246

Brown, Matt AppliedMicro (AMCC)

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

The frequency variation should apply when changint to and from low power mode as well.

SuggestedRemedy

Add sentence...
The short-term frequency variation limit shall also apply when switching to and from LPI mode.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **69** *SC* **69.1.1** *P* **192** *L* **1** # 10186

Ganga, Ilango Intel

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

Clause 69 is also being amended by P802.3ba. Update the editing instructions and base text to indicate appropriate source (IEEE Std 802.3-2008 or P802.3ba).

SuggestedRemedy

As per comment

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
There doesn't appear to be any conflicting or overlapping changes.

But editor will add editor's note to indicate P802.3ba may also affect clause 69 and, in parenthesis, and identify draft if the edit is based on a draft

Cl **69** *SC* **69.1.1** *P* **198** *L* **7** # 119

Dawe, Piers Independent

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

As D2.0 comment 118: P802.3ba will be adding the objective "a 4 lane 40Gb/s PHY". The addition by 802.3az of "Optionally support Energy Efficient Ethernet will imply that 40GBASE-KR4 will support EEE.

SuggestedRemedy

If you intend to mandate EEE as an option for 40GBASE-KR4, Table 69-1 will make this clear. If you don't, change "Backplane Ethernet optionally supports Energy Efficient Ethernet (EEE) to reduce energy consumption." to "1000BASE-KX, 10GBASE-KX4 and 10GBASE-KR optionally support Energy Efficient Ethernet (EEE) to reduce energy consumption.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See response to comment 26.

Cl **69** *SC* **69.1.2** *P* **192** *L* **41** # 10118

D'Ambrosia, John Force10 Networks

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

P802.3ba will be adding the objective "a 4 lane 40Gb/s PHY. The addition by 802.3az of "Optionally support ENergy Efficient Ethernet will imply that 40GBASE-KR4 will support EEE.

SuggestedRemedy

Change added objective text to
"Optionally support Energy Efficent Ethernet for PHYs that support MAC rates of 10 Gb/s or lower."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See response to comment 26.

Cl **69** *SC* **69.1.2** *P* **198** *L* **17** # 26

Marris, Arthur Cadence

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

This is a pile on to comment 118 against 2.0.

"Optionally support EEE" implies 40GBASE-KR4 can also support EEE.

SuggestedRemedy

Change:
Optionally support EEE.

To:
Optionally support EEE for 10 Gb/s rates or lower.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT. Also answered as an editorial comment

Cl **69** *SC* **69.2.3** *P* **198** *L* **35** # 121

Dawe, Piers Independent

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

AUTO-NEGOTIATION

SuggestedRemedy

Auto-Negotiation

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **69** *SC* **69.2.3** *P* **198** *L* **44** # 118

Dawe, Piers Independent

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

As D2.0 comment 186: Clause 69 is also being amended by P802.3ba.

SuggestedRemedy

Show Table 69-1 as in P802.3ba (with the 40GBASE-KR4 row and extra columns) as your basis for modification.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Will change table to match that of P802.3ba with editors note to show source.

Cl **70** *SC* **70.6.10** *P* **200** *L* **35** # 20

Marris, Arthur Cadence

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

'responds' should not be underlined

SuggestedRemedy

as above

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **70** *SC* **70.6.5** *P* **200** *L* **18** # 19

Marris, Arthur Cadence

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

optional should not be underlined as it is in the base document. Same problem in 70.6.4 on line 4.

SuggestedRemedy

Remove underlining from the word 'optional'.

Also remove underlining from 'is optional and' on line 4.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **71** *SC* **71.6.4** *P* **204** *L* **46** # 21

Marris, Arthur Cadence

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

Incorrect underling

SuggestedRemedy

Remove underlining from 'is optional and' on line 46.

Remove underlining from the word 'optional' on line 7 page 205.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **72** *SC* **72.10** *P* **214** *L* **5** # 170

Kasturia, Sanjay Teranetics

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

Change "FED" to "FEC" to fix typo.

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **72** *SC* **72.6.4** *P* **207** *L* **26** # 10189

Ganga, Ilango Intel

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

Clause 72 supports digital signal detect mechanisms. Analog signal detect (or energy detect) was not part of this clause as it was felt that robust analog signal detect functions are difficult to define/implement in the backplane environment. (see thaler_01_0505.pdf, minutes_01_0505.pdf). Hence define a suitable digital signaling mechanism to exit from the low power idle state.

SuggestedRemedy

As per comment

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

At this point there is no clear alternative to a basic energy detect to waking up the PHY from sleep.

The receiver is just required to wake up within a certain time after detecting the electrical energy on the diff signal pair from a compliant, enabled transmitter.

The original KR signal_detect would not work for EEE because it requires that training to be complete before it could wake up the receiver. This was believed to be too long and we needed something to wake the PHY's receiver prior to that.

For EEE, the KR's transmit coefficients and receive equalization state are assumed to be saved before going quiet and quickly restored after wake so it can sync and lock much more quickly.

Changes were made to the state diagrams (see response to comment #425) to fix the observable behavior that may be caused by false detection. There is concern that the energy detect threshold level and detection circuitry could cause unnecessary activity in the receiver (due to noise and cross-talk).

Cl **72** *SC* **72.6.4** *P* **210** *L* **17** # 133

Pillai, Velu Broadcom

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

"The value of the SIGNAL_DETECT is defined by the training state diagram shown in Figure 72-5 when rx_quiet = FALSE."
Does not sound correct. The rx_quiet = FALSE happens several times when the PHY is in EEE. Change this line to

SuggestedRemedy

"The value of the SIGNAL_DETECT is defined by the training state diagram shown in Figure 72-5 when rx_lpi_active = FALSE."

Proposed Response *Response Status* **W**

PROPOSED REJECT.

There currently is no rx_lpi_active signal defined from the PMA to the KR PHY. But based on other proposals, I believe there should be.

Cl **72** *SC* **72.6.5** *P* **210** *L* **32** # 22

Marris, Arthur Cadence

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

Remove underlining from 'is' and 'optional'

SuggestedRemedy

as above

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **74** *SC* **74.10.2.2** *P* **219** *L* **21** # 177

Healey, Adam LSI Corporation

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

The variable fec_rapid_block_lock_edge "is set to TRUE to detect when fec_rapid_block_lock changes state from FALSE to TRUE." When is it set to FALSE?

Referring the FEC Lock state diagram (Figure 74-3).

1. If rx_lpi_active is TRUE and the link partner's transmission ceases during the quiet period (!signal_ok), the state diagram will not transition to FEC_LOCK_INIT state. It is not clear why this transition is inhibited; perhaps to stop fec_block_lock from being set to FALSE. However, there will be repeated parity check failures corresponding to the lack of an input signal. It seems that it can be safely assumed that fec_block_lock will be set to FALSE at some point during the quiet period and held there until refresh or wake.

2. As long as fec_rapid_block_lock_edge is TRUE, the state diagram is held in the RESET_CNT state.

3. When fec_rapid_block_lock_edge transitions from TRUE to FALSE, the state diagram tests the next available block. It proceeds to check for n = 4 consecutive good parity checks before fec_block_lock is set back to TRUE.

4. The variable fec_signal_ok is defined (page 219, line 10) to be signal_ok*(fec_block_lock+fec_rapid_block_lock_edge). Therefore, this value will be set to TRUE while fec_rapid_block_lock is TRUE, and then be set to FALSE for at least n = 4 FEC blocks before being set to TRUE again.

5. This fec_signal_ok variable is communicated to the PCS via the FEC_SIGNAL.indication primitive, and used in the PCS Lock state diagram (Figure 49-12). The behavior of fec_signal_ok implies that the PCS lock diagram will first try to obtain block synchronization, and then be forced to lose it, and then try to obtain it again.

The intended behavior is unclear.

SuggestedRemedy

1. If the intent is to have the PCS begin to acquire block lock when fec_block_lock is TRUE, then it seems unnecessary to include the term "+fec_rapid_block_lock_edge" in the definition of fec_signal_ok.

2. If the intent is to have the PCS begin to acquire block lock when fec_rapid_block_lock_edge is TRUE, the perhaps to correct entry point is FEC_BLOCK_LOCK where fec_block_lock is TRUE. In this case, the term "+fec_rapid_block_lock_edge" becomes redundant in the definition of fec_signal_ok. This assumes that the fec_rapid_block_lock process reliably identifies FEC block boundaries, since erroneous alignment wouldn't be detected for at least m = 8 FEC frames.

3. In either case, it seems that the qualification of fec_signal_ok for the optional EEE capability in 74.10.2.2 is not necessary and can be removed.

4. In either case, it seems necessary to define when fec_rapid_block_lock_edge is set to FALSE. It seems that this time should be (considerably?) less than one FEC block following its time of its assertion.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Agree with the commenter. The way fec_rapid_bloc_lock_edge is used in the state machine is not going to work correctly. The basic idea is to find the SLIP through the deterministic block and guide the FEC lock state machine to achieve fec_block_lock gracefully.

Suggetions:

#1. Remove text under 74.7.4.7

#2. Change the fec_signal_ok description for EEE capability to the following:

If EEE capability is supported, then fec_signal_ok is a Boolean variable that is set based on the most recently received value of PMA_UNITDATA.indication(SIGNAL_OK) and (fec_block_lock + fec_rapid_block_lock). It is set to true if the fec_bock_lock or fec_rapid_block_lock
value is true and PMA_UNITDATA.indication(SIGNAL_OK) value was OK and set to false otherwise. The value is sent to the PCS layer through the primitive FEC_SIGNAL.indication as
specified in 74.5.3.

#3. Remove the variable fec_rapid_block_lock_edge and the associated description.

#4 Add this new variable

fec_rapid_block_lock
This variable is set to true when FEC Rapid block synchronization mechanism locks to the deterministic FEC frame. And it is set to false when this mechanism does not receive the deterministic frame or rx_lpi_active = FALSE

#5 Changes to Fig 74-3
#a: Remove fec_rapid_block_lock_edge transition to RESET_CNT and the note associated with it.

#b: replace rx_lpi_active = FALSE to rx_quiet = TRUE

#c: Change the transition condition between TEST_FEC_BLOCK and VALID PARITY from "parity_good" to "parity_good + fec_rapid_block_lock"

#d: Change the transition condition between TEST_FEC_BLOCK and INVALID PARITY from "parity_invalid " to "parity_invalid * !fec_rapid_block_lock"

#e: Change the transition condition between VALID PARITY and FEC_BLOCK_LOCK from
"parity_good_cnt = n" to "(parity_good_cnt = n + fec_rapid_block_lock)"

#d Change the transition condition between VALID PARITY and TEST_FEC_BLOCK from "test_fec_block * parity_good_cnt < n" to "(test_fec_block * parity_good_cnt < n * fec_rapid_block_lock)"

These state diagram changes will gracefully set the fec_block_lock as soon as the fec_rapid_block_lock is achieved. Since the fec_rapid block lock mechanism will set the correct SLIP, the blocks that follows will also match the parity. Hence the FEC lock state diagram will maintain the fec_block_lock status.

Cl **74** *SC* **74.10.2.2** *P* **219** *L* **4** # 79

Hajduczenia, Marek ZTE Corporation

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

"...fec_block_lock. It is set to true if the..." - again, it is TRUE or true or True ??? There are several occurences within this and other clauses. Please scrub the draft accordingly.

SuggestedRemedy

Get the capitalization right unless there is a good reason to have capitalization different across various clauses.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **74** *SC* **74.11** *P* **221** *L* **1** # 80

Hajduczenia, Marek ZTE Corporation

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

PICS section is empty. If EEE does not changes to this subclause, why have it at all?

SuggestedRemedy

Either fill it in or remove it ...

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Please refer to Suggested remedy of #134

Cl **74** *SC* **74.11** *P* **221** *L* **8** # 176

Kasturia, Sanjay Teranetics

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

Add row in major capabilities table to cover EEE. Remove editor's note. Add shalls if needed in the clause text.

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Please refer to Suggested remedy of #134

Cl **74** *SC* **74.11.3** *P* *L* # 134

Pillai, Velu Broadcom

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

Add EEE to CL 74 PICS

SuggestedRemedy

Under 74.11.3 Major capabilities/options

Item: LPI
Feature: Rapid block lock
Subcals: 74.7.4.8
Value/Comment: Device implements Rapid block lock mechanism to suuport EEE.
Status: O
Support: Yes [] / No []

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **74** *SC* **74.4.1** *P* **215** *L* **215** # 156

Healey, Adam LSI Corporation

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

10GBASE-R service interface primitive names now map to several different functions. Bad idea. In the use of these primitive that follows, the parameter names suddenly become upper case (e.g. "tx_quiet" becomes "TX_QUIET").

SuggestedRemedy

Recommend the following changes:

d) "FEC_SIGNAL.request(tx_quiet)" should become "FEC_TXQUIET.request(tx_quiet)"
e) "FEC_SIGNAL.request(rx_quiet)" should become "FEC_RXQUIET.request(rx_quiet)"
f) "FEC_SIGNAL.indication(energy_detect)" should become "FEC_ENERGY.indication(energy_detect)"
g) "FEC_SIGNAL.request(rx_lpi_active)" should become "FEC_LPIACTIVE.request(rx_lpi_active)"

This will also align with service interface primitive names used in the Clause 51 PMA.

In addition, consistently use lower case for the parameter names.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **74** *SC* **74.4.1** *P* **215** *L* **40** # 157

Healey, Adam LSI Corporation

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

In Figure 74-2...

1) There is a typ-o in the title -- "diagra" should be "diagram"
2) The figure implies that rx_lpi_active is passed from the FEC sublayer to the PMA sublayer. It is not, remove it.

SuggestedRemedy

Per comment.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Accepting #1.

#2: There is a comment against CL72 (#133), if that gets accepted, then CL72 will be using rx_lpi_active

Cl **74** *SC* **74.4.1** *P* **215** *L* **46** # 10

Anslow, Peter Nortel Networks

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

In title of Figure 74-2 "diagra" should be "diagram"

SuggestedRemedy

Change "diagra" to "diagram"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **74** *SC* **74.4.1** *P* **221** *L* **40** # 169

Koenen, David Hewlett-Packard

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

rx_lpi_active is not an output of the FEC nor an input to the PMA sublayer.

SuggestedRemedy

Delete from signal name from FEC to PMA on diagram.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

There is a comment against CL72 (#133), if that gets accepted, then CL72 will be using rx_lpi_active

Cl **74** *SC* **74.5** *P* **214** *L* **12** # 10184

Ganga, Ilango Intel

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

Underline new primitive defined in item e) RX_LPI_ACTIVE

Also subclause numbering and Figure numbers for functional block diagrame are incorrect. Update the numbering as per the base spec (for example 74.0.1 should be 74.4.1 and Figure 74-1 should be Figure 74-2).

SuggestedRemedy

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Please refer to comments
364 and 8

Cl **74** *SC* **74.5.1.4** *P* **216** *L* **37** # 27

Marris, Arthur Cadence

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

74.5.4 should really be 74.5.1.4
74.5.5 should really be 74.5.1.5
74.5.6 should really be 74.5.1.6
74.5.7 should really be 74.5.1.7

SuggestedRemedy

Change
Insert 74.5.4 through 74.5.7 as shown below after 74.5.3
To
Insert 74.5.1.4 through 74.5.1.7 as shown below after 74.5.1.3

Change paragraph numbering appropriately

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **74** *SC* **74.5.4.1** *P* **216** *L* **51** # 23

Marris, Arthur Cadence

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

Change
.FEC

To
. The FEC

SuggestedRemedy

as above

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **74** *SC* **74.5.5** *P* **216** *L* **38** # 158

Healey, Adam LSI Corporation

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

Subclause headings make it impossible to reference the desired subject matter from the bookmarks.

"74.5.4 Service primitive from FEC for EEE support (optional)" should be "74.5.5 FEC_ENERGY.indication (optional)"

"74.5.5 Service primitive from PCS for EEE support (optional)" should be "74.5.5 FEC_LPIACTIVE.request (optional)"

"74.5.6 Service primitive from PCS for EEE support (optional)" should be "74.5.6 FEC_RXQUIET.request (optional)"

etc...

SuggestedRemedy

Please review the structure of the base document, as amended by P802.3ba, and be consistent with it. It would also be be nice if the primitive were defined in the same order they are listed in 74.5.1.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **74** *SC* **74.5.5.2** *P* **217** *L* **19** # 25

Marris, Arthur Cadence

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

The explanation of what the FEC is supposed to do when it receives a FEC_SIGNAL.request(RX_LPI_ACTIVE) request is not clear.

SuggestedRemedy

Please explain how the FEC layer responds to FEC_SIGNAL.request(RX_LPI_ACTIVE)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

There is a comment against CL72 (#133), if that gets accepted, then CL72 will be using rx_lpi_active

Cl **74** *SC* **74.7** *P* **216** *L* **22** # 10185

Ganga, Ilango Intel

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

Clause 74 is also being amended by P802.3ba. So where appropriate update the editing instructions to indicate the approprate base text (IEEE Std 802.3-2008 or P802.3ba/D2.2).

SuggestedRemedy

As per comment

Response *Response Status* **W**

ACCEPT.

Cl **74** *SC* **74.7.4.7** *P* **218** *L* **16** # 159

Healey, Adam LSI Corporation

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

It is proposed that the following paragraph be added to the end of this subclause.

"Fec_block_lock is identical to fec_normal_block_lock when the optional EEE capability is not implemented. Otherwise fec_block_lock is fec_normal_block_lock OR fec_rapid_block_lock."

What is fec_normal_block_lock and where is it defined? I can find no occurence of it other than this paragraph. From the FEC Lock state diagram (Figure 74-3), it appears fec_block_lock is defined as it has always been defined. For some reason, the assignments of fec_block_lock in the FEC_LOCK_INIT, FEC_BLOCK_LOCK, and SLIP states are shown in underscore text as if they have been inserted via this amendment. In fact, this is no different than what is in the base document.

SuggestedRemedy

1. Remove the proposed addition to 74.7.4.7.
2. In Figure 74-3, show fec_block_lock assignments in normal text (no underscore).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **74** *SC* **74.7.5** *P* **218** *L* **48** # 78

Hajduczenia, Marek ZTE Corporation

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

"These counters shall not count if FEC_SIGNAL.indication (RX_LPI_ACTIVE) is TRUE" - why not say that "These counters shall be disabled if ..." - sounds more natural.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **78** *SC* **78.1** *P* **222** *L* **15** # 81

Hajduczenia, Marek ZTE Corporation

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

(1) I thought that MAC was not operated at any specific data rate. I suggest to drop "EEE supports the IEEE 802.3 MAC operation at 100 Mb/s, 1000 Mb/s, and 10 Gb/s.". EEE should not care about what data rate the MAC is operating it, since it does not use MAC directly in any way. EEE does not extend MAC in any specific way.
(2) Change sentence "For operation over twisted pair cabling systems, the PHYs supported are 100BASE-TX, 1000BASE-T and 10GBASE-T. For operation over electrical backplanes, the PHYs supported are 1000BASE-KX, 10GBASE-KX4 and
10GBASE-KR." to read "For operation over twisted pair cabling systems, EEE supports the following PHYs: 100BASE-TX, 1000BASE-T and 10GBASE-T. For operation over electrical backplanes, EEE supports the following PHYs: 1000BASE-KX, 10GBASE-KX4 and 10GBASE-KR."

SuggestedRemedy

Per comment.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Re (1), as per comment.

Re (2) Change sentence:
"For operation over twisted pair cabling systems, the PHYs supported are 100BASE-TX, 1000BASE-T and 10GBASE-T. For operation over electrical backplanes, the PHYs supported are 1000BASE-KX, 10GBASE-KX4 and
10GBASE-KR."
to read:
"For operation over twisted pair cabling systems, EEE supports the 100BASE-TX PHY, the 1000BASE-T PHY and the 10GBASE-T PHY. For operation over electrical backplanes, EEE supports the 1000BASE-KX PHY, the 10GBASE-KX4 PHY and the 10GBASE-KR PHY."

Cl **78** *SC* **78.1** *P* **222** *L* **26** # 82

Hajduczenia, Marek ZTE Corporation

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

"EEE also specifies a means to exchange capabilities between" change to "EEE also specifies means to exchange capabilities between"

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **78** *SC* **78.1.2.1.2** *P* **228** *L* **18** # 10197

Grow, Robert Intel

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

Primitives are not signals, and as I recall, timing requirements can't be placed on the primitive, only on the layers causing generation of a primitive.

SuggestedRemedy

Needs thought and proper specification on the timing in multiple places in the standard.

All text (e.g., assert and deassert functions) related to service primitives needs to be reviewed for any language that reflects continuous visibility of a primitive value between (sub)layers to only a change in value being signaled by a primitive.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Change the two sentences on lines 17 and 18, page 228 from:

"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 set to DEASSERT for 1 second following the change of link_status to OK."

to:

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

Cl **78** *SC* **78.1.2.1.4** *P* **228** *L* **26** # 10202

Grow, Robert Intel

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

Is signaling of LPI between an RS and its link partner, or between the RS and the lower parts of the PHY? If the PHY has no option to signal the request, then the language is appropriate, but it seems inconsistent with MII text describing the xMII signals. The effect of the primitive is to generate signals on the MII and that isn't specified here, but should be.

SuggestedRemedy

Assure MII clause are consistent in what layer is signaling to what peer layer, and that any additional requirements on conveying the LPI request in lower sublayers is properly represented. Add generic text that covers the three MII types -- how the assert or deassert is signaled, can probably be generic using the MII definition of assert low power idle.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

The PHY has no option to signal the request so the language is appropriate however editor will look into adding clarifying text as in the suggested remedy.

Editor to check if that this is clear in the xMII clauses.

Cl **78** *SC* **78.1.3** *P* **225** *L* **4** # 83

Hajduczenia, Marek ZTE Corporation

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

"xMII interface in this diagram represents any of the family of medium independent interfaces supported by EEE" and which are those in particular? Since there is already such an introduction, you are invited to provide details what types of xMII are supported. IMHO it would improve transparency of the description.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED REJECT.

It is not clear to the editor that listing the xMII interfaces adds any significant clarity.

Cl **78** *SC* **78.1.3.1** *P* **225** *L* **50** # 84

Hajduczenia, Marek ZTE Corporation

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

Why is "normal inter-frame" in quotation marks? I understand why 'assert LPI' in line 44 would be in quotation marks, but 'normal inter-frame' seem to not need that

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **78** *SC* **78.1.3.1** *P* **225** *L* **50** # 85

Hajduczenia, Marek ZTE Corporation

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

"After a delay the LPI" - what delay? I think this delay is parametrized in the text of the clause, so it should be either spelled out what the value is or what it depends on. A reference to 78.4 should be made much sooner.
Also missing comma after "After a delay"

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The comma will be added as suggested. No other change will be made as there is a reference to 78.4 already in the last sentence of the paragraph

Cl **78** *SC* **78.1.3.3.1** *P* **226** *L* **25** # 86

Hajduczenia, Marek ZTE Corporation

Comment Type **TR** *Comment Status* **D** *sleep signal*

"At the start of 'assert LPI' encoding on the xMII, the PHY signals sleep"
should read
"When the start of 'assert LPI' encoding on the xMII is detected, the PHY signals "

I am not sure what 'signal sleep' really means. Is it a special code-group or something else altogether? The sentence reads just fine without it. This term 'sleep' is also used in following sentences without ever defining what this is and what it is used for. Please remove it consistently or define altogether what this 'sleep' is, how it is transmitted etc. Otherwise it seems like a poor description of transmission of LPI encoding onto the other side of the link.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change:
"At the start of 'assert LPI' encoding on the xMII, the PHY signals sleep"
to:
"When the start of 'assert LPI' encoding on the xMII is detected, the PHY signals "

Also see response to comment #87

Cl **78** *SC* **78.1.3.3.1** *P* **226** *L* **29** # 87

Hajduczenia, Marek ZTE Corporation

Comment Type **TR** *Comment Status* **D** *sleep signal*

"and 10GBASE-KX4) requires the transmit function of the local PHY to enter a quiet mode after sleep is"
OK so now we have 'sleep mode', 'quiet mode' and 'low power mode' - are they the same or not? I have not seen a single definition of either of them so far so it is hard to tell. Please make nomenclature uniform or define each and every single of these terms which are used to describe operatio of LPI system elements.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

I don't see "sleep mode" used in the draft.

"quiet mode" is used in two places - Page 226 lines 19 and 32.

Replace:
"...the transmit function of the local PHY enters a quiet mode..."
with:
"...the local PHY transmitter goes quiet..."
on Page 226, lines 29 and 32 and any other place.

"quiet" refers to the state of a transmitter.

Depending on the PHY, LPI mode can involve a repeating sequence of sleep and refresh states.

Cl **78** *SC* **78.1.3.3.1** *P* **226** *L* **43** # 88

Hajduczenia, Marek ZTE Corporation

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

"The PHY then enters the normal operating state where data is transmitted or IDLEs are transmitted" why do we need to mention what is transmtted in a normal state? Just change that sentence to read "The PHY then enters the normal operating state."

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **78** *SC* **78.1.3.3.1** *P* **227** *L* **1** # 89

Hajduczenia, Marek ZTE Corporation

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

Change "Figure 78-3 illustrates general principles of the EEE-capable transmitter operation." to read "Figure 78-3 illustrates a general operating principle of an EEE-capable transmitter.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **78** *SC* **78.1.3.3.1** *P* **227** *L* **10** # 90

Hajduczenia, Marek ZTE Corporation

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

Change caption of Figure 78-3 to read "EEE operating cycle: active state - LPI mode - active state"

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **78** *SC* **78.1.3.3.2** *P* **227** *L* **18** # 91

Hajduczenia, Marek ZTE Corporation

Comment Type **TR** *Comment Status* **D** *sleep signal*

What is this 'sleep signal'? Where is this defined? How is it transmitted?

SuggestedRemedy

Similar comment was submitted against previous version of the draft and yet there are no changes so far.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The sleep signal is defined in individual PHY clauses.

The suggested remedy is not actionable

Also see response to comment #87

Cl **78** *SC* **78.1.3.3.2** *P* **227** *L* **21** # 92

Hajduczenia, Marek ZTE Corporation

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

""assert LPI" on the xMII and the local receiver can disable some functionality to reduce power consumption" - change "some functionality" to "certain functional blocks" - this seems more precise.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The description seems accurate as is. Stating that disabling functionality requires disabling of some functional blocks makes an assumption on implementation that is unnecessary.

Cl **78** *SC* **78.1.4** *P* **227** *L* **32** # 93

Hajduczenia, Marek ZTE Corporation

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

"EEE defines a low power mode of operation for the following 802.3 PHYs. Table 78-1 lists the clauses associated with each PHY"
change to read
"EEE defines a low power mode of operation for the 802.3 PHYs listed in Table 78-1, together with clauses associated with each PHY."

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change to:
"EEE defines a low power mode of operation for the 802.3 PHYs listed in Table 78-1. The table also lists the clauses associated with each PHY."

Cl **78** *SC* **78.1.4** *P* **227** *L* **35** # 94

Hajduczenia, Marek ZTE Corporation

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

Change caption of Table 78-1 to "PHY types supporting EEE"

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The existing table title seems adequate.

Cl **78** *SC* **78.2** *P* **228** *L* **31** # 95

Hajduczenia, Marek ZTE Corporation

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

Table 78-2 contains some parameters with three trailing decimal zeros. Is this deliberate? Please remove any unnecessary trailing zeros.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The three zeros are after a comma (which is used as a separator for thousands) and not after a decimal point

Cl **78** *SC* **78.2** *P* **228** *L* **34** # 11

Anslow, Peter Nortel Networks

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

comment 12 against Draft 2.0 has not been fully implemented

SuggestedRemedy

In Table 78-2 change greek letter mu followed by "sec" to greek letter mu followed by "s" in 3 places

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **78** *SC* **78.4.1** *P* **230** *L* **30** # 110

CHOU, JOSEPH REALTEK SEMICOND

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

Tw_sys is not a valid parameter name described in 78.2-LPI mode timing parameters description. Instead, it is Tw_sys_tx which should be the only parameter negotiated between link partners by EEE LLDP.

This comment will affect the entire text of 78.4. It also affects Figure 78.4-EEE DLL Transmitter State Diagram, and
Figure 78.5-EEE DLL Receiver State Diagram

SuggestedRemedy

Replace Tw_sys with Tw_sys_tx in the entire subclause 78.4.

Change the initial value of all variables in the INITIALIZE state of Figure 78-4 to LOCAL_INITIAL_TX_VALUE.
Change the initial value of all variables in the INITIALIZE state of Figure 78-5 to LOCAL_INITIAL_RX_VALUE.

Remove constant PHY_WAKE_VALUE in 78.4.2.2 since it is no longer used.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

This comment is out of scope as it is on unchanged text and not related to outstanding disapprove, however, the commenter is correct in that the terminology was not updated to allign with the one decided by the wake-shrinkage ad-hoc.

Cl **78** *SC* **78.4.2.2** *P* **231** *L* **4** # 111

CHOU, JOSEPH REALTEK SEMICOND

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

The parameter Tw_sys (actual Tw_sys_tx) can be a decimal number based on the value in the column Tw_sys_tx of the table 78-4. However, the value holders of negotiated parameter described in this subclause ask for an integer with microsecond as the unit.

It needs clarification on how to convert the intended Tw_sys_tx, which could consist of fraction of microseconds, to an integer number.

SuggestedRemedy

Add in the text of 78.4.2.2 something like:
"This parameter should be rounded up to the nearest integer number when it is calculated and examined according to 78.2 and Table 78-4."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

This comment is out of scope as it is on unchanged text and not related to outstanding disapprove, however, the commenter is correct in that the current TLV fields do not take into account decimal locations. The proposed remedy is an efficient way to accommodate the issue.

Cl **78** *SC* **78.4.2.3** *P* **232** *L* **12** # 162

Dove, Daniel HP ProCurve Networki

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

separate terms tx_dll_enable, tx_dll_ready and rx_dll_enable, rx_dll_ready are not necessary.

Comment:- The TX and RX state machines uses the above conditions as an entry/exit point to the states. It is noted that both TX and RX state machine works on the transmission and reception of EEE TLV's and both conditions are need to be considered while entering/exiting to each of the state machine.

SuggestedRemedy

Search and Replace tx_dll_enable and rx_dll_enable with dll_enable and clean up tables to reflect proper definition.

Search and Replace tx_dll_ready and rx_dll_ready with dll_ready and clean up tables to reflect proper definition.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

This comment is out of scope for the recirculation as it is on unchanged text and not related to outstanding disapprove.

The comment requests a simplification to the current scheme and is not necessary for technical completeness of the draft and would result in considerable changes to the section. The commenter may wish to submit again during sponsor ballot.

Cl **78** *SC* **78.4.2.3** *P* **232** *L* **21** # 96

Hajduczenia, Marek ZTE Corporation

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

"A summary cross-references between" > "A summary of cross-references between"

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **78** *SC* **78.4.2.5** *P* **234** *L* **28** # 112

CHOU, JOSEPH REALTEK SEMICOND

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

The two exit conditions of the TX UPDATE state in Figure 78-4 "EEE DLL Transmitter State Diagram" should be swapped.

That means the branch from TX UPDATE with conditions "(NEW_TX_VALUE < LocResolvedTxSystemValue) * (NEW_TX_VALUE < TempRxVar)" goes to MIRROR UPDATE state, while the branch with conditions "(NEW_TX_VALUE >= LocResolvedTxSystemValue) + (NEW_TX_VALUE >= TempRxVar)" goes to SYSTEM REALLOCATION state.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

This comment is out of scope as it is on unchanged text and not related to outstanding disapprove, however, the commenter is correct that this is an error in the SM.

Cl **78** *SC* **78.4.2.5** *P* **234** *L* **41** # 116

CHOU, JOSEPH REALTEK SEMICOND

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

The figure number of "Figure 78-4 EEE DLL Transmitter State Diagram" duplicates with that of "Figure 78-4 LPI mode timing parameters and their relationship to minimum system wake time".

SuggestedRemedy

Change the figure number of "Figure 78-4 EEE DLL Transmitter State Diagram" to 78-5 and make the correspondent change on all the subsequent figures.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **78** *SC* **78.4.3.1** *P* **236** *L* **41** # 163

Dove, Daniel HP ProCurve Networki

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

From the text:

During normal operation the transmitting link partner is in the RUNNING state. If the transmitting link partner wants to initiate a change to the presently resolved value of Tw_sys, the local_system_change is asserted and the transmitting link partner enters the LOCAL CHANGE state where NEW_TX_VALUE is computed. +++ If the new value is smaller than the presently advertised value of Tw_sys or if the transmitting link partner is in sync with the receiving link partner, then it enters TX UPDATE state. +++ Otherwise it returns to the RUNNING state.

Comment: The portion in "+++" suggests that the local PHY's TX or RX state machine can request for a change in its currently advertised Tw_sys value. However it is also noted that this is only allowed it to reduce the value and there is no support to increase it or restore it to the previous value or a higher value.

SuggestedRemedy

Add clarifying text in 78.4.2.5 (and possibly in 78.4.3.1) that the Transmit Tw_sys must always be the same or longer than the Reciever Tw_sys, so that the receiving link partner will always be ready to accept data, prior to data being sent by the Transmit link.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

This comment is out of scope for the recirculation as it is on unchanged text and not related to outstanding disapprove.

In addition, the behaviour is not as described by the commenter. The SM will allow the link partner to move in either direction (up or down) as long as the link partners are in sync (i.e. the echo matches what the local link partner has). The constraint is only when they are out of sync.

Cl **78** *SC* **78.4.3.1** *P* **236** *L* **52** # 113

CHOU, JOSEPH REALTEK SEMICOND

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

The statement of "If the NEW_TX_VALUE is smaller than either ..." has technical error and is also inconsistent with what is shown in the Figure 78-4 EEE DLL Transmitter State Diagram.

SuggestedRemedy

Replace the "smaller than" with "equal to or greater than" in the statement to read "If the NEW_TX_VALUE is equal to or greater than either the resolved Tw_sys value or the value requested by the receiving link partner then it enters the SYSTEM REALLOCATION state where it updates the value of resolved Tw_sys with NEW_TX_VALUE.".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

This comment is out of scope as it is on unchanged text and not related to outstanding disapprove, however, the commenter is correct in that the text does not match the SM.

Cl **79** *SC* **79** *P* **239** *L* **1** # 12

Anslow, Peter Nortel Networks

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

The format of the clause title for clause 79 is still incorrect. As pointed out in comment 14 against draft 2.0 there should be a "." after the "79"

SuggestedRemedy

change "79 IEEE" to "79. IEEE"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **79** *SC* **79.3** *P* **239** *L* **19** # 97

Hajduczenia, Marek ZTE Corporation

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

IEEE 802.3 subtype for EEE is not yet assigned. This comment serves as a reminder to get the IEEE 802.3 subtype for EEE TLVs.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

This will be assigned by the IEEE 802.3 WG Chair or his designee at the IEEE-SA Sponsor Ballot stage.

Cl **79** *SC* **79.3.a** *P* **240** *L* **1** # 13

Anslow, Peter Nortel Networks

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

The response to comment 15 against draft 2.0 has not been implemented. The heading numbers are still incorrect

SuggestedRemedy

Change from
79.3.a
79.3.0.1
79.3.0.2
79.3.0.3
79.3.0.4
to
79.3.a
79.3.a.1
79.3.a.2
79.3.a.3
79.3.a.4

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Will check this editorially at all steps of producing the next version draft.