Cl 01 SC 1.4 P14 L28 # 1
Anslow, Peter Nortel Networks

Comment Type E Comment Status A
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 "10 Mb/s" to "10 Mb/s"

Response Response Status C
ACCEPT.

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

Cl 14 SC 14.3.1.2.1 P20 L1 # 2
Anslow, Peter Nortel Networks

Comment Type E Comment Status A
Spurious "<Default-1 Font>" appears in title

SuggestedRemedy
remove "<Default-1 Font>",

Response Response Status C
ACCEPT IN PRINCIPLE.

Delete table per comment #199

Cl 14 SC 14.10.4.5.12 P24 L28 # 3
Anslow, Peter Nortel Networks

Comment Type E Comment Status A
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

Response Response Status C
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 14.8 P22 L53 # 4
Anslow, Peter Nortel Networks

Comment Type E Comment Status A
Items c) and d) from the 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.

Response Response Status C
ACCEPT.

Cl 22 SC 22.7a P30 L8 # 5
Anslow, Peter Nortel Networks

Comment Type E Comment Status A
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 "100 Mb/s" to "100 Mb/s"

Response Response Status C
ACCEPT.

Delete table per comment #199

Cl 24 SC 24.2.2.5 P39 L32 # 6
Anslow, Peter Nortel Networks

Comment Type E Comment Status A
The base standard uses "4B/5B" not "4b5b"

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

Response Response Status C
ACCEPT.

Subclause is being deleted
Cl 45 SC 45.2.3 P 115 L 21 # 7
Anslow, Peter Nortel Networks

Comment Type: E  Comment Status: A
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

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

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

Suggested Remedy:
change the names so that they are the same.

Response: Response Status: C
ACCEPT IN PRINCIPLE.

Change to Clock stop enable.
Cl 79 SC 79 P 239 L 1 # 12
Anslow, Peter Nortel Networks

Comment Type E Comment Status A
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"

Suggested Remedy
change "79 IEEE" to "79. IEEE"

Response Response Status C
ACCEPT.

Seems to be a Framemaker issue. Editors will check pdf to see if the fix worked.

Cl 79 SC 79.3.a P 240 L 1 # 13
Anslow, Peter Nortel Networks

Comment Type E Comment Status A
The response to comment 15 against draft 2.0 has not been implemented. The heading numbers are still incorrect

Suggested Remedy
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

Response Response Status C
ACCEPT.

Will check this editorially at all steps of producing the next version draft.

Cl 36 SC 36-7 P 81 L # 14
Sela, Oren Mellanox

Comment Type T Comment Status A
In 36-7a there is a missing exit condition for LPI_K - SUDI([D21.5] + [D2.2])

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

Response Response Status C
ACCEPT IN PRINCIPLE.

See healey_01_1109.pdf

Cl 49 SC 49.2.6 P 148 L 25 # 15
Mark, Gustlin Cisco

Comment Type T Comment Status A
"Change 49.2.6 for scrambler reset" is out of date, should be bypass.

Suggested Remedy
Change to:
"Change 49.2.6 for scrambler bypass"

Response Response Status C
ACCEPT.

Cl 49 SC 49.2.6 P 149 L 1 # 16
Mark, Gustlin Cisco

Comment Type T Comment Status A
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."

Suggested Remedy

Response Response Status C
ACCEPT IN PRINCIPLE.

See comment #239
Comment Type: T  Comment Status: A
This statement says the the scrambler will be bypassed to aid synchronization, but I think this is only needed if FEC is enabled, state this condition.

Suggested Remedy
Clarify the statement that this only applies if FEC is used.

Response
Response Status: C
ACCEPT IN PRINCIPLE.

See comment #239
add "when Clause 74 FEC is in use"

Comment Type: E  Comment Status: A
Clean up the overlap in the text and state machine lines in figure 49-16.

Suggested Remedy
as above.

Response
Response Status: C
ACCEPT.

Comment Type: E  Comment Status: A
"responds" should not be underlined

Suggested Remedy
as above

Response
Response Status: C
ACCEPT.

Comment Type: E  Comment Status: A
"is optional and" on line 46.

Suggested Remedy
Remove underlining from "is optional and" on line 46.

Response
Response Status: C
ACCEPT.

Comment Type: E  Comment Status: A
"optional" on line 7 page 205.

Suggested Remedy
Remove underlining from "optional" on line 7 page 205.

Response
Response Status: C
ACCEPT.

Comment Type: E  Comment Status: A
"is" and "optional"

Suggested Remedy
Remove underlining from "is" and "optional"

Response
Response Status: C
ACCEPT.
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Comment</th>
<th>Suggested Remedy</th>
<th>Response</th>
<th>Response Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>74</td>
<td>216</td>
<td>51</td>
<td>E</td>
<td>A</td>
<td>The FEC is supposed to do when it receives a FEC.Signal request is not clear.</td>
<td>Please explain how the FEC layer responds to FEC.Signal request(RX_LPI_ACTIVE).</td>
<td>ACCEPT IN PRINCIPLE.</td>
<td>C</td>
</tr>
<tr>
<td>24</td>
<td>46</td>
<td>125</td>
<td>20</td>
<td>T</td>
<td>A</td>
<td>“LP_IDLE.request shall remain to be set to DEASSERT for 1 second following link_status changing state to OK” reads awkwardly.</td>
<td>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).</td>
<td>ACCEPT IN PRINCIPLE.</td>
<td>C</td>
</tr>
<tr>
<td>25</td>
<td>74</td>
<td>217</td>
<td>19</td>
<td>T</td>
<td>A</td>
<td>RX_LPI_ACTIVE is being removed.</td>
<td>See comment # 169</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>69</td>
<td>198</td>
<td>17</td>
<td>TR</td>
<td>A</td>
<td>“Optionally support EEE” implies 40GBASE-KR4 can also support EEE.</td>
<td>Change: Optionally support EEE.</td>
<td>ACCEPT.</td>
<td>W</td>
</tr>
</tbody>
</table>

Also answered as an editorial comment.
Comment Type: TR/technical required  ER/editorial required  GR/general required  T/technical  E/editorial  G/general
COMMENT STATUS: D/dispatched  A/accepted  R/rejected     RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied  Z/withdrawn
SORT ORDER: Comment ID

---

**Response #27**

**Comment ID:** 74  **SC:** 74.5.1.4  **P:** 216  **L:** 37  # 27

Marris, Arthur  Cadence

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

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

**Suggested Remedy:**

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

**Response**  **Response Status:** W

ACCEPT.

---

**Response #28**

**Comment ID:** 00  **SC:** 0  **P:** 4  **L:** 13  # 28

Hajduczenia, Marek  ZTE Corporation

**Comment Type:** E  **Comment Status:** A

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

**Suggested Remedy:**

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

**Response**  **Response Status:** C

ACCEPT.

---

**Response #29**

**Comment ID:** 14  **SC:** 14.3.1.2.1  **P:** 20  **L:** 1  # 29

Hajduczenia, Marek  ZTE Corporation

**Comment Type:** E  **Comment Status:** A

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

**Suggested Remedy:**

Per comment

**Response**  **Response Status:** C

ACCEPT IN PRINCIPLE.

**Response #30**

**Comment ID:** 14  **SC:** 14.8  **P:** 23  **L:** 1  # 30

Hajduczenia, Marek  ZTE Corporation

**Comment Type:** E  **Comment Status:** R

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

**Suggested Remedy:**

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

**Response**  **Response Status:** C

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.

---

**Response #31**

**Comment ID:** 14  **SC:** 14.10.3  **P:** 24  **L:** 13  # 31

Hajduczenia, Marek  ZTE Corporation

**Comment Type:** T  **Comment Status:** A

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?

**Suggested Remedy:**

Per comment

**Response**  **Response Status:** C

ACCEPT.

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

---

**Response #32**

**Comment ID:** 22  **SC:** 22.2.1  **P:** 25  **L:** 9  # 32

Hajduczenia, Marek  ZTE Corporation

**Comment Type:** E  **Comment Status:** A

"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."

**Suggested Remedy:**

Per comment

**Response**  **Response Status:** C

ACCEPT.

---

Type: TR/technical required  ER/editorial required  GR/general required  T/technical  E/editorial  G/general
Comment Status: D/dispatched  A/accepted  R/rejected  Response Status: O/open  W/written  C/closed  U/unsatisfied  Z/withdrawn
Sort Order: Comment ID

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Response #33

Cl SC 22.2.1.3.3 P26 L40 #33
Hajduczenia, Marek
ZTE Corporation

Comment Type: E
Comment Status: A

"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

Response
Response Status: C
ACCEPT IN PRINCIPLE.

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

Response #34

Cl SC 22.2.2.2 P27 L3 #34
Hajduczenia, Marek
ZTE Corporation

Comment Type: T
Comment Status: A

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

SuggestedRemedy
per comment

Response
Response Status: C
ACCEPT.

Response #35

Cl SC 22.2.2.7 P28 L30 #35
Hajduczenia, Marek
ZTE Corporation

Comment Type: T
Comment Status: A

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

SuggestedRemedy
Per comment

Response
Response Status: C
ACCEPT.

Response #36

Cl SC 22.7a P30 L5 #36
Hajduczenia, Marek
ZTE Corporation

Comment Type: E
Comment Status: A

(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

Response
Response Status: C
ACCEPT.

Response #37

Cl SC 22.7a.1 P31 L2 #37
Hajduczenia, Marek
ZTE Corporation

Comment Type: T
Comment Status: A

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

Response
Response Status: C
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.
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>SC</th>
<th>Type</th>
<th>Page</th>
<th>Line</th>
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<th>Comment Status</th>
<th>Response</th>
<th>Response Status</th>
<th>Suggested Remedy</th>
<th>Comment Status</th>
<th>Response Status</th>
<th>Suggested Remedy</th>
<th>Comment Status</th>
<th>Response Status</th>
<th>Suggested Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>38</td>
<td>22</td>
<td>Cl</td>
<td>31</td>
<td>26</td>
<td>T</td>
<td>R</td>
<td></td>
<td></td>
<td>Please clarify per comment</td>
<td></td>
<td></td>
<td>REJECT.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>24</td>
<td>Cl</td>
<td>39</td>
<td>21</td>
<td>T</td>
<td>A</td>
<td></td>
<td></td>
<td>Clarify please.</td>
<td></td>
<td></td>
<td>ACCEPT IN PRINCIPLE.</td>
<td></td>
<td></td>
<td>Per comment.</td>
</tr>
<tr>
<td>40</td>
<td>24</td>
<td>Cl</td>
<td>39</td>
<td>45</td>
<td>E</td>
<td>A</td>
<td></td>
<td></td>
<td>Per comment.</td>
<td></td>
<td></td>
<td>ACCEPT.</td>
<td></td>
<td></td>
<td>Subclause is deleted</td>
</tr>
</tbody>
</table>
"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?

**Suggested Remedy**
Clarify per comment

**Response**
ACCEPT IN PRINCIPLE.

Response to comment #144 deletes this subclause

---

(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"

**Suggested Remedy**
Per comment

**Response**
ACCEPT IN PRINCIPLE.

For item #1, Response to comment #144 deletes this subclause

For item (2), the wording was agreed during the comment resolution on D2.0 and it is not clear that this is a significant improvement warranting a change.

For item (3) change line 13: "The SLEEP code-group (/P/) used for LPI state delineator, as specified in 24.2.2.1" to "The SLEEP code-group (/P/) used by the LPI state delineator, as specified in 24.2.2.1"

---

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 interoperability between devices i.e. what happens if the receiving side expect the maximum value nad the transmitter uses the minimum value. Does this break operation of an EEE enabled link?

**Suggested Remedy**
Please clarify questions in the comment.

**Response**
REJECT.

The purpose of the range is to allow for implementation tolerances.

This does not affect or break interoperability between devices as there is no overlap in the range of timer values for the transmitter and the receiver.
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.

Suggested Remedy
Per comment

Accept in principle.

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

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

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.

Suggested Remedy
Per comment

Accept in principle.

Change total four places in the draft.

"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)."

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".

Suggested Remedy
Per comment

Accept.
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.

Suggested Remedy
Per comment

Response
ACCEPT IN PRINCIPLE.

See the response of comment #46

---

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

Suggested Remedy
Clarify per comment

Response
REJECT.

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.

---

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 30 SC 30.12.1.22 P62 L19
Hajduczenia, Marek ZTE Corporation

Comment Type E Comment Status A
"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

Response Response Status C
ACCEPT.

Cl 35 SC 35.2.1.2 P66 L17
Hajduczenia, Marek ZTE Corporation

Comment Type E Comment Status A
"LocTxSystemValue as defined in 35.4a" > "The mapping is changed for EEE capability, as described in 35.4a"

SuggestedRemedy
Per comment

Response Response Status C
ACCEPT.

Cl 35 SC 35.2.2.4 P67 L2
Hajduczenia, Marek ZTE Corporation

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

SuggestedRemedy
Per comment

Response Response Status C
ACCEPT.

Cl 35 SC 35.2.2.4 P67 L
Hajduczenia, Marek ZTE Corporation

Comment Type T Comment Status A
"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

Response Response Status C
ACCEPT.

Cl 35 SC 35.2.2.9a P70 L33
Hajduczenia, Marek ZTE Corporation

Comment Type E Comment Status A
"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

Response Response Status C
ACCEPT.
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.

SUGGESTED REMEDY
PER COMMENT
ACCEPT.

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.

SUGGESTED REMEDY
PER COMMENT
ACCEPT.

"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.

SUGGESTED REMEDY
PER COMMENT
REJECT.

This wording was agreed during the comment resolution for D2.0.
Cl 40 SC 40.2.12.1 P92 L 30 # 62
Hajduczenia, Marek ZTE Corporation

Comment Type: T  Comment Status: A
"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"

Suggested Remedy

Per comment

Response
Response Status: C
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 to FALSE by the PCS Transmit state diagram."

Cl 40 SC 40.4.6.1 P105 L 1 # 63
Hajduczenia, Marek ZTE Corporation

Comment Type: E  Comment Status: A
Several smaller issues 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

Suggested Remedy

Per comment

Response
Response Status: C
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 40.6.1.2.7 P109 L 40 # 54
Hajduczenia, Marek ZTE Corporation

Comment Type: T  Comment Status: A
"40.6.1.2.7 Transmitter operation during WAKE" should read
"40.6.1.2.7 Transmitter operation during the WAKE state"

Suggested Remedy

Per comment

Response
Response Status: C
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 40 SC 40.12.4 P111 L 17 # 65
Hajduczenia, Marek ZTE Corporation

Comment Type: T  Comment Status: A
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.

Suggested Remedy

Remove shall statements from the PCT18, PCT19, PCR5 PICS items.
Remove shall statements from the PMF24 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.

Response
Response Status: C
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 too excessive. 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 is preferred to be consistent with the base document style.

Update the PICS to be consistent with the style of existing Clause 40 PICS.
<table>
<thead>
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<tbody>
<tr>
<td>T</td>
<td>A</td>
<td>66</td>
<td>21</td>
<td>116</td>
</tr>
<tr>
<td>T</td>
<td>A</td>
<td>66</td>
<td>23</td>
<td>116</td>
</tr>
</tbody>
</table>

**Response**

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

**Suggested Remedy**

Per comment. **ACCEPT IN PRINCIPLE.** Change line 21 to LPI Also page 117, line 29

<table>
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<tr>
<td>E</td>
<td>A</td>
<td>67</td>
<td>29</td>
<td>116</td>
</tr>
</tbody>
</table>

**Response**

"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.

**Suggested Remedy**

Per comment **ACCEPT.**

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<td>E</td>
<td>A</td>
<td>69</td>
<td>33</td>
<td>118</td>
</tr>
</tbody>
</table>

**Response**

"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

**Suggested Remedy**

Per comment **ACCEPT.**

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<td>A</td>
<td>70</td>
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</tr>
</tbody>
</table>

**Response**

"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>>."** Suggested Remedy**

Per comment **ACCEPT.**
IEEE P802.3az D2.1 Energy Efficient Ethernet comments

Response

# 71

Hajduczenia, Marek  ZTE Corporation

Comment Type: E  Comment Status: A

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

Suggested Remedy

Per comment

Response

Response Status: C

Accept in principle.

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

2) fix font size.

# 72

Hajduczenia, Marek  ZTE Corporation

Comment Type: T  Comment Status: A

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

Suggested Remedy

Per comment

Response

Response Status: C

Accept.

# 73

Hajduczenia, Marek  ZTE Corporation

Comment Type: T  Comment Status: R

"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"

Suggested Remedy

Per comment

Response

Response Status: C

Reject.

The "capability" wording was agreed after very long discussions during comment resolution
for D2.0.
Comment Type: T
Comment Status: R
Personally, I think "||LPIDLE||" should be "||LP_IDLE||", which is what it is i.e. it is an LPI IDLE. Do not remove that extra I from within the acronym.

Suggested Remedy
Suggest a change per comment. Scrub draft as needed.

REJECT.

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

Comment Type: E
Comment Status: A
Missing space between "specified in 48.2.4.2.3" and "For EEE capability".

Suggested Remedy
Per comment

ACCEPT.

"...fec_block_lock. It is set to true if the..." - again, it is TRUE or true or True ???
There are several occurrences within this and other clauses. Please scrub the draft accordingly.

Suggested Remedy
Get the capitalization right unless there is a good reason to have capitalization different across various clauses.

ACCEPT.

PICS section is empty. If EEE does not change to this subclause, why have it at all?

Suggested Remedy
Either fill it in or remove it ...

ACCEPT IN PRINCIPLE.

Please refer to Suggested remedy of #134
Responses

IEEE P802.3az D2.1 Energy Efficient Ethernet comments

November 2009

Cl 78 SC 78.1 P 222 L 15 # 81
Hajduczenia, Marek ZTE Corporation

Comment Type T Comment Status A
(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, 100BASE-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."

Suggested Remedy
Per comment.

Response
Response Status C
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, 100BASE-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 A
"EEE also specifies a means to exchange capabilities between" change to "EEE also specifies means to exchange capabilities between"

Suggested Remedy
Per comment.

Response
Response Status C
ACCEPT.

Cl 78 SC 78.1.3 P 225 L 4 # 83
Hajduczenia, Marek ZTE Corporation

Comment Type T Comment Status R
"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.

Suggested Remedy
Per comment

Response
Response Status C
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 A
"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

Suggested Remedy
Per comment

Response
Response Status C
ACCEPT.

Cl 78 SC 78.1.3.1 P 225 L 50 # 85
Hajduczenia, Marek ZTE Corporation

Comment Type T Comment Status A
"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"

Suggested Remedy
Per comment

Response
Response Status C
ACCEPT IN PRINCIPLE.

The comma will be added as suggested. There is a reference to 78.4 already in the next paragraph and that will be brought into this paragraph by concatenating the two paragraphs.
Response #86

Cl 78  SC 78.1.3.3.1  P226  L25  # 86
Hajduczenia, Marek  ZTE Corporation

Comment Type TR  Comment Status A  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.

Suggested Remedy
Per comment

Response Response Status C

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 sleep"

The sleep signal is PHY specific and described in the PHY clauses

Response #87

Cl 78  SC 78.1.3.3.1  P226  L29  # 87
Hajduczenia, Marek  ZTE Corporation

Comment Type TR  Comment Status A  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 operation of LPI system elements.

Suggested Remedy
Per comment

Response Response Status C

ACCEPT IN PRINCIPLE.

"sleep mode" is not 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. It is defined in clause 1 on page 14 and does not need to be redefined in Clause 78

Response #88

Cl 78  SC 78.1.3.3.1  P226  L43  # 88
Hajduczenia, Marek  ZTE Corporation

Comment Type T  Comment Status A

"The PHY then enters the normal operating state where data is transmitted or IDLEs are
transmitted" why do we need to mention what is transmitted in a normal state? Just change
that sentence to read "The PHY then enters the normal operating state."

Suggested Remedy
Per comment

Response Response Status C

ACCEPT.
IEEE P802.3az D2.1 Energy Efficient Ethernet comments

Cl 78 SC 78.1.3.3.1 P227 L1
Hajduczenia, Marek ZTE Corporation

Comment Type E Comment Status R
"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.

Suggested Remedy
Per comment

Response Response Status C
REJECT.
Change does not provide any additional clarity

Cl 78 SC 78.1.3.3.1 P227 L10
Hajduczenia, Marek ZTE Corporation

Comment Type T Comment Status A
Change caption of Figure 78-3 to read "EEE operating cycle: active state - LPI mode - active state"

Suggested Remedy
Per comment

Response Response Status C
ACCEPT IN PRINCIPLE.
Change caption to:
Overview of EEE LPI operation

Cl 78 SC 78.1.3.3.2 P227 L21
Hajduczenia, Marek ZTE Corporation

Comment Type T Comment Status A
"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.

Suggested Remedy
Per comment

Response Response Status C
ACCEPT IN PRINCIPLE.
The description seems accurate as is. Stating that disabling functionality requires disabling of some functional blocks makes an assumption on implementation that is unnecessary.
Capitalizing the "A" in "assert" throughout the draft to be consistent with the rest of the draft.

Cl 78 SC 78.1.4 P227 L32
Hajduczenia, Marek ZTE Corporation

Comment Type T Comment Status A
"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."

Suggested Remedy
Per comment

Response Response Status C
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."
Response #94

Cl 78 SC 78.1.4 P 227 L 35
Hajduczenia, Marek ZTE Corporation

Comment Type: T
Comment Status: A

Change caption of Table 78-1 to "PHY types supporting EEE"

Suggested Remedy:
Per comment

Response
Response Status: C

ACCEPT IN PRINCIPLE.

The existing table title seems adequate.

Change the heading of the first column from "Nomenclature" to "PHY type"

Also change the entry for 100BASE-TX to "24".

Response #95

Cl 78 SC 78.2 P 228 L 31
Hajduczenia, Marek ZTE Corporation

Comment Type: T
Comment Status: R

Table 78-2 contains some parameters with three trailing decimal zeros. Is this deliberate? Please remove any unnecessary trailing zeros.

Suggested Remedy
Per comment

Response
Response Status: C

REJECT.

The three zeros are after a comma (which is used as a separator for thousands) and not after a decimal point.

Response #96

Cl 78 SC 78.4.2.3 P 232 L 21
Hajduczenia, Marek ZTE Corporation

Comment Type: E
Comment Status: A

"A summary cross-references between" > "A summary of cross-references between"

Suggested Remedy
Per comment

Response
Response Status: C

ACCEPT.
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.

Suggested Remedy

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 TXQUIET state. The Transmit process returns to IDLE state whenever the MII de-asserts LPI.]

Response

ACCEPT IN PRINCIPLE.

Follow suggested remedy with the following changes:

1) Remove space between "TX_ER" and ',' in the first sentence of the second paragraph
2) Replace "...to IDLE state..." with "...to the IDLE state..." in the last sentence

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.

Suggested Remedy

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.]

Response

ACCEPT IN PRINCIPLE.

Adopt suggested remedy with "...a SSD..." replaced with "...an SSD..."
Comment Type: TR
Comment Status: A

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.

Suggested Remedy:

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 presentation will be made in the Nov. meeting.

Response Status: C

ACCEPT IN PRINCIPLE.

Page 56, Line 20 (Figure 25-1)

Change the transition condition to the state ZERO_V of Figure 25-1 from

- "link_status != OK + tx_quiet = TRUE"
- to
- "link_status != OK + tx_quiet = TRUE * gotNRZbit.indicate"

Page 54, Line 43 (25.4.6 Change to 9.1.9, "Jitter")

Change

- "... the jitter contributions from the clock transitions occurring during the TX_QUIET state and the first 5 μs of the TX_SLEEP state are ignored."
- To
- "... the jitter contributions from the clock transitions occurring during the TX_QUIET state and the first 5 μs of the TX_SLEEP state or the first 5 μs of the IDLE state following a TX_QUIET state are ignored."

Comment Type: TR
Comment Status: A

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

Suggested Remedy:

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.

Response Status: C

ACCEPT.
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.

**Response**

Response Status C

ACCEPT.

---

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."

**Response**

Response Status C

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 the quiet state of the LPI mode (TX_QUIET, see PCS Transmit state diagram, Figure 24-8).

---

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."

**Response**

Response Status C

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 the quiet state of the LPI mode (RX_QUIET, see PCS Receive state diagram, Figure 24-11b).

---

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.

**Response**

Response Status C

ACCEPT.
Comment Type: TR/technical required  ER/editorial required  GR/general required  T/technical  E/editorial  G/general

COMMENT STATUS: D/dispatched  A/accepted  R/rejected  RESPONSE STATUS: O/open  W/written  C/closed  U/unsatisfied  Z/withdrawn

SORT ORDER: Comment ID

---

**Comment 1: 25.4.11**

*Comment Type: TR  *Comment Status: A

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
- 25.4.11.8, P.55, L.44

*SuggestedRemedy*

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

*Response  Response Status: C  ACCEPT.*

---

**Comment 2: 78.4.1**

*Comment Type: TR  *Comment Status: A

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 parameters 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 a 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."

*Response  Response Status: C  ACCEPT.*

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.

---

**Comment 3: 78.4.2.5**

*Comment Type: TR  *Comment Status: A

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

\[(NEW_TX_VALUE < LocResolvedTxSystemValue) \times (NEW_TX_VALUE < TempRxVar)\]


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

*Response  Response Status: C  ACCEPT.*

---

The commenter is correct in that the terminology was not updated to align with the one decided by the wake-shrinkage ad-hoc.
### Responses

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#### Comment 113

**Response**

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.

**Suggested Remedy**

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.".

**Response Status**

ACCEPT.

#### Comment 114

**Response**

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.

**Suggested Remedy**

"Shall"s 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.

**Response Status**

ACCEPT IN PRINCIPLE.

**Comment**

"Shall"s and associated PICS entries are added in the draft per comment #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."
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.

**Response**

ACCEPT IN PRINCIPLE.

Will change table to match that of P802.3ba with editors note to show source.

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.

**Response**

ACCEPT IN PRINCIPLE.

See response to comment 26.

"while scrambler_reset is TRUE": I can't find any other occurrence of "scrambler_reset".

**SuggestedRemedy**

?  

**Response**

ACCEPT IN PRINCIPLE.

See comment #239.

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.

**Response**

ACCEPT IN PRINCIPLE.

See comment #239.

Change will to shall

Fix the PICS if necessary.

Subclause heading for Table 51-3 is missing

**SuggestedRemedy**

Insert "51.4 Sixteen-Bit Interface (XSBI)"

**Response**

REJECT.

The change instruction names the figure.
CL 51 SC 51.4 P 162 L 29 # 124
Dawe, Piers Independent

Comment Type: E
Comment Status: A

Optional

Suggested Remedy

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).

Response

ACCEPT.

CL 49 SC 49.2.9 P 150 L 28 # 127
Dawe, Piers Independent

Comment Type: TR
Comment Status: R

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.

Suggested Remedy

Preserve the non-EEE material in an undamaged state, by use of annexes like 4A, duplicate state diagrams or other means.

Response

Response Status: W

REJECT.

This was discussed at length during the resolution of comments against draft 2.0 and the task force decided against the suggested remedy.

CL 49 SC 49.1.6 P 147 L 22 # 125
Dawe, Piers Independent

Comment Type: ER
Comment Status: A

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

Suggested Remedy

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

Response

Response Status: W

ACCEPT IN PRINCIPLE.

Place dotted box around the signals.

Also around the "Data output."

of Figure 49-5.

CL 49 SC 49.2.9 P 152 L 37 # 126
Dawe, Piers Independent

Comment Type: E
Comment Status: A

Lines 22, 29, 33, 47 "A boolean"
Line 37 "An boolean"
Line 40 "this Boolean"

Suggested Remedy

See online editors' guidance (capital B for Mr Boole) and correct. Scrub the draft.

Response

Response Status: C

ACCEPT.
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).

The block lock is still required.
reset + r_test_mode + !rx_block_lock + rx_lpi_active

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.

If scrambler_bypass is not used then the wake time may be shorter.
1. as written
2. 26uS, 27 uS
3. 29uS, 30uS
To make the transition from RX_SLEEP to RX_ACTIVE more robust, we should change the transition condition from

!rx_tq_timer_done * R_TYPE(rx_coded) = IDLE

To

!rx_tq_timer_done * rx_block_lock * R_TYPE(rx_coded) = IDLE

Suggested Remedy

ACCEPT.

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 deterministic 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.

Suggested Remedy

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.

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).
### Comment 133
**Comment Type:** TR  
**Comment Status:** R  

> "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

> "The value of the SIGNAL_DETECT is defined by the training state diagram shown in Figure 72-5 when rx_lpi_active = FALSE."

**Suggested Remedy:**

> "The value of the SIGNAL_DETECT is defined by the training state diagram shown in Figure 72-5 when rx_lpi_active = FALSE."

**Response:** C  
**Response Status:** C  

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.

### Comment 134
**Comment Type:** TR  
**Comment Status:** A  

**Suggested Remedy:**

Add EEE to CL 74 PICS

**Response:** C  
**Response Status:** C  

ACCEPT IN PRINCIPLE.

Under 74.11.3 Major capabilities/options

- **Item:** LPI  
  - **Feature:** Rapid block lock  
  - **Value/Comment:** Device implements Rapid block lock mechanism to support EEE.  
  - **Status:** O  
  - **Support:** Yes [] / No []

**Response** C  
**Response Status** C  

ACCEPT IN PRINCIPLE.

Under 74.11.3 Major capabilities/options

- **Item:** LPI  
  - **Feature:** Rapid block lock  
  - **Value/Comment:** Device implements Rapid block lock mechanism to support EEE.  
  - **Status:** O  
  - **Support:** Yes [] / No []

### Comment 135
**Comment Type:** TR  
**Comment Status:** A  

**Suggested Remedy:**

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

\[ || \text{IDLE} || \cdot \text{tx_q_timer_done} \]

to

\[ || \text{IDLE} || \cdot \text{tx_q_timer_done} \cdot \text{deskew Align status} = \text{OK} \]

**Response** C  
**Response Status:** C  

ACCEPT.

### Comment 136
**Comment Type:** E  
**Comment Status:** R  

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.

**Suggested Remedy:**

**Response** C  
**Response Status:** C  

REJECT.

Changing the name will effect multiple lines in multiple clauses.
Cl 49 SC Fig 49-17 P 157 L 34 # 137
Pillai, Velu Broadcom

Comment Type E Comment Status R
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

Response Response Status C
REJECT.

Changing the name will effect multiple lines in multiple clauses.

Cl 36 SC Fig 36-9b P 85 L 16 # 139
Pillai, Velu Broadcom

Comment Type TR Comment Status A
Modify the following transition conditions
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

Response Response Status C
ACCEPT.

Cl 48 SC Fig 48-9b P 143 L 30 # 138
Pillai, Velu Broadcom

Comment Type E Comment Status R
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

Response Response Status C
REJECT.

Changing the name will effect multiple lines in multiple clauses.
Comment Type: TR
Comment Status: A

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.

Suggested Remedy:
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.

Response: C

ACCEPT IN PRINCIPLE.

Change as per Pillai_02_1109.pdf

And make an additional change to the receive LPI state diagram:
Add another state RX_SCR_BYPASS.
The transitions from RX_WAKE need to change:
Transitions - RX_WAKE -> RX_ACTIVE; RX_WAKE -> RX_SLEEP; RX_WTF -> RX_ACTIVE; RX_WTF -> RX_SLEEP - all need to be "and-ed" with NOT scrambler_bypass_enable.

New transition - RX_WAKE -> RX_SCR_BYPASS = !rx_tw_timer_done * rx_block_lock * scrambler_bypass_enable
New transition - RX_WTF -> RX_SCR_BYPASS = !rx_wf_timer_done * rx_block_lock * scrambler_bypass_enable

In state RX_SCR_BYPASS, start one_us_timer

New transition - RX_SCR_BYPASS -> RX_ACTIVE = one_us_timer_done *
R_TYPE(rx_coded) = IDLE
New transition - RX_SCR_BYPASS -> RX_SLEEP = one_us_timer_done *
R_TYPE(rx_coded) = LI
Response to 24.2.3.4

Healey, Adam  LSI Corporation

Comment Type: T  Comment Status: A

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.

Suggested Remedy:
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.

Response Status: C

ACCEPT IN PRINCIPLE.

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."

Response to 24.2.2.5

Healey, Adam  LSI Corporation

Comment Type: TR  Comment Status: A

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.

Suggested Remedy
Correct the discrepancies or delete this subclause.

Response Status: C

ACCEPT IN PRINCIPLE.

Delete 24.2.2.5
The assert_lpidle variable is defined to be an alias for:

\[(\text{xmit=DATA} \land \text{TX\_OSET\_indicate} \land \text{TX\_EN}=\text{FALSE} \land \text{TX\_ER}=\text{TRUE} \land (\text{TXD}<7:0> = \text{0x01}))\]

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 \land TX\_OSET\_indicate
- XMIT\_LPIDLE to XMIT\_LPIDLE: assert_lpidle \land TX\_OSET\_indicate
- XMIT\_LPIDLE to XMIT\_DATA: !assert_lpidle \land 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.

**Suggested Remedy**

Per comment.

**Response**

Response Status C

ACCEPT.
Comment Type: T  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.

Suggested Remedy: Per comment.

Response: ACCEPT IN PRINCIPLE.
Remove RUDI(/L/I/)
Change rx_lp_active to rx_lpi_active

Comment Type: TR  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 /L/ or /LI/ ordered_sets would be sent. That would cause 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.

Suggested Remedy: Implement the state diagram changes recommended in healey_01_1109.pdf.

Response: ACCEPT IN PRINCIPLE.
See response to comment #147

Comment Type: E  Encoding notation for /LI1/ and /LI2/ are missing leading and trailing forward slashes.

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

Response: ACCEPT.
The editing instruction for Figure 36-7a is wedged below the figure and an associated note 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.

Suggested Remedy
Per comment.

Response Status: ACCEPT.

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.

Suggested Remedy
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.

Response Status: ACCEPT.

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.

Suggested Remedy
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.

Response Status: ACCEPT.
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.

Suggested Remedy
Per comment.

ACCEPT.

---

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").

Suggested Remedy
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.

ACCEPT.
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 occurrence 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.

Suggested Remedy
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).

Response
ACCEPT IN PRINCIPLE.

See response to comment #177

---

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, for the 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 100BASE-T link may re-train without setting link_status != OK. This implies that the LPI client will be unaware that the link is re-training and may present "Assert LPI" at the GMII.

Suggested Remedy
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
REJECT.

This comment was WITHDRAWN by the commenter.

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."
"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.

**Suggested Remedy**

Amend the paragraph accordingly.

**Response**

**Response Status** C

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.

---

**Comment Type** TR

**Comment Status** R

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 if it to reduce the value and there is no support to increase it or restore it to the previous value or a higher value.

**Suggested Remedy**

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.

**Response**

**Response Status** C

REJECT.

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.

---

**Comment Type** E

**Comment Status** A

**Comment** Incorrect reference for 22.2.2.4

**Suggested Remedy**

Should be 35.2.2.4

**Response**

**Response Status** C

ACCEPT.
IEEE P802.3az D2.1 Energy Efficient Ethernet comments

November 2009

Cl 35 SC 35.4a.3.1 P72 L 49 # 165
Koenen, David Hewlett-Packard

Comment Type E Comment Status A
Two instances of MII instead of GMII in this paragraph.

Suggested Remedy
Prefix MII with a G.

Response Response Status C
ACCEPT.

Cl 49 SC 49.2.13.3.1 P156 L 26 # 166
Koenen, David Hewlett-Packard

Comment Type E Comment Status A
Missing arrow head on line from RX_QUIET to RX_LINK_FAIL.

Suggested Remedy
Add arrow head.

Response Response Status C
ACCEPT.

Cl 36 SC 36.2.5.1.3 P76 L 35 # 167
Koenen, David Hewlett-Packard

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

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

Response Response Status C
ACCEPT IN PRINCIPLE.

rx_lpi_active is used, but there is a typo - change rx_lp_active to rx_lpi_active
See comment #148

Cl 51 SC 51.2 P162 L 1 # 168
Koenen, David Hewlett-Packard

Comment Type T Comment Status A
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.

Suggested Remedy
Either add it to the PMA diagram and definitions or delete from the other figures and definitions.

Response Response Status C
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 74 SC 74.4.1 P221 L 40 # 169
Koenen, David Hewlett-Packard

Comment Type T Comment Status A
rx_lpi_active is not an output of the FEC nor an input to the PMA sublayer.

Suggested Remedy
Delete from signal name from FEC to PMA on diagram.

Response Response Status C
ACCEPT.

Cl 72 SC 72.10 P214 L 5 # 170
Kasturia, Sanjay Teranetics

Comment Type E Comment Status A
Change "FED" to "FEC" to fix typo.

Suggested Remedy

Response Response Status C
ACCEPT.
Cl 14 SC 14.1.1 P 15 L 36 # 171
Kasturia, Sanjay Teranetics

Comment Type ER Comment Status A
Delete Figure 1 as it is unchanged from the base text

SuggestedRemedy

Response Response Status C
ACCEPT.

Delete Figure 14-1

Duplicate of comment #196

Cl 14 SC 14.3.1.2.1 P 19 L 20 # 172
Kasturia, Sanjay Teranetics

Comment Type ER Comment Status A
Delete Figure 14-9 as it is unchanged from the base text. Also delete Table 14-1 if it is unchanged from base text. Remove associated base text if it is unchanged.

SuggestedRemedy

Response Response Status C
ACCEPT IN PRINCIPLE.

Duplicate of comments #200 and #201

Cl 14 SC 14.4 P 21 L 11 # 173
Kasturia, Sanjay Teranetics

Comment Type ER Comment Status A
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

Response Response Status C
ACCEPT IN PRINCIPLE.

Delete Fig 14-10 and Fig 14-11

Delete associated text that is unchanged from the base text if it will save vertical space in the draft and avoid confusion on the editing instructions.

Cl 14 SC 14.4.1 P 22 L 20 # 174
Kasturia, Sanjay Teranetics

Comment Type ER Comment Status A
Delete Fig 14-12 if unchanged from base text

SuggestedRemedy

Response Response Status C
ACCEPT.

Duplicate of comment #198

Cl 24 SC 24.2.2.1 P 38 L 30 # 175
Kasturia, Sanjay Teranetics

Comment Type ER Comment Status A
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

Response Response Status C
ACCEPT.
Add row in major capabilities table to cover EEE. Remove editor's note. Add shalls if needed in the clause text.

Suggested Remedy

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.

Suggested Remedy

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.

Response

ACCEPT IN PRINCIPLE.

Agree with the commenter. The way fec_rapid_block_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.

#1: Change the 2nd paragraph of 74.7.4.8 to FEC Rapid block lock mechanism will start looking for a lock on deterministic block when the rx_lpi_active is asserted and rx_quiet is deasserted. A lock on the deterministic FEC block will find the right SLIP and this SLIP is maintained as long as the decoder receives the deterministic frame.

#2: Remove the following sub clauses

74.7.4.7 FEC block synchronization
74.10.2.2 Variables
74.10.3 State diagram

Response

ACCEPT IN PRINCIPLE.

Estes, Dave
UNH - IOL

Comment Type E
Comment Status A

"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"

Response

ACCEPT IN PRINCIPLE.

Sentence reworded by comment #24.

<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
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<td>48</td>
<td>48.2.6.1.2</td>
<td>135</td>
<td>49</td>
<td>180</td>
</tr>
</tbody>
</table>

Healey, Adam
LSI Corporation

Comment Type T
Comment Status A

The definition of rx_lq_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.

Response

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

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

Response Response Status C
ACCEPT.

Comment #141 was accepted but the text to define ldpc_frame_done was not added.

Suggested Remedy:
Add the text from comment #141.

Response Response Status C
ACCEPT.

scrambler_reset was removed in comment #456.

Suggested Remedy:
Remove the text "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."

Response Response Status C
ACCEPT IN PRINCIPLE.

See comment #239

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.

Suggested Remedy:
Change "K28.5/D6.5, K28.5/D26.4" to "K28.0 or K28.3 or K28.5 or D20.5."

Response Response Status C
ACCEPT.

Same as comment #204

Comment #141 was accepted but the text to define ldpc_frame_done was not added.
**Comment Type**: T  **Comment Status**: A

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.

**Suggested Remedy**

See presentation.

**Response**  **Response Status**: C

ACCEPT IN PRINCIPLE.

No consensus to change the draft at this time. The 10GBASE-T AD-HOC will prepare a detailed proposal when the ballot opens and will make it available on the website.

Add an editor's note in the draft to indicate that a proposal to address this comment is available (and identify where this is available)

History of discussion is captured below:

PROPOSED ACCEPT IN PRINCIPLE.

Yes: 11
No: 4
Abstain: 6
Motion fails.

In favor of proposed response: 6
Opposed: 3
Abstain: 11

Use slides 5-13 and 15 of parnaby_03_1109.pdf to make changes to draft 2.2

Add two new state diagrams and modify three existing state diagrams
Add four new variables, two timers and two counters
Add PMA link fail signaling as describes in Slide 10

a) to improve robustness of link monitoring during LPI and

b) allow a fast retrain process to recover from poor link quality

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

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.

**Suggested Remedy**

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

**Response**  **Response Status**: W

ACCEPT.

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.

**Suggested Remedy**

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).

**Response**  **Response Status**: C

ACCEPT IN PRINCIPLE.

In 28D.7 replace "this use is summarized below" with:

"Autonegotiation is mandatory for all EEE PHYs that support LPI."

Delete bullets points A and B.
Comment Type: TR
Comment Status: A
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.

Suggested Remedy
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.

Comment ID: 190
Cl: 45 SC: 45.2.7.13a P: 120 L: 12

Response Type: TR
Comment Status: W
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.

Suggested Remedy
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.

Response
ACCEPT IN PRINCIPLE.

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.

Comment ID: 191
Cl: 40 SC: 40.5.1.1 P: 108 L: 31

Response Type: TR
Comment Status: R
Submitted on behalf of Todd Thompson, Solarflare.

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.
<table>
<thead>
<tr>
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<th>SC</th>
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<tr>
<td>193</td>
<td>45</td>
<td>120</td>
<td>12</td>
<td>C</td>
<td>TR</td>
<td>A</td>
<td>Parnaby, Gavin</td>
<td>TR</td>
<td>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. Accept In Principle. Both tables should use U1-U3. Change backplane bits to U4-U6.</td>
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<td>194</td>
<td>45</td>
<td>121</td>
<td>16</td>
<td>W</td>
<td>TR</td>
<td>A</td>
<td>Parnaby, Gavin</td>
<td>TR</td>
<td>Submitted on behalf of Todd Thompson, Solarflare. Also Page 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 &quot;advertisement&quot; registers while link partner/incoming status registers are called &quot;ability&quot; registers. SuggestedRemedy Change the name of register 7.61 from &quot;EEE link partner advertisement&quot; to &quot;EEE link partner ability&quot;. Change any reference to this register to this new name (such as in Clause 40.5 Page 108 Line 34). Accept.</td>
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<tr>
<td>195</td>
<td>55</td>
<td>188</td>
<td>23</td>
<td>C</td>
<td>TR</td>
<td>A</td>
<td>Parnaby, Gavin</td>
<td>TR</td>
<td>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. Accept In Principle. Add counter lpi_rxw_err_cnt lpi_rxw_err_cnt increments in a delayless state added to the transition between RX_W and RX_E Make terminology consistent with other PHYs.</td>
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<tr>
<td>196</td>
<td>14</td>
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<td>E</td>
<td>A</td>
<td>Chadha, Mandeep</td>
<td>E</td>
<td>Figure 14-1 is unchanged from the base text. SuggestedRemedy Delete figure 14-1. Accept.</td>
</tr>
<tr>
<td>197</td>
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<td>9</td>
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<td>E</td>
<td>A</td>
<td>Chadha, Mandeep</td>
<td>E</td>
<td>Figure 14-8 is unchanged from the base text. SuggestedRemedy Delete figure 14-8. Accept.</td>
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</table>

Type: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general Comment Status: D/dispatched A/accepted R/rejected Response Status: O/open W/written C/closed U/unsatisfied Z/withdrawn Sort Order: Comment ID
IEEE P802.3az D2.1 Energy Efficient Ethernet comments

Chadha, Mandeep
Vitesse Semiconductor

Response  # 198

Comment Type E  Comment Status A
Figure 14-9 is unchanged from the base text

Suggested Remedy
Delete figure 14-9

Response  Response Status C
ACCEPT.

Chadha, Mandeep
Vitesse Semiconductor

Response  # 199

Comment Type E  Comment Status A
Table 14-1 is unchanged from the base text

Suggested Remedy
Delete table 14-1

Response  Response Status C
ACCEPT.

Chadha, Mandeep
Vitesse Semiconductor

Response  # 199

Comment Type E  Comment Status A
Figure 14-10 is unchanged from the base text

Suggested Remedy
Delete figure 14-10

Response  Response Status C
ACCEPT.

Chadha, Mandeep
Vitesse Semiconductor

Response  # 200

Comment Type E  Comment Status A
Figure 14-11 is unchanged from the base text

Suggested Remedy
Delete figure 14-11

Response  Response Status C
ACCEPT.

Brown, Matt
AppliedMicro (AMCC)

Response  # 203

Comment Type T  Comment Status A
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.

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

Response  Response Status C
ACCEPT IN PRINCIPLE.

Add a second note:

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

**Suggested Remedy**
- 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."

**Response**

Accept.

---

Comment Type: E  Comment Status: A  wording

**Suggested Remedy**
- Change "Receive 64B/65B state diagram" to "64B/65B receive state diagram in Figure 55-16".

**Response**

Accept.

---

Comment Type: E  Comment Status: A  "alert" and "refresh" are signals

**Suggested Remedy**
- 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."

**Response**

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."

---

Comment Type: E  Comment Status: A  Many instances of both "EEE capability" and "LPI capability", but both have the same meaning. The latter is used only in Clause 55.

**Suggested Remedy**
- Change "LPI capability" to "EEE capability".

**Response**

Accept.
Responses

Cl 55 SC 55.3.5.2.4 P 182 L 9 # 209
Brown, Matt AppliedMicro (AMCC)

Comment Type E Comment Status R
Suggested Remedy
Change...
"to the eight types"
To...
"to one of eight types"

Response Response Status C
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 A
Suggested Remedy
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"

Response Response Status C
ACCEPT.

Cl 55 SC 55.3.5.4 P 189 L 8 # 211
Brown, Matt AppliedMicro (AMCC)

Comment Type E Comment Status A
comparison to boolean value redundant
Suggested Remedy
Change "tx_loi_req=true" to "tx_loi_req".

Response Response Status C
ACCEPT.

Cl 55 SC 55.4.2.4 P 192 L 38 # 212
Brown, Matt AppliedMicro (AMCC)

Comment Type E Comment Status A
Suggested Remedy
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.

Response Response Status C
ACCEPT IN PRINCIPLE.

Cl 55 SC 55.4.2.5.14 P 193 L 11 # 213
Brown, Matt AppliedMicro (AMCC)

Comment Type E Comment Status A
Suggested Remedy
Delete sentence...
"PHYs with the EEE ... figure 55-27a."

Response Response Status C
ACCEPT.
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<th>Subclause</th>
<th>Page</th>
<th>Line</th>
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<td>55.4.2.4</td>
<td></td>
<td>192</td>
<td>40</td>
<td>E</td>
<td>Last sentence refers to deleted state diagram. The functionality was moved to the PCS state diagram.</td>
<td>A</td>
<td>Brown, Matt</td>
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<td>215</td>
<td>49.2.13.3.1</td>
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<td>156</td>
<td>43</td>
<td>ER</td>
<td>For clarity and consistency re-name SCR_BYPASS to TX_WAKE_SCR_BYPASS.</td>
<td>C</td>
<td>Brown, Matt</td>
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<td>Remove comparisons to logical values.</td>
<td>C</td>
<td>Brown, Matt</td>
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<td>ER</td>
<td>Should be more specific about use of 06.</td>
<td>C</td>
<td>Brown, Matt</td>
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<td>Should be more specific about use of 06.</td>
<td>C</td>
<td>Brown, Matt</td>
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</table>
Cl 46  SC 46.3.1.5a  P126  L42  # 221
Brown, Matt  AppliedMicro (AMCC)

Comment Type  ER  Comment Status  R

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

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

Response  Response Status  C
REJECT.

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

---

Cl 46  SC 46.3.2.2  P127  L37  # 222
Brown, Matt  AppliedMicro (AMCC)

Comment Type  ER  Comment Status  R

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

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

Response  Response Status  C
REJECT.

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

---

Cl 46  SC 46.4a.1  P128  L40  # 223
Brown, Matt  AppliedMicro (AMCC)

Comment Type  ER  Comment Status  A

LPI indication goes to LPI client.

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

Response  Response Status  C
ACCEPT.

---

Cl 55  SC 55.2.2.3.1  P171  L47  # 224
Brown, Matt  AppliedMicro (AMCC)

Comment Type  ER  Comment Status  A

Description of pma_unidata.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.

Suggested Remedy
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:"
Cl 55 SC 55.3.2.2.0 P 174 L 38 # 226
Brown, Matt AppliedMicro (AMCC)

Comment Type ER Comment Status A
Use lp_idle to indicate lp idle characters. Also, "/I/s" seems like bad syntax.

SuggestedRemedy
Change "/I/s" may be added following LPI" to "/LI/ control characters may be added following lp_idle".

Response Response Status C
ACCEPT IN PRINCIPLE.

The 'I/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 following low power idle control characters'.

Cl 55 SC 55.3.2.2.21 P 176 L 3 # 228
Brown, Matt AppliedMicro (AMCC)

Comment Type ER Comment Status A
Header in column 1 is incorrect.

SuggestedRemedy
Change "lpi_tx_wake_time" to "lpi_wake_time".

Response Response Status C
ACCEPT.

Cl 55 SC 55.3.4a.1 P 177 L 41 # 230
Brown, Matt AppliedMicro (AMCC)

Comment Type ER Comment Status A
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."

Response Response Status C
ACCEPT.

Cl 55 SC 55.3.5.4 P 183 L 10 # 231
Brown, Matt AppliedMicro (AMCC)

Comment Type ER Comment Status A
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"

Response Response Status C
ACCEPT.
IEEE P802.3az D2.1 Energy Efficient Ethernet comments Responses November 2009

Cl 49 SC 49.2.13.3.1 P 157 L 19 # 232
Brown, Matt AppliedMicro (AMCC)

Comment Type T Comment Status A
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

Response Response Status C
ACCEPT IN PRINCIPLE.

Cl 55 SC 55.3.2.2.21 P 175 L 9 # 233
Brown, Matt AppliedMicro (AMCC)

Comment Type T Comment Status A
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."

Response Response Status C
REJECT.

Cl 55 SC 55.3.5.2.3 P 181 L 18 # 235
Brown, Matt AppliedMicro (AMCC)

Comment Type T Comment Status A
Definition of "i_pi_rx_wake_timer" does not match SM.

SuggestedRemedy
Change definition to:
"This timer defines the time the receiver continues to send IDLE and/or LF blocks after the ALERT signal is detected."

Response Response Status C
ACCEPT IN PRINCIPLE.
Change definition to:
"This timer defines the time the receiver sends IDLE blocks after the ALERT signal is detected."
### IEEE P802.3az D2.1 Energy Efficient Ethernet comments

**Comment Type:** T  **Comment Status:** R

**Comment:** 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.

**Suggested Remedy:** Wherever there is statement "...mandatory for EEE capability" or similar statement also indicate something like "...mandatory for EEE-capable PHYs and is not required for non-EEE PHYs".

**Response:** 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.'

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

**Comment:** 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, provison 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.

**Suggested Remedy:** Define LI as...

"LI: If the optional Low Power Idle function is supported then LI 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 /LI/ 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+LI)
- TX_T to TX_C: T_TYPE(tx_raw) = (C+LI)
- TX_LI to TX_LI: T_TYPE(tx_raw) = (L+LII)

**Response:** ACCEPT IN PRINCIPLE.

Change the definition of C in R_BLOCK_TYPE and T_BLOCK_TYPE. Replace "less than eight of the characters are /LI/" with "zero or four of the characters are /LI/".
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<td>#238</td>
<td>TR</td>
<td>C</td>
<td>Cl 49 SC 49.2.13.3.1 P 156 L 43</td>
<td>Transition from RX_REF_SCR_BYPASS or RX_REF_SCR_ON to TX_WAKE will cause result in far end receiver transiting to RX_ACTIVE state the receiving random behaviour when local TX is in SCR_BYPASS state (should be labelled TX_WAKE_SCR_BYPASS).</td>
<td>SuggestedRemedy</td>
<td>Change SM as follows: (1) change transition &quot;TX_REFRESH_SCR_BYPASS-TX_WAKE&quot; to TX_REFRESH_SCR_BYPASS-TX_ACTIVE (2) For (1) change criteria from &quot;T_TYPE(tx_raw)=I&quot; to &quot;(T_TYPE(tx_raw)=I)*one_us_timer_done&quot; (3) change transition &quot;TX_REFRESH_SCR_ON-TX_WAKE to TX_REFRESH_SCR_ON-TX_ACTIVE&quot;</td>
<td>ACCEPT IN PRINCIPLE.</td>
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<td>#239</td>
<td>TR</td>
<td>C</td>
<td>Cl 49 SC 49.2.6 P 149 L 1</td>
<td>Throughout this sub-clause there are references to the LPI client. The LPI client is the MAC and this section describes RS Transmit functionality.</td>
<td>SuggestedRemedy</td>
<td>Change all instances of &quot;LPI Client&quot; to &quot;RS&quot;.</td>
<td>ACCEPT.</td>
<td></td>
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<tr>
<td>#240</td>
<td>TR</td>
<td>C</td>
<td>Cl 46 SC 46.3.1.5a P 126 L 21</td>
<td>Throughout this sub-clause there are references to the LPI client. The LPI client is the MAC and this section describes RS Transmit functionality.</td>
<td>ACCEPT</td>
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<tr>
<td>#241</td>
<td>TR</td>
<td>C</td>
<td>Cl 46 SC 46.3.2.4a P 127 L 18</td>
<td>Throughout this sub-clause there are references to the LPI client. The LPI client is the MAC and this section describes RS Receive functionality.</td>
<td>SuggestedRemedy</td>
<td>Change all instances of &quot;LPI Client&quot; to &quot;RS&quot;.</td>
<td>ACCEPT.</td>
<td></td>
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**Response:**

- **Type:** TR/technical required
- **Status:** C/closed
- **Comment ID:** #241
- **Response Status:** C/closed
- **Date:** 11/19/2009 7:54:04 AM
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<td>AppliedMicro (AMCC)</td>
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**Comment Type:** TR | **Comment Status:** A

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.

**Suggested Remedy**

- 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".

**Response**

**Response Status:** C

ACCEPT IN PRINCIPLE.

Delete the TX_WE state and all transitions to and from it.

Delete the transition from TX_WN to TX_E.

Change the transition condition from TX_WN to TX_C to "tx_lpi_active".

Change the transition condition from TX_L to TX_WN to "T_TYPE(tx_raw) = (C + D + E + S + T)"

Change the transition condition from TX_WN to TX_WN to "tx_lpi_active".

This simplifies the operation of the transmit state diagram.

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**Comment Type:** TR | **Comment Status:** A

Loop timing in slave mode is never explicitly stated as a requirement for EEE.

**Suggested Remedy**

- 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."

**Response**

**Response Status:** C

ACCEPT IN PRINCIPLE.

- 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 on the slave PHY."

Also add a PICS entry for the "shall"

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**Comment Type:** TR | **Comment Status:** A

LI and LII are defined as RBLOCKS not TBLOCKS.

**Suggested Remedy**

- Redefine LI and LII T_BLOCK types for XGMII.

**Response**

**Response Status:** C

ACCEPT IN PRINCIPLE.

See comments 253, 251
Cl 55 SC 55.4.2.5.14 P 193 L 18 # 245
Brown, Matt AppliedMicro (AMCC)

Comment Type TR Comment Status A
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.

Response Response Status C ACCEPT.
Add the PICS entry to support this.

Cl 55 SC 55.5.3.5 P 193 L 45 # 246
Brown, Matt AppliedMicro (AMCC)

Comment Type TR Comment Status A
The frequency variation should apply when changing 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.

Response Response Status C ACCEPT.
Add add PICS item

Cl 40 SC 40.5.1.1 P 108 L 22 # 248
Grimwood, Michael Broadcom

Comment Type T Comment Status A
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

Response Response Status C ACCEPT.

Cl 45 SC 45.2.3.2 P 116 L 47 # 249
Grimwood, Michael Broadcom

Comment Type T Comment Status A
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.

Response Response Status C ACCEPT.
Cl 55  SC 55.3.5.2.4  P 182  L 8  # 250
Grimwood, Michael  Broadcom

Comment Type  T  Comment Status  A
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..."

Response  Response Status  C
ACCEPT.

Cl 55  SC 55.3.5.2.4  P 182  L 28  # 251
Grimwood, Michael  Broadcom

Comment Type  T  Comment Status  A
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/.

Response  Response Status  C
ACCEPT.

Cl 55  SC 55.3.5.2.4  P 182  L 14  # 252
Grimwood, Michael  Broadcom

Comment Type  TR  Comment Status  A
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 /II/;

To:
   C; The vector contains one of the following:
       a) eight valid control characters other than /O/, /S/, /T/, /E/, and /LI/.

Response  Response Status  C
ACCEPT.

Comment Type  TR  Comment Status  A
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.

Response  Response Status  C
ACCEPT.
<table>
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</table>

**Grimwood, Michael Broadcom**

**Comment**

**Response**

**Comment Type** TR

**Comment Status** A

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.

**Suggested Remedy**

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

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.

**Response**

**Response Status** C

**ACCEPT.**

---

**Comment**

**Response**

**Comment Type** TR

**Comment Status** A

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.

**Suggested Remedy**

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 + LI
- 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 + LII) 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.

**Response**

**Response Status** C

**ACCEPT.**
Comment #256

**Cl 48 SC 48.2.6.2.5** P143 L #256

Horner, Rita
Avago

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

**Figure 48-9b**

Figure 48-9b transitions from RX_SLEEP are ambiguous.

**Suggested Remedy**

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)"

**Response**  **Response Status** C

ACCEPT.

Comment #257

**Cl 48 SC 48.2.6.2.5** P143 L #257

Horner, Rita
Avago

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

**Figure 48-9b**

Figure 48-9b transitions from RX_WAKE are ambiguous.

**Suggested Remedy**

Change 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||"

Change criteria for RX_WAKE to RX_SLEEP, to "(signal_detect=OK) * !rx_tw_timer_done * deskew_align_status=OK * ||LPIDLE||"

**Response**  **Response Status** C

ACCEPT.

Comment #258

**Cl 48 SC 48.2.6.2.6** P144 L #258

Horner, Rita
Avago

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

**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.**

**Suggested Remedy**

Add PHY XS LPI management registers 4.1.11, 4.1.10, 4.1.9, 4.1.8, 4.22

Add DTE XS LPI management registers 5.1.11, 5.1.10, 5.1.9, 5.1.8, 5.22

**Response**  **Response Status** C

ACCEPT IN PRINCIPLE.

Adopt the changes in barrasst_02_1109.pdf

D2.2 will have the following:

1) extension of LPI signaling across XAUI
2) LPI mode for XAUI based on LPI mode of KX4

Comment #259

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

Horner, Rita
Avago

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

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

**Suggested Remedy**

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-group 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.

**Response**  **Response Status** C

REJECT.

**Figure 48-6 forces the column following a ||T|| to be either ||A|| or ||K||**
Comment ID # 260

Horner, Rita Avago

Comment Type TR Comment Status A

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.

Response Response Status C

ACCEPT IN PRINCIPLE.

Change "RX_QUIET" to "RX_SLEEP and RX_QUIET" in the existing definition.

Make similar changes in clauses 36 and 49

Comment ID # 261

Horner, Rita Avago

Comment Type TR Comment Status R

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.

Response Response Status C

REJECT.

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

Comment ID # 263

Barrass, Hugh Cisco

Comment Type T Comment Status A

For SNMP management of EEE, it would be convenient to have objects defined in clause 30 to describe LPI usage statistics.

SuggestedRemedy

Changes are detailed in barrass_01_1109.pdf

Response Response Status C

ACCEPT IN PRINCIPLE.

Changes are detailed in barrass_03_1109.pdf
<table>
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<tr>
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<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
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<td>78.1.3.3.1</td>
<td>226</td>
<td>42</td>
<td>264</td>
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<td>69.1.2</td>
<td>192</td>
<td>41</td>
<td>10118</td>
</tr>
</tbody>
</table>

**Response**

**Bennett, Michael**

**Comment Type**: E

**Comment Status**: A

I don't see the value in calling the wake signal "special"

**Suggested Remedy**

delete "special"

**Response**

**Response Status**: C

ACCEPT.

**D'Ambrosia, John**

**Comment Type**: ER

**Comment Status**: A

Protocol implementation conformance statements throughout the document use inconsistent descriptions for the Major Capabilities/Options feature description

**Suggested Remedy**

make the feature descriptions consistent. I prefer "Implementation of LPI"

**Response**

**Response Status**: C

ACCEPT.

**Frazier, Howard**

**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?

**Suggested Remedy**

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 Reconciliation 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.
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?

**Suggested Remedy**
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**
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.

---

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.

**Suggested Remedy**
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**
ACCEPT IN PRINCIPLE.

See response to Comment #410
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 instructions 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
ACCEPT IN PRINCIPLE.

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

Clause 74 is also being amended by P802.3ba. So where appropriate update the editing instructions to indicate the appropriate base text (IEEE Std 802.3-2008 or P802.3ba/D2.2).

SuggestedRemedy
As per comment

Response
ACCEPT IN PRINCIPLE.

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
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.

Comment ID # 10183 Page 66 of 75 11/19/2009 7:54:04 AM
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.

Suggested Remedy
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 00 SC 0 P 1 L 25 # 10190
ghiasi, ali Broadcom
doc-structure

Comment Type TR Comment Status A
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

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

Response Response Status U
ACCEPT IN PRINCIPLE.

See response to comment #410

Cl 22 SC 22.2.2.4 P 27 L 42 # 10195
Grow, Robert Intel

Comment Type TR Comment Status A
Awkward and possibly misleading text.

Suggested Remedy
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 combination of TX_EN and TX_ER shall have no effect upon the PHY.

Response Response Status C
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 combination of TX_EN and TX_ER shall have no effect upon the PHY.*
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.

**Suggested Remedy**

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**

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.

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.

**Suggested Remedy**

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**

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."
### Comment 10202
**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.

**Suggested Remedy:**
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.

### Comment 10224
**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.

**Suggested Remedy:**
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

ACCEPT IN PRINCIPLE.

Comment #455 may satisfy this.

### Comment 10457
**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.

**Suggested Remedy:**
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

### Comment 10458
**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.)

**Suggested Remedy:**
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.
### Comment 14.5.2

**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-T to have automatic MDI-X correction.

**Suggested Remedy:** 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 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.

### Comment 24.1.1

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

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)

**Suggested Remedy:** 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 Status:** W

ACCEPT IN PRINCIPLE.

(need help to respond)
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.

Suggested Remedy
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.

Response
ACCEPT IN PRINCIPLE.

In D2.1 in clause 22 and 46, the sentence has been changed to read "... the PHY indicates..." and no further change will be made.

In clause 35, the same change will be made.

The mandatory requirements are, and should be, in the appropriate PCS clauses.

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.
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.

**Suggested Remedy**

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

**Response**

Accept in principle.

Resolved by comment 260 on D2.0. It is no longer an issue in D2.1 and no additional change is required.

---

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.

**Suggested Remedy**

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.

**Response**

Accept in principle.

See the response to comment #114. Multiple shalls are added.

---

25.4.6 has three shall statements and only one PICS entry.

**Suggested Remedy**

Add other PICS entries or delete unnecessary shalls.

**Response**

Accept.

See the response to comment #107.
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.

**Suggested Remedy**

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)=(L+LII)". Alternately, change the criteria for transition from TX_L to TX_C to "T_TYPE(tx_raw)=(I+LII)".

**Response**

ACCEPT IN PRINCIPLE.

This has been resolved by the response to D2.0 comments #99 and #456.

---

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.

**Suggested Remedy**

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.

**Response**

ACCEPT IN PRINCIPLE.

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

---

What is this 'sleep signal'? Where is this defined? How is it transmitted?

**Suggested Remedy**

Similar comment was submitted against previous version of the draft and yet there are no changes so far.

**Response**

REJECT.

The sleep signal is PHY dependent and described in individual PHY clauses.
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.

Suggested Remedy

Change the duration of lpi_postupdate_timer as follows:

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

ACCEPT IN PRINCIPLE.

Duration: This timer shall have a period between 2 μs to 3.2 μs

Prior discussion:

Duration: This timer shall have a period between 2.5 μs to 3 μs

Strawpoll:

In favor: 5
Opposed: 3
Abstain: 10

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.

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.

REJECT.

These registers are consistent with other registers in 45.2.7 for autonegotiation.
Cl 28C SC 28C.12 P 243 L 18 # 20192
Parnaby, Gavin Solarflare Communications

Comment Type TR Comment Status R
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.

Suggested Remedy
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.

Response Response Status U
REJECT.

No consensus to make the change.

Proposed AIP was discussed - see below:

See parnaby_02_1109.pdf

Add three bits in 55.6 for EEE capability, make these bits mandatory for 10GBASE-T EEE

No changes in clauses 22 and 40

Straw poll
In favor of proposed response: 2
Opposed: 4
Abstain: 11

Cl 55 SC 55.3.2.2.21 P 175 L 47 # 20227
Brown, Matt AppliedMicro (AMCC)

Comment Type ER Comment Status R
Transitions are on ordered_sets not code groups.

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

Response Response Status U
REJECT.

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

Cl 49 SC 48.2.6.2 P 138 L 52 # 20218
Brown, Matt AppliedMicro (AMCC)

Comment Type ER Comment Status R
This 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".

Suggested Remedy
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."

Response Response Status U
REJECT.

Not clear that this is an improvement and the second sentence in the suggested remedy is confusing.