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/10BASE-PRX-D/U1, 10G/10BASE-PRX-D/U2, and 10G/10BASE-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

---

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<7:5>.

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.

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

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

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

---

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

ACCEPT IN PRINCIPLE.

See response to comment #410
Cl 00 SC 0 P27 L 50 # 10196
Grow, Robert Intel
Comment Type ER Comment Status A editing instructions
The style manual 21.2.1 isn't followed for numbering inserts, where for example, 22.2.2.6A would follow 22.2.2.6, it doesn't precede it and the draft insert instructions do not indicate a convention other than that of the style manual.
SuggestedRemedy
Don't insert a TX subclause in the middle of receive subclauses. If the style manual convention is being used, what is currently 22.2.2.6a should be 22.2.2.5A. If not following the style manual all change instructions need to be clear about the insertion point. Fix all inserts consistently.
Response Response Status U
ACCEPT IN PRINCIPLE.
Use explicit insert instructions. When the base text is from an approved amendment indicate the amendment in parenthesis.
Use lowercase alphabetic indication for a new subclause, table or figure to avoid disrupting the numbering of subsequent amendments.
When inserting a new subclause at a level it is x.x.0a Coordinate numbering with 802.3ba. WG chair will help resolve any issues that arise from the coordination.
Cl 01 SC 1.4 P14 L 28 # 1
Anslow, Peter Nortel Networks
Comment Type E Comment Status D
IEEE Std 802.3av-2009 was approved, which means that the TM should be used as well.
SuggestedRemedy
Change "IEEE Std 802.3av-2009" to "IEEE Std 802.3avTM-2009". Scrub the text for any other missing "TM" marks.
Proposal Response Response Status W PROPOSED ACCEPT.
Also make the same change in any other places where the same error occurs.
Cl 14 SC 14.1.1 P15 L 36 # 196
Chadha, Mandeep Vitesse Semiconducto
Comment Type E Comment Status D
There should be a space between a number and its unit. This should be a non-breaking space (ctrl space) to avoid the unit appearing on a different line from the number.
SuggestedRemedy
change "10Mb/s" to "10 Mb/s"
Proposal Response Response Status W PROPOSED ACCEPT.
Proposed Response Response Status W PROPOSED ACCEPT.
Also make the same change in any other places where the same error occurs.
Cl 14 SC 14.1.1 P15 L 36 # 171
Kasturia, Sanjay Teranetics
Comment Type ER Comment Status D
Delete Figure 1 as it is unchanged from the base text
SuggestedRemedy
Delete figure 14-1
Proposal Response Response Status W PROPOSED ACCEPT.
Duplicate of comment #196

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: Clause, Subclause, page, line
Page 2 of 74 11/13/2009 4:45:08 AM
### Comment: CL 14 SC 14.1.1 P 16 L 21 # 10511

**Booth, Brad**

**Proposed Response**

**Response Status W**

**Comment Type TR**

**Comment Status D**

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

**Suggested Remedy**

Change note to read:

**NOTE** - A 10BASE-Te PHY may not support operation with a 10BASE-T PHY unless the minimum cabling requirements for 10BASE-Te are met.

**Proposed Response**

PROPOSED REJECT.

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

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

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

### Comment: CL 14 SC 14.1.1 P 17 L 15 # 10512

**Booth, Brad**

**Proposed Response**

**Response Status W**

**Comment Type TR**

**Comment Status D**

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

**Suggested Remedy**

Update reference to 568-B.

Update throughout Clause 14.

**Proposed Response**

**Response Status W**

PROPOSED ACCEPT.

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

The change will not be made in D2.1.

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

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

### Comment: CL 14 SC 14.10.3 P 24 L 13 # 111

**Hajduczenia, Marek**

**Proposed Response**

**Response Status W**

**Comment Type T**

**Comment Status D**

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

**Suggested Remedy**

Per comment

**Proposed Response**

PROPOSED ACCEPT.

Split PICS item into two separate lines, one for 10BASE-T and the second for 10BASE-Te
Cl 14 SC 14.10.4.5.12 P 24 L 28 # 3
Anslow, Peter Nortel Networks

Comment Type E Comment Status D
TS2 is an added row so the subclause number and Req should also be in underline font.

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

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.
Also modify the editing instruction by changing the "insert" to a "change" as an insert does not require underlining.

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

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

Suggested Remedy

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.
Duplicate of comment #198

Cl 14 SC 14.3.1.2.1 P 19 L 20 # 199
Chadha, Mandeep Vitesse Semiconductor

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

Suggested Remedy
Delete figure 14-9

Proposed Response Response Status W
PROPOSED ACCEPT.
Proposed responses

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

Cl 14 SC 14.3.1.2.1 P20 L 1 # 2
Anslow, Peter Nortel Networks

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

Suggested Remedy
remove "<Default-1 Font>"

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPE.

Delete table per comment #199

Cl 14 SC 14.4 P21 L 10 # 200
Chadha, Mandeep Vitesse Semiconductor

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

Suggested Remedy
Delete figure 14-10

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 14 SC 14.4 P21 L 11 # 173
Kasturia, Sanjay Teranetics

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

Suggested Remedy

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPE.

Duplicate of comments #200 and #201

Cl 14 SC 14.4 P21 L 28 # 201
Chadha, Mandeep Vitesse Semiconductor

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

Suggested Remedy
Delete figure 14-11

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 14 SC 14.4.1 P22 L 13 # 202
Chadha, Mandeep Vitesse Semiconductor

Comment Type E Comment Status D
Figure 14-12 is unchanged from base text

Suggested Remedy
Delete figure 14-12

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 14 SC 14.4.1 P22 L 20 # 174
Kasturia, Sanjay Teranetics

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

Suggested Remedy

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPE.

Duplicate of comment #202
Cl 14 SC 14.4.1 P 22 L 43 # 10457
Thompson, Geoff GraCaSI

Comment Type ER Comment Status R
I find no text added anywhere to clause 14 that states or even gives a hint of the compatibility between 10BASE-T and 10BASE-Te. How is a customer to know how to mix the two on a network?
Further, the text in 14.4.1 is not correct in the current market and proposed context. The word "Since is inappropriate. That is, it is no longer the case that we believe that "a significant number of 10BASE-T networks are expected to be installed utilizing in-place unshielded telephone wiring" rather, the market has evolved to the extent that most telephones and networks (especially autonegotiating multi-speed adapters) are expected to utilize Category 5 or better cabling.

SuggestedRemedy
Rewrite the introductory paragraph to better reflect both the current market AND still make provision for the historical context that made use of "left-over" telephone wiring. Also, add a new subclause to clause 14 to address the topic of cross compatibility between 10BASE-T and 10BASE-Te, i.e. the two MDI can be freely mixed as long as the cabling meets the requirements for 10BASE-Te.

Response Response Status U
REJECT.
Interoperability between 10BASE-T and 10BASE-Te is addressed in 14.1.1.1 (i).
The first paragraph in 14.4.1 is text from the original standard and was not future-proof when originally written. It is not the objective of this task force to correct such text.

There changes to 14 based on resolution of comment #356

Cl 14 SC 14.4.1 P 22 L 48 # 10458
Thompson, Geoff GraCaSI

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

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

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

Cl 14 SC 14.5.2 P L # 10460
Thompson, Geoff GraCaSI

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

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

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

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

Cl 14 SC 14.8 P 23 L 1 # 1146
Anslow, Peter Nortel Networks

Comment Type E Comment Status D
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.

Proposed Response Response Status W
PROPOSED ACCEPT.

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

Cl 14 SC 14.8 P 23 L 1 # 1146
Hajduczenia, Marek ZTE Corporation

Comment Type E Comment Status D
"Which of the two specifications is implemented, i.e. ‘10BASE-T or 10BASE-Te (not both)."

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

Proposed Response Response Status W
PROPOSED REJECT.

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: Clause, Subclause, page, line

Cl 14 Page 6 of 74
SC 14.8
11/13/2009 4:45:09 AM
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.

**Proposed Response**  
PROPOSED ACCEPT IN PRINCIPLE.

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

---

"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

**Proposed Response**  
PROPOSED ACCEPT.

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

**Suggested Remedy**

per comment

**Proposed Response**  
PROPOSED ACCEPT.

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.

**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**  
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."

But make sure "Marek" is not in the draft!
Comment Type: TR
Comment Status: R

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

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.

Comment Type: E
Comment Status: D

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

Suggested Remedy
Per comment

Proposed Response: PROPOSED ACCEPT.

Comment Type: E
Comment Status: D

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

Suggested Remedy
change "100Mb/s" to "100 Mb/s"

Proposed Response: PROPOSED ACCEPT.
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.

**Suggested Remedy**

Per comment

**Proposed Response**

**Response Status** W

PROPOSED ACCEPT IN PRINCIPLE.

The primitives should be written:

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

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

Fix the text in 2 locations appropriately.

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

**Suggested Remedy**

Please clarify per comment

**Proposed Response**

**Response Status** W

PROPOSED REJECT.

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

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)

Comment Type | ER | Comment Status | D
---|---|---|---
Many of the rows are unchanged from base text. Delete most of these. Leave some if necessary to specify the insertion point/location of changes.

Suggested Remedy
per comment

Proposed Response Status | W
---|---
PROPOSED ACCEPT.
Signal
Sleep Ts 200 us - 220 us 240 us - 260 us SLEEP: 4B/5B code-group /P/
Quiet Tq 20 ms - 22 ms 24 ms - 26 ms Ceased transmission on medium
Wake Tw Minimum 20.5us Maximum 20.5us IDLE: 4B/5B code-group /I/

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

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

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

Proposed Response
PROPOSED ACCEPT IN PRINCIPLE.

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

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

24.2.2.5 EEE Capability

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

Table 24-2 Timing Parameters and Signals

<table>
<thead>
<tr>
<th>Line State Parameter Symbol</th>
<th>Parameter value (Transmitter)</th>
<th>Parameter value (Receiver)</th>
</tr>
</thead>
</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: Clause, Subclause, page, line
"Upon receiving the LPI command," in previous clauses, you speak of LPI assert / deassert very clearly, which is fine since it identifies what happens with signals. Here you start using LPI command, which is unclear as to what it carries and how signal assertion / deassertion is mapped into it. Please clarify what an LPI command is, how it maps into specific LPI assert / deassert signals.

**Suggested Remedy**
Per comment.

**Proposed Response**
PROPOSED ACCEPT IN PRINCIPLE.

Please see the response to comment #144.

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

**Suggested Remedy**
Clarify please.

**Proposed Response**
PROPOSED ACCEPT IN PRINCIPLE.

Please see the response to comment #144.

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

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

**Proposed Response**
PROPOSED ACCEPT.

Please see the response to comment #144.

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

**Suggested Remedy**
Clarify per comment

**Proposed Response**
PROPOSED ACCEPT IN PRINCIPLE.

Please see the response to comment #144.

The 100BASE-X is changed to 100BASE-TX.
<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
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<tbody>
<tr>
<td>24</td>
<td>24.2.2.5</td>
<td>40</td>
<td>3</td>
<td>43</td>
</tr>
<tr>
<td>Hajduczenia, Marek</td>
<td>ZTE Corporation</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Comment Type</strong></td>
<td><strong>Comment Status</strong></td>
<td><strong>Suggested Remedy</strong></td>
<td></td>
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</tr>
<tr>
<td>T</td>
<td>D</td>
<td>Per comment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1) &quot;as depicted in Figure 24-11b&quot; - link is not live</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| (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" |

**Comment Type** | **Response Status** | **Proposed Response** |
| T | W | PROPOSED ACCEPT IN PRINCIPLE. For item (2), do we need to change all instances of "required only for" to "required to support" throughout the draft? |

<table>
<thead>
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<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
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<td>ZTE Corporation</td>
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<td><strong>Comment Type</strong></td>
<td><strong>Comment Status</strong></td>
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<tr>
<td>T</td>
<td>D</td>
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<tr>
<td>The &quot;0001&quot; is a binary, hex or any other representation? This is unclear in here, given that it is not clear what the variable is (TX_LP_IDLE, RX_LP_IDLE)</td>
<td></td>
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</tbody>
</table>

**Suggested Remedy** |
Please clarify per comment |

**Proposed Response** | **Response Status** | **Proposed Response** |
| W | PROPOSED ACCEPT IN PRINCIPLE. Change the "value 0001" to the "binary value 0001" in the following two places: |
| P.40, L.16 |
| P.40, L.21 |

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<td>24</td>
<td>24.2.3.4</td>
<td>41</td>
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<tr>
<td>CHOU, JOSEPH</td>
<td>REALTEK SEMICOND</td>
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<tr>
<td>There is a &quot;shall&quot; statement in LPI Link Fail condition without the associated PICS item.</td>
<td></td>
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</tr>
</tbody>
</table>

**Suggested Remedy** |
Insert a new PICS entry for LPI Link Fail with the following comment: |
"If the PHY fails to receive a valid Refresh or Wake signal before lpi_rx_tq_timer expires, the receiver shall assume a link failure."

**Proposed Response** | **Response Status** | **Proposed Response** |
| W | PROPOSED ACCEPT. |

<table>
<thead>
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<tr>
<td>24</td>
<td>24.2.3.4</td>
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<td>117</td>
</tr>
<tr>
<td>CHOU, JOSEPH</td>
<td>REALTEK SEMICOND</td>
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<tr>
<td><strong>Comment Type</strong></td>
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<tr>
<td>TR</td>
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<td></td>
</tr>
<tr>
<td>There is a &quot;shall&quot; statement in wake error counter of MMD register without the associated PICS item.</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Suggested Remedy** |
Insert a new PICS entry for the wake error counter with the following comment: |
"For each transition of lpi_rx_tw_timer_done from false to true, the wake error counter shall be incremented."

**Proposed Response** | **Response Status** | **Proposed Response** |
| W | PROPOSED ACCEPT. |
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.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

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

Change

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

To:

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

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

**Proposed Response**

PROPOSED ACCEPT.
Cl 24  SC 24.2.4.2  P 43  L 22  # 102
CHOU, JOSEPH  REALTEK SEMICOND

Comment Type  TR  Comment Status  D

There is a corner case:

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

This scenario is a mistake and needs to change. However, the fix will affect the wake shrinkage time. To reduce the impact, it's preferable to decrease the signal_detection time.

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 ? TXD[3:0] ! TX_LP_IDLE" to "sentCodeGroup.indicate ? lpi_tx_tm_timer_done * TXD[3:0] ! TX_LP_IDLE"

Parameters are modified in the second row of Table 78-4 under the PHY type 100BASE-TX:

- Tphy_shrink_tx = 6.5
- Tphy_shrink_rx = 11
- Tphy_wake_rx = 11.5
- Tw_sys_rx = 12.5

Please refer to the presentation chou_01_1109.pdf

Suggested Remedy

Modify 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.]

Proposed Response  Response Status  W

PROPOSED ACCEPT.
"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

PROPOSED ACCEPT IN PRINCIPLE.

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

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

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

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

PROPOSED ACCEPT IN PRINCIPLE.

Change total four places in the draft.

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

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

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

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

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

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

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

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

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.

Proposed Response Response Status W
PROPOSED ACCEPT.

“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

Proposed Response Response Status W
PROPOSED 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”.

Suggested Remedy

Per comment

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

See the response of comment #46.
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.

Proposed Response

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

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

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

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

P.47, line 43 and 51: Change "operates" to "shall operate" in the sentence of "In the absence of the optional EEE capability, the PHY operates as if the value of this variable is FALSE."
The subclause number overlaps with the existing subclause 25.4.11 of IEEE Std 802.3-2008. What is more, it would be better to promote the Ethernet Efficient Ethernet to its own heading 2 level. The volume of information here probably should not be buried as an exception.

Suggested Remedy

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

PROPOSED ACCEPT.

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

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

Suggested Remedy

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

PROPOSED ACCEPT.

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.

PROPOSED ACCEPT IN PRINCIPLE.

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

November 2009

1. Proposed responses

Comment Type: T  Comment Status: D

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

Suggested Remedy:

Insert the following statement at the end of this paragraph:

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

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

Proposed Response: PROPOSED ACCEPT IN PRINCIPLE.

Refine the statements as follow:

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

Comment Type: T  Comment Status: D

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

Suggested Remedy:

which is the correct capitalization?

Proposed Response: PROPOSED ACCEPT IN PRINCIPLE.

Only clarification is made here. No change is recommended.

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

2. Proposed responses

Comment Type: T  Comment Status: D

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

Suggested Remedy:

Insert the following statement at the end of this paragraph:

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

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

Proposed Response: PROPOSED ACCEPT IN PRINCIPLE.

Refine the statements as follow:

The PMD Decoder function of the 100BASE-TX with EEE capability is identical to that of the TP-PMD except that the output of the Decoder is set to a value ZERO when the receiver is in a quiet line state of the LPI mode (RX_QUIET, see PCS Receive state diagram, Figure 24-11b).
Comment Type TR
Comment Status D
25.4.6 has three shall statements and only one PICS entry.

Suggested Remedy
Add other PICS entries or delete unnecessary shalls.

Proposed Response
PROPOSED ACCEPT IN PRINCIPLE.

See the response to comment #107.

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

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

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

Comment Type TR
Comment Status D
25.4.6 has three shall statements and only one PICS entry.

Suggested Remedy
Add two more PICS entries as follows:

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

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

Proposed Response
PROPOSED ACCEPT.

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.

Proposed Response
PROPOSED REJECT.

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

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

**Proposed Response**

This text is part of 802.3-2008. It describes the extended next page operation. Specific PHYs may require mandatory use of extended next pages, such mandates are in the respective PHY clauses.
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<tr>
<td>35</td>
<td>35.2.1</td>
<td>66</td>
<td>17</td>
<td>E D</td>
<td>The mapping is changed for EEE capability, this is described in 35.4a&quot; &gt; &quot;The mapping is changed for EEE capability, as described in 35.4a.&quot;</td>
<td>Per comment</td>
<td>PROPOSED ACCEPT.</td>
</tr>
<tr>
<td>35</td>
<td>35.2.2.4</td>
<td>66</td>
<td>42</td>
<td>E D</td>
<td>Incorrect reference for 22.2.2.4</td>
<td>Should be 35.2.2.4</td>
<td>PROPOSED ACCEPT.</td>
</tr>
<tr>
<td>35</td>
<td>35.2.2.4</td>
<td>67</td>
<td>55</td>
<td>T D</td>
<td>&quot;For EEE capability, the RS shall use the combination of TX_EN de-asserted, TX_ER asserted and TXD&lt;7:0&gt; equal to 0x01 shown in Table 35-1 as a request to enter, or remain in low power idle&quot;</td>
<td>Per comment</td>
<td>PROPOSED ACCEPT.</td>
</tr>
<tr>
<td>35</td>
<td>35.4a.3.1</td>
<td>72</td>
<td>49</td>
<td>E D</td>
<td>Two instances of MII instead of GMII in this paragraph.</td>
<td>Prefix MII with a G.</td>
<td>PROPOSED ACCEPT.</td>
</tr>
</tbody>
</table>
Cl 36  SC 36.2.4.12a  P 75  L 49  # 58
Hajduczenia, Marek  ZTE Corporation

Comment Type  T  Comment Status  D

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

SuggestedRemedy
Per comment

Proposed Response  Response Status  W
PROPOSED ACCEPT.

Cl 36  SC 36.2.4.7  P 75  L 12  # 57
Hajduczenia, Marek  ZTE Corporation

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

SuggestedRemedy  per comment

Proposed Response  Response Status  W
PROPOSED ACCEPT.

Cl 36  SC 36.2.4.7  P 75  L 28  # 150
Healey, Adam  LSI Corporation

Comment Type  E  Comment Status  D

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

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

Proposed Response  Response Status  W
PROPOSED ACCEPT.

Cl 36  SC 36.2.5.1.2  P 76  L 3  # 59
Hajduczenia, Marek  ZTE Corporation

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

SuggestedRemedy
Per comment

Proposed Response  Response Status  W
PROPOSED REJECT.

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

Cl 36  SC 36.2.5.1.3  P 76  L 15  # 145
Healey, Adam  LSI Corporation

Comment Type  TR  Comment Status  D

The assert_lpidle variable is defined to be an alias for:

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

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

\( \text{XMIT\_DATA to XMIT\_LPIDLE: assert\_lpidle} \land \text{TX\_OSET\_indicate} \)
\( \text{XMIT\_LPIDLE to XMIT\_DATA: assert\_lpidle} \land \text{TX\_OSET\_indicate} \)

b) The XMIT\_DATA state, and thus the XMIT\_LPIDLE state, can only be reached when xmit=DATA. Therefore, the xmit=DATA could also be removed in the assert\_lpidle definition.

SuggestedRemedy
Per comment.

Proposed Response  Response Status  W
PROPOSED ACCEPT.
The aliases detect_lpidle and detect_idle could be asserted during data reception therefore the LPI Receive state diagram (Figure 36-9b) could bounce between RX_ACTIVE and RX_SLEEP states during normal operation. A transition to RX_SLEEP will result in "Rx LPI indication" and "Rx LPI received" from being falsely asserted during normal operation. This is not likely what is intended.

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

**Proposed Response**
PROPOSED ACCEPT IN PRINCIPLE.

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

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

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

---

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.

**Proposed Response**
PROPOSED ACCEPT.

---

The alias 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.

**Proposed Response**
PROPOSED ACCEPT IN PRINCIPLE.

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

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

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

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

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

**Suggested Remedy**

Implement the state diagram changes recommended in healey_01_1109.pdf.

**Proposed Response**

PROPOSED REJECT.

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

---

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

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

1. In the LP_IDLE state, "RUDI(/LI/)" 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.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

Remove RUDI(/LI/)

Change rx_lp_active to rx_lpi_active

---

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

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

**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.

**Proposed Response**

PROPOSED REJECT.

If TWR is set too low then the receiver may falsely assert wake time fault.
<table>
<thead>
<tr>
<th>Cl.</th>
<th>SC</th>
<th>Comment Type</th>
<th>Suggested Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>36.2.5.2.9</td>
<td>E</td>
<td>&quot;and transmit directions using the status variables shown in Table 36-3c&quot; - link is not live to &quot;Table 36-3c&quot;</td>
</tr>
<tr>
<td>36</td>
<td>36.2.5.2.9</td>
<td>E</td>
<td>PROPOSED ACCEPT.</td>
</tr>
<tr>
<td>36</td>
<td>36.2.5.2.9</td>
<td>E</td>
<td>Per comment</td>
</tr>
<tr>
<td>36</td>
<td>36.2.5.2.9</td>
<td>E</td>
<td>PROPOSED ACCEPT.</td>
</tr>
<tr>
<td>36</td>
<td>36.2.5.2.9</td>
<td>E</td>
<td>PROPOSED ACCEPT.</td>
</tr>
<tr>
<td>36</td>
<td>36.2.5.2.9</td>
<td>E</td>
<td>PROPOSED ACCEPT.</td>
</tr>
<tr>
<td>36</td>
<td>36.2.5.2.9</td>
<td>E</td>
<td>PROPOSED ACCEPT.</td>
</tr>
<tr>
<td>36</td>
<td>36.2.5.2.9</td>
<td>E</td>
<td>PROPOSED ACCEPT.</td>
</tr>
<tr>
<td>36</td>
<td>36.2.5.2.9</td>
<td>E</td>
<td>PROPOSED ACCEPT.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cl.</th>
<th>SC</th>
<th>Comment Type</th>
<th>Suggested Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>36.7</td>
<td>T</td>
<td>In 36-7a there is a missing exit condition for LPI_K - SUDI([D21.5] + [D2.2])</td>
</tr>
<tr>
<td>36</td>
<td>36.7</td>
<td>T</td>
<td>Add and arch from LPI_K to RX_CB (C) when SUDI([D21.5] + [D2.2])</td>
</tr>
<tr>
<td>36</td>
<td>36.7</td>
<td>T</td>
<td>PROPOSED REJECT.</td>
</tr>
<tr>
<td>36</td>
<td>36.7</td>
<td>T</td>
<td>There is no support for configuration updates during LPI.</td>
</tr>
<tr>
<td>40</td>
<td>40.1.4</td>
<td>T</td>
<td>&quot;mode. In LPI mode, the PCS is directed to generate only idle code groups encoded with LPI request and&quot;</td>
</tr>
<tr>
<td>40</td>
<td>40.1.4</td>
<td>T</td>
<td>Sometimes it is written &quot;IDLE code-groups&quot;, sometimes &quot;idle code groups&quot; - which is it finally?</td>
</tr>
<tr>
<td>40</td>
<td>40.1.4</td>
<td>T</td>
<td>Is this caused by the specific capitalization rules in the given clause? Otherwise it should be uniformly formatted throughout all clauses.</td>
</tr>
<tr>
<td>40</td>
<td>40.1.4</td>
<td>T</td>
<td>PROPOSED REJECT.</td>
</tr>
<tr>
<td>40</td>
<td>40.1.4</td>
<td>T</td>
<td>Lower case &quot;idle code groups&quot; is used throughout Clause 40 and is consistent with its usage in the base document. There is no apparent need to make the capitalization consistent between clauses since, for example, Clause 40 &quot;idle code groups&quot; are not the same as Clause 24 &quot;IDLE code groups.&quot;</td>
</tr>
<tr>
<td>40</td>
<td>40.1.4</td>
<td>T</td>
<td>PROPOSED REJECT.</td>
</tr>
</tbody>
</table>
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.

PROPOSED ACCEPT IN PRINCIPLE.

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

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

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

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

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

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

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 optional EEE capability, the PHY should be able to successfully complete training per Figure 40-15a even when loc_lpi_req and/or rem_lpi_req are set to TRUE. This is due to the fact that a 1000BASE-T link may re-train without setting link_status !\= OK. This implies that the LPI client will be 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 ACCEPT IN PRINCIPLE.

Change Figure 40-9 per comment.

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

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

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

PROPOSED ACCEPT.
Cl 40 SC 40.4.6.1 P105 L1 # 63
Hajduczenia, Marek ZTE Corporation

Comment Type E Comment Status D
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

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

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

Cl 40 SC 40.5.1.1 P108 L31 # 191
Parnaby, Gavin Solarflare Communications

Comment Type TR Comment Status D
Submitted on behalf of Todd Thompson, Solarflare.

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

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.

Proposed Response Response Status W
PROPOSED REJECT.

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

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

The commenter does not provide a sufficiently detailed suggested remedy (i.e. specific modifications to the Clause 22 register map) to consider a change to the draft.
<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>40.6.1.2.7</td>
<td>109</td>
<td>40</td>
<td>64</td>
</tr>
<tr>
<td>Hajduzczenia, Marek</td>
<td>ZTE Corporation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Comment Type</strong></td>
<td><strong>Comment Status</strong></td>
<td><strong>Suggested Remedy</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| T | D | "40.6.1.2.7 Transmitter operation during WAKE" should read "40.6.1.2.7 Transmitter operation during the WAKE state"
| **Proposed Response** | **Response Status** | **W** |
| PROPOSED ACCEPT IN PRINCIPLE. |

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

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

<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>45.2.3</td>
<td>112</td>
<td>16</td>
<td>10183</td>
</tr>
<tr>
<td>Ganga, Ilango</td>
<td>Intel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Comment Type</strong></td>
<td><strong>Comment Status</strong></td>
<td><strong>Suggested Remedy</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| ER | A | Show the row for 3.16 through 3.23 as modified to be: 3.16 through 3.19 Reserved
You should therefore show the row for 3.16 through 3.23 as modified to be:
3.16 through 3.19 Reserved
| **Proposed Response** | **Response Status** | **W** |
| Change the edit instruction:
Change Table 45-83 (as renumbered by 802.3av) to add the following rows and change the reserved rows accordingly:

<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>45.2.3.1</td>
<td>116</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Anslow, Peter</td>
<td>Nortel Networks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Comment Type</strong></td>
<td><strong>Comment Status</strong></td>
<td><strong>Suggested Remedy</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| T | D | change the names so that they are the same.
| **Proposed Response** | **Response Status** | **W** |
| Change to Clock stop enable.

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

---

**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:** Clause, Subclause, page, line

---
Hajduczenia, Marek
ZTE Corporation

Comment Type: T  Comment Status: D
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.

Proposed Response  Response Status: W
PROPOSED ACCEPT IN PRINCIPLE.

Change line 21 to LPI
Also page 117, line 29

Hajduczenia, Marek
ZTE Corporation

Comment Type: E  Comment Status: D
"see 22.2.2.9a, 35.2.2.9a, 46.3.2.4a" should read
"see 22.2.2.9a, 35.2.2.9a, and 46.3.2.4a"

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

Suggested Remedy
Per comment

Proposed Response  Response Status: W
PROPOSED ACCEPT.

Grimwood, Michael
Broadcom

Comment Type: T  Comment Status: D
Clock stop capable is a status bit and therefore should be RO not R/W.

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

Proposed Response  Response Status: W
PROPOSED ACCEPT.

Hajduczenia, Marek
ZTE Corporation

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

Suggested Remedy
Per comment

Proposed Response  Response Status: W
PROPOSED ACCEPT IN PRINCIPLE.

Change 1 to one.
IEEE P802.3az D2.1 Energy Efficient Ethernet comments

November 2009

Cl 45 SC 45.2.3.9a.1 P 118 L 33 # 69
Hajdczenia, Marek ZTE Corporation

Comment Type E Comment Status D

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

Suggested Remedy

Per comment

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 45 SC 45.2.7.13a P 119 L 32 # 189
Parnaby, Gavin Solarflare Communicat

Comment Type TR Comment Status D

Submitted on behalf of Todd Thompson, Solarflare.

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

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.

Proposed Response Response Status W

PROPOSED REJECT.

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

Cl 45 SC 45.2.7.13a P 120 L 12 # 190
Parnaby, Gavin Solarflare Communicat

Comment Type TR Comment Status D

Submitted on behalf of Todd Thompson, Solarflare.

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

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.

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 45 SC 45.2.7.13a P 121 L 12 # 193
Parnaby, Gavin Solarflare Communicat

Comment Type TR Comment Status D

Submitted on behalf of Todd Thompson, Solarflare.

Also Page 122 Lines 12-33
Tables 45-157a and 45-157b use different indicators for the bits in the unformatted
message page. Table 45-157a uses U0-U2 while Table 45-157a uses D0-D1.

Suggested Remedy

Both should use U0-U2.

Proposed Response Response Status W

PROPOSED ACCEPT.

These registers are consistent with other registers in 45.2.7 for autonegotiation.
<table>
<thead>
<tr>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Proposed Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>TR</td>
<td>D</td>
<td>Submitted on behalf of Todd Thompson, Solarflare. Also P 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. <strong>Suggested Remedy</strong> 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). <strong>Proposed Response</strong> PROPOSED ACCEPT.</td>
</tr>
<tr>
<td>E</td>
<td>D</td>
<td>&quot;All of the bits in the EEE LP advertisement register are read only.&quot; should read &quot;All of the bits in the EEE LP advertisement register are &lt;&lt;read-only&gt;&gt;.&quot; <strong>Suggested Remedy</strong> Per comment <strong>Proposed Response</strong> PROPOSED ACCEPT.</td>
</tr>
<tr>
<td>ER</td>
<td>D</td>
<td>&quot;mapping changes slightly when LPI signaling is in operation&quot; - how much is slightly? Either it changes or not. Remove &quot;slightly&quot; (2) &quot;LP_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.&quot;- this block of text is written in smaller font than the rest of the paragraph <strong>Suggested Remedy</strong> Per comment <strong>Proposed Response</strong> PROPOSED ACCEPT IN PRINCIPLE.</td>
</tr>
</tbody>
</table>
| T            | D              | "LP_IDLE.request shall remain to be set to DEASSERT for 1 second following link_status changing state to OK" reads awkwardly. \r
 Delete this sentence and change previous sentence to: LP_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). **Suggested Remedy** Per comment **Proposed Response** PROPOSED ACCEPT IN PRINCIPLE. |
| ER           | D              | Should be more specific about use of 06. **Suggested Remedy** Change "Description" to ... **Proposed Response** PROPOSED ACCEPT IN PRINCIPLE. |

**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:** Clause, Subclause, page, line
<table>
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<th>Comment Type</th>
<th>Comment Status</th>
<th>Proposed Responses</th>
<th>Cl SC 46</th>
<th>SC 46.1.7</th>
<th>P 125 L 20</th>
<th># 179</th>
<th>Cl SC 46.3.1.5a</th>
<th>SC 46.3.1.5a</th>
<th>P 126 L 22</th>
<th># 73</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>D</td>
<td>&quot;shall remain to be set to&quot; should be &quot;shall remain set to&quot;</td>
<td>Cl 46 SC 46</td>
<td>SC 46.1.7</td>
<td>P 125 L 20</td>
<td># 179</td>
<td>Cl 46 SC 46.3.1.5a</td>
<td>SC 46.3.1.5a</td>
<td>P 126 L 22</td>
<td># 73</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>Estes, Dave</td>
<td>UNH - IOL</td>
<td></td>
<td></td>
<td>Hajduczenia, Marek</td>
<td>ZTE Corporation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>D</td>
<td>&quot;shall remain to be set to&quot; should be &quot;shall remain set to&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>D</td>
<td>&quot;shall remain to be set to&quot; should be &quot;shall remain set to&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>W</td>
<td>PROPOSED ACCEPT IN PRINCIPLE.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T</td>
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<td>Cl 46 SC 46</td>
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<td>P 125 L 45</td>
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<td>Hajduczenia, Marek</td>
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<td>Cl 46 SC 46</td>
<td>SC 46.3.1.5a</td>
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<td>Brown, Matt</td>
<td>AppliedMicro (AMCC)</td>
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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:  Clause, Subclause, page, line
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.

**Proposed Response**

**Response Status** W
PROPOSED REJECT.

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

---

**Comment Type** ER **Comment Status** D
Should be more specific about use of 06.

**Suggested Remedy**
Change "Description" to ...
"Only valid on all four lanes to indicate LP_IDLE is asserted."

**Proposed Response**
**Response Status** W
PROPOSED ACCEPT IN PRINCIPLE.

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

---

**Comment Type** TR **Comment Status** D
Throughout this sub-clause there are references to the LPI client. The LPI client is the MAC and this section describes RS Receive functionality.

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

**Suggested Remedy**
Change all instances of "LPI Client" to "RS".

**Proposed Response**
**Response Status** W
PROPOSED ACCEPT.
Cl  48  SC 48.2.6.1.2  L 135  P 40  # 76
Hajduczenia, Marek  ZTE Corporation

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

Suggested Remedy
Per comment

Proposed Response    Response Status  W
PROPOSED ACCEPT.

Cl  48  SC 48.2.6.1.2  L 135  P 49  # 180
Estes, Dave  UNH - IOL

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

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

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

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

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

Proposed Response    Response Status  W
PROPOSED ACCEPT.

Cl  48  SC 48.2.6.1.3  L 136  P 40  # 74
Hajduczenia, Marek  ZTE Corporation

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

Suggested Remedy
Per comment

Proposed Response    Response Status  W
PROPOSED REJECT.

Cl  48  SC 48.2.6.1.4  L 136  P 49  # 269
Horner, Rita  Avago

Comment Type  TR  Comment Status  D
check_end function is not defined in 802.3az. When LPI is enabled in the device, there is a
possibility that /D20.5/ will 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-groups other than /A/ or /K/ or
/D20.5/ are recognized in the column following ||T||. The XGMII Error control character is
also returned in all lanes greater than n in the column prior to ||T||, where n identifies the
specific Terminate ordered-set ||Tn||, for which a running disparity error or any code group
other than /K/ is recognized in the corresponding lane of ||T||. For all other lanes the value
set previously is retained.

Proposed Response    Response Status  W
PROPOSED ACCEPT.
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.

**Proposed Response**

PROPOSED ACCEPT.

---

**Comment Type:** TR  **Comment Status:** D  **Response Status:** W

Healey, Adam  LSI Corporation  

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

**Suggested Remedy**

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

**Proposed Response**

PROPOSED REJECT.

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

---

**Comment Type:** ER  **Comment Status:** D  **Response Status:** W

Brown, Matt  AppliedMicro (AMCC)  

Remove comparisons to logical values.

**Suggested Remedy**

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

**Proposed Response**

PROPOSED ACCEPT.

---

**Comment Type:** E  **Comment Status:** D  **Response Status:** W

Hajduczenia, Marek  ZTE Corporation  

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

**Suggested Remedy**

Per comment

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

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

---

**Comment Type:** TR  **Comment Status:** D  **Response Status:** W

Horner, Rita  Avago  

Figure 48-9b  LPI Receive state diagram page 143, RX_ACTIVE transitions to RX_SLEEP when following condition is satisfied:

||LPIDLE|| * align_status = deskew_align_status

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

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

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

**Suggested Remedy**

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

**Proposed Response**

PROPOSED REJECT.

If alignment is lost, the PCS receive state diagram will prevent the decode function from operating.
Cl 48 SC 48.2.6.2.5 P143 L # 257
Horner, Rita Avago

Comment Type TR Comment Status D
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) * lrx_tw_timer_done * deskew_align_status=OK * ||IDLE||"
Change criteria for RX_WAKE to RX ACTIVE, to "(signal_detect=OK) * lrx_tw_timer_done * deskew_align_status=OK * ||IDLE||"
Change criteria for RX_WAKE to RX_SLEEP, to "(signal_detect=OK) * lrx_tw_timer_done * deskew_align_status=OK * ||LPIDLE||"

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 48 SC 48.2.6.2.5 P143 L # 256
Horner, Rita Avago

Comment Type TR Comment Status D
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)"

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 48 SC 48.2.6.2.6 P144 L 16 # 153
Healey, Adam LSI Corporation

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

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 48-10."

Proposed Response Response Status W
PROPOSED REJECT.

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

---

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: Clause, Subclause, page, line
To make the transition from RX_SLEEP to RX_ACTIVE more robust, the condition should be changed from

|| IDLE || * !rx_tq_timer_done

to

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

PROPOSED ACCEPT.

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.

PROPOSED REJECT.

"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.

Amend the paragraph accordingly.

PROPOSED ACCEPT IN PRINCIPLE.

Changing the name will effect multiple lines in multiple clauses.
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.

Proposed Response  
PROPOSED ACCEPT IN PRINCIPLE.

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

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."

Proposed Response  
PROPOSED REJECT.

If TWR is set too low then the receiver may falsely assert wake time fault.
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 LI as...
"LI: If the optional Low Power Idle function is supported then LI occurs when the vector contains eight control characters of /LI/.

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 LI:
TX_C to TX_E
TX_INIT to TX_E
TX_D to TX_E
TX_E to TX_E
TX_T to TX_E

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

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

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

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

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

Suggested Remedy

Define LI as...
"LII: If the optional Low Power Idle function is supported then LII occurs when the vector contains (a) four /LI/ control characters followed by four /I/ control characters or (b) four /I/ control characters followed by four /I/ control characters."

Re-define LI as...
"LI: If the optional Low Power Idle function is supported then the LI type occurs when the vector contains eight control characters of /LI/.

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

Proposed Response

PROPOSED REJECT.

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

This covers all of the corner cases.
Proposed responses

Cl 49 SC 49.2.13.3 P 155 L 11 # 216
Brown, MattAppliedMicro (AMCC)

Comment Type ER Comment Status D
Remove comparisons to logical values.

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

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 49 SC 49.2.13.3.1 P 148 L 3 # 10224
Gustlin, Mark Cisco

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

Suggested Remedy

Response Response Status U
ACCEPT IN PRINCIPLE.

Comment #455 may satisfy this.

Cl 49 SC 49.2.13.3.1 P 149 L 18 # 10546
Brown, Matt AppliedMicro (AMCC)

Comment Type TR Comment Status D late
It is possible to be caught in RX_SLEEP state. The only exit conditions are detection of IDLE blocks or detection of no energy at PMA. It is possible that with a compromised signal that neither Isignal_ok or IDLE will be detected.

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

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

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

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

Cl 49 SC 49.2.13.3.1 P 156 L 26 # 166
Koenen, David Hewlett-Packard

Comment Type E Comment Status D
Missing arrow head on line from RXQUIET to RX_LINK_FAIL.

Suggested Remedy

Add arrow head.

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 49 SC 49.2.13.3.1 P 156 L 43 # 238
Brown, Matt AppliedMicro (AMCC)

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

Suggested Remedy

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

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

See comment #132

Cl 49 SC 49.2.13.3.1 P 156 L 43 # 275
Brown, Matt AppliedMicro (AMCC)

Comment Type ER Comment Status D
For clarity and consistency re-name SCR_BYPASS to TX_WAKE_SCR_BYPASS.

Suggested Remedy

Re-name SCR_BYPASS to TX_WAKE_SCR_BYPASS.

Proposed Response Response Status W
PROPOSED ACCEPT.
Cl 49  SC 49.2.13.3.1  P156  L 8  # 18
Mark, Gustlin  Cisco
Comment Type  E  Comment Status  D
Clean up the overlap in the text and state machine lines in figure 49-16.
SuggestedRemedy
as above.
Proposed Response  Response Status  W
PROPOSED ACCEPT.

Cl 49  SC 49.2.13.3.1  P157  L 19  # 232
Brown, Matt  AppliedMicro (AMCC)
Comment Type  T  Comment Status  D
Transition criteria from RX_SLEEP to RX_ACTIVE or RX_SLEEP not consistent with rest of SM. R_TYPE is elsewhere anded with rx_block_lock.
SuggestedRemedy
Simple fix.
Change "R_TYPE(rx_coded) = IDLE" to "(R_TYPE(rx_coded) = IDLE) * rx_block_lock".
Alternately.
Consider/define (R_TYPE(x) = y) being TRUE to include the condition that rx_block_lock = TRUE. in which case, we can clean up the SM by removing the rx_block_lock condition from the following transitions:
RX_WAKE to RX_SLEEP
RX_WAKE to RX_ACTIVE
RX_WTF to RX_SLEEP
RX_WTF to RX_ACTIVE
RX_ACTIVE to RX_SLEEP
Proposed Response  Response Status  W
PROPOSED ACCEPT IN PRINCIPLE.
Use the simple fix.

Cl 49  SC 49.2.4.7  P148  L 7  # 187
Parnaby, Gavin  Solarflare Communicat
Comment Type  TR  Comment Status  D
The response to comment #466 (on Clause 55) on draft 2.0 said that the control code for /LI/ in clause 49 would be changed to 0x06.
This was missed in the draft update.
SuggestedRemedy
Change the /LI/ control code to 0x06 in clause 49 as agreed in the response to comment #466 on draft 2.0.
Proposed Response  Response Status  W
PROPOSED ACCEPT.

Cl 49  SC 49.2.4.7  P148  L 7  # 181
Estes, Dave  UNH - IOL
Comment Type  T  Comment Status  D
Comment #130 was accepted but not all of the text was changed.
SuggestedRemedy
Change "0x07" to "0x06" on page 148 line 7 and on page 149 line 42 to fulfill the changes accepted in comment #130.
Proposed Response  Response Status  W
PROPOSED ACCEPT.

Cl 49  SC 49.2.6  P148  L 25  # 15
Mark, Gustlin  Cisco
Comment Type  T  Comment Status  D
"Change 49.2.6 for scrambler reset" is out of date, should be bypass.
SuggestedRemedy
Change to:
"Change 49.2.6 for scrambler bypass"
Proposed Response  Response Status  W
PROPOSED ACCEPT.
**Proposed responses**

- **Comment Type**: T
- **Comment Status**: D
- **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."
- **Proposed Response**: PROPOSED ACCEPT IN PRINCIPLE.

- **Comment Type**: T
- **Comment Status**: D
- **Suggested Remedy**: "To aid block synchronization in the receiver when optional LPI function is supported, a scrambler bypass will be provided. When scrambler_bypass = true the scrambler bypass is used and the scrambler will otherwise continue to operate normally."
- **Proposed Response**: PROPOSED ACCEPT IN PRINCIPLE.

- **Comment Type**: T
- **Comment Status**: D
- **Suggested Remedy**: "while scrambler_reset is TRUE": I can't find any other occurrence of "scrambler_reset".
- **Proposed Response**: PROPOSED ACCEPT IN PRINCIPLE.

---

**Comment Status**: D

**Proposed Response**: 

See comment #239

---

**Comment Status**: D

**Proposed Response**: 

See comment #239
Cl 49  SC 49.2.9  P149  L 2  # 122

Dawe, Piers  Independent

Comment Type  T  Comment Status  D

"the scrambler input will bypass": "will" is deprecated (except in Clause 30 and as described in style manual)

Suggested Remedy

shall? (with PICS) "bypasses"?

Scrub the draft.

Proposed Response  Response Status  W

PROPOSED ACCEPT IN PRINCIPLE.

See comment #239

Change will to shall
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, line 31). This will cause the receive SM (fig 49-15) to transit from RX_LI to RX_INIT (because of Page 155, line 3).

Suggested Remedy

Change the transition to BER_MT_INIT (Page 151, line 2) from reset + r_test_mode + !rx_block_lock
To reset + r_test_mode + rx_lpi_active.

This will make it consistent with Clause 55: fig 55-14 (LFER monitor state diagram).

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

The block lock is still required.

reset + r_test_mode + !rx_block_lock + rx_lpi_active

Proposed responses

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.

Proposed Response

PROPOSED REJECT.

Unnecessary transitions out of RX_QUIET because of noise will cause a waste of power but will cause any malfunction. Any method used to improve the quality of energy_detect will improve the power savings but will not require changes to this state diagram.
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.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

- Transition from TX_SLEEP: \( T \_TYPE(tx\_raw) \neq LI \), goes to TX_ACTIVE
- Transition from TX_REF_SCR_BYPASS: \( T \_TYPE(tx\_raw) \neq LI \) * one_us_timer_done, goes to TX_ACTIVE
- Transition from TX_REF_SCR_ON: \( T \_TYPE(tx\_raw) \neq LI \), goes to TX_ACTIVE

(the last one doesn't need to wait for the timer).

Both the conditions out of TX_REF_SCR_BYPASS and TX_REF_SCR_ON should be qualified with one_us_timer_done.

**Suggested Remedy**

Modify the transition condition from

\[ T \_TYPE(tx\_raw) = LI \]

\[ T \_TYPE(tx\_raw) = LI \) * one_us_timer_done

for both these states.

`pillai_1109_01.pdf` also addresses this change.

**Proposed Response**

PROPOSED REJECT.

The transitions from the refresh states to TX_WAKE do not need to wait because the scrambler bypass will be held for 1\( \mu \)S in state SCR_BYPASS.

**Proposed Response**

PROPOSED ACCEPT.
Comment Type: E  Comment Status: D
I think we should rename RX_WTF to RX_EXW (Extended wake)
or at least add a "K", which will make it RX_WKTF (Wake time fault)
Which ever way we decide, all the reference to WTF needs to be changed too.

Suggested Remedy

Proposed Response  Response Status: W
PROPOSED REJECT.

Changing the name will effect multiple lines in multiple clauses.

Comment Type: TR  Comment Status: D
Resolution on Comment #130 against draft D2.0 was to change control code to 0x06, but it
is still 0x07.

Suggested Remedy
Change the control code to 0x06 at these loctions.
Page 148, line 7
Page 149, line 42

Proposed Response  Response Status: W
PROPOSED ACCEPT.

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.

Suggested Remedy
Increase the timeout for RX wake timer to 29us (min) to 30us (max).
The following are the changes that are required.
1. sub clause: 49.2.13.2.5, page 153, Line 19 Change TUL to TWR.
2. table 49-3, page 158, line 28: Change the values to 29us (min) to 30us (max).
3. table 49-3, page 158, line 31: Remove this line. There is no need for two TWR.

Proposed Response  Response Status: W
PROPOSED ACCEPT IN PRINCIPLE.

If scrambler_bypass is not used then the wake time may be shorter.
1. as written
2. 26uS, 27 uS
3. 29uS, 30uS
Cl  51  SC  51.2  P 162  L 1  #  168
Koenen, David  Hewlett-Packard

Comment Type  T  Comment Status  D

rx_lpi_active appears in Figure 49-4 & Figure 74-2 going to the PMA, but does not appear in the PMA diagram or signal definitions.

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

Proposed Response  Response Status  W
PROPOSED ACCEPT IN PRINCIPLE.
The signal should not be shown going to the PMA in Figure 74-2.

In Figure 49-4 add "(FEC sublayer only)"

Cl  51  SC  51.4  P 162  L 29  #  121
Dawe, Piers  Independent

Comment Type  E  Comment Status  D

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).

Proposed Response  Response Status  W
PROPOSED ACCEPT.

Cl  51  SC  51.4  P 162  L 3  #  123
Dawe, Piers  Independent

Comment Type  E  Comment Status  D

Subclause heading for Table 51-3 is missing
SuggestedRemedy
Insert "51.4 Sixteen-Bit Interface (XSBI)"

Proposed Response  Response Status  W
PROPOSED REJECT.
The change instruction names the figure.

Cl  55  SC  0  P 0  L 0  #  236
Brown, Matt  AppliedMicro (AMCC)

Comment Type  T  Comment Status  D

In many figures, there is a statement "... mandatory for EEE." This doesn't say that its not required by non-EEE PHYs and might be interpreted as saying that its optional for non-EEE PHYs.

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".

Proposed Response  Response Status  W
PROPOSED REJECT.
Adding 'not required for non-EEE PHYs' does not change the normative requirements of the text so it is not necessary.

However, the wording will be changed to match that in other clauses (see e.g. page 89 of draft 2.1), for consistency (though this doesn't seem to address the meat of the comment, which is why the proposed response is reject):
NOTE--Signals and functions shown with dashed lines are only required for the EEE capability.

The editor also notes that in at least one state diagram a new variable has been added which are not defined for non-EEE PHYs - in Figure 55-14 lpi_rx_wake_timer_done is used. Add a note to this figure that states
'NOTE- The variable lpi_rx_wake_timer_done is only required for the EEE capability and should be treated as if the value of this variable is TRUE otherwise.'
Comment Type: TR
Comment Status: D

LI and LII are defined as RBLOCKS not TBLOCKS.

Suggested Remedy
Redefine LI and LII T_BLOCK types for XGMII.

Proposed Response
Response Status: W
PROPOSED ACCEPT IN PRINCIPLE.

See comments 253, 251

Comment Type: E
Comment Status: D

"a LPI" should be "an LPI"

Suggested Remedy
change "a LPI" to "an LPI"

Proposed Response
Response Status: W
PROPOSED ACCEPT IN PRINCIPLE.

Make change identified at location in comment as well as in other places in Clause 55

Comment Type: E
Comment Status: D

wording

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

Proposed Response
Response Status: W
PROPOSED ACCEPT.
Proposed responses

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

November 2009

Comment Type ER Comment Status D

Use lp_idle to indicate lp idle characters. Also, "/LI/s" seems like bad syntax.

Suggested Remedy

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

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

The 'LI/s' terminology was used to maintain consistent bad-syntax with non-EEE PHYs - 'I/s' are used in 55.3.2.2.9 in the existing standard. The new subclause parallels 55.3.2.2.9 with 'I/s' replaced with '/'LI/s'.

Change the sentence to 'LI/s may be added follow low power idle control characters'.

Comment Type ER Comment Status D

Blocks and frames have as much or as little significance in LPI mode as in any other mode. Also, LPDC frame boundaries delimit LPI cycles. So retain, legacy wording and change new sentence.

Suggested Remedy

Change two sentences from "Outside the LPI ... and alert times." to "Blocks and frames are unobservable and have no meaning outside the PCS. During the LPI mode, LDPC frame boundaries delimit sleep, wake, refresh, quiet and alert cycles."

Proposed Response Response Status W
PROPOSED ACCEPT.

If accepted this changes the response to 229

Comment Type T Comment Status D
Presumably, the scrambler continues to run as well.

Suggested Remedy

Change sentence to:
"After the sleep signal is transmitted, LP_IDLE characters shall be input to the PCS scrambler continuously and the scrambler shall continue to operate until the transmit LPI mode ends."

Proposed Response Response Status W
PROPOSED REJECT.

There is no text saying that the scrambler is disabled.

Stating that it runs continuously is not necessary.
Cl 55 SC 55.3.2.2.21 P 176 L 25 # 234
Brown, Matt AppliedMicro (AMCC)

Comment Type T Comment Status D
The last two sentences are not very clear and are incorrect.

Suggested Remedy
Change...
"The /LI/ ... normal operation." To...
"The PHY receive sends /I/ to the XGMII for 9 LDPC frame periods then resumes normal operation decoding received 64B/65B blocks and sending the decoded values to the XGMII."

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.
"The PCS receive function sends /I/ to the XGMII for 9 LDPC frame periods then resumes normal operation."
<table>
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<tr>
<th>Comment Type</th>
<th>Comment Status</th>
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<tbody>
<tr>
<td>T</td>
<td>D</td>
<td>PROPOSED ACCEPT.</td>
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</tbody>
</table>

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."

**Proposed Response**

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<thead>
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<th>Comment Status</th>
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<tbody>
<tr>
<td>E</td>
<td>W</td>
<td>PROPOSED ACCEPT.</td>
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</table>

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."
  "An EEE capable PHY shall support loop timing and loop timing shall be enabled."

**Proposed Response**

<table>
<thead>
<tr>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Proposed Response</th>
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<tbody>
<tr>
<td>ER</td>
<td>D</td>
<td>PROPOSED ACCEPT.</td>
</tr>
</tbody>
</table>

Symmetric low power mode is not defined

**Suggested Remedy**
- change...
  "during the symmetric low power mode"
  to...
  "when both transmit and receive are in LPI mode."

**Proposed Response**

<table>
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<tr>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Proposed Response</th>
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</thead>
<tbody>
<tr>
<td>T</td>
<td>D</td>
<td>PROPOSED ACCEPT.</td>
</tr>
</tbody>
</table>

Definition of "lpi_rx_wake_timer" does not match SM.

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

**Proposed Response**

<table>
<thead>
<tr>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Proposed Response</th>
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<tbody>
<tr>
<td>T</td>
<td>D</td>
<td>PROPOSED ACCEPT.</td>
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</tbody>
</table>

See also 242 as that may change whether LF are transmitted in the TX_WE state.
Simplify the definition of \texttt{R\_BLOCK\_TYPE C} to be consistent with the new definition for \texttt{T\_BLOCK\_TYPE C} proposed in another comment.

\textbf{Suggested Remedy}

\begin{itemize}
  \item Change:
  \begin{itemize}
    \item C: The vector contains a data/ctrl header of 1 and one of the following:
      \begin{itemize}
        \item a) A block type field of 0x1E and eight valid control characters, none of which are /E/ and, if the low power idle function is supported, none of which are /LI/;
      \end{itemize}
    \end{itemize}
  \end{itemize}

  To:
  \begin{itemize}
    \item C: The vector contains a data/ctrl header of 1 and one of the following:
      \begin{itemize}
        \item a) A block type field of 0x1E and eight valid control characters other than /E/ and /LI/;
      \end{itemize}
  \end{itemize}
\end{itemize}

\textbf{Proposed Response} \hspace{1cm} \textbf{Response Status W}

PROPOSED ACCEPT.

In the existing PCS state diagram, certain normally occurring control blocks are considered as error (e.g. 4/I/ followed by 4/LI/). Redefine \texttt{LII} and add this type to state transitions currently conditioned on C.

\textbf{Suggested Remedy}

Redefine the \texttt{LII} block type as follows:

\begin{itemize}
  \item \texttt{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:
    \begin{itemize}
      \item four control characters of /LI/ followed by four control characters of /LI/;
      \item four control characters of /LI/ followed by four control characters of /LI/.
    \end{itemize}
\end{itemize}

In Figure 55-16 on page 187 add \texttt{LII} to the following state transitions:

\begin{itemize}
  \item RX\_INIT to RX\_C: Change \texttt{C} to \texttt{C + LII}
  \item RX\_C to RX\_C: Change \texttt{C} to \texttt{C + LII}
  \item RX\_D to RX\_T: Change (S + C + LII) to (S + C + LI + LII)
  \item RX\_D to RX\_E: Change (E + C + LI + S) to (E + C + LII + LI + S)
  \item RX\_E to RX\_T: Change (S + C) to (S + C + LI + LII)
  \item RX\_T to RX\_C: Change \texttt{C} to \texttt{C + LII}
  \item RX\_E to RX\_C: Change \texttt{C} to \texttt{C + LII}
  \item 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 \texttt{R\_TYPE\_NEXT}.
\end{itemize}

\textbf{Proposed Response} \hspace{1cm} \textbf{Response Status W}

PROPOSED ACCEPT.
<table>
<thead>
<tr>
<th>Cl</th>
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<th>P</th>
<th>L</th>
<th>Line</th>
<th>Comment Type</th>
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<th>Suggested Remedy</th>
<th>Proposed Response</th>
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<tbody>
<tr>
<td>55</td>
<td>55.3.5.2.4</td>
<td>182</td>
<td>14</td>
<td></td>
<td>TR</td>
<td>D</td>
<td>In the T_BLOCK_TYPE definition, type C conflicts with LII. Redefine type C to eliminate conflict (another comment addresses LII by redefining it).</td>
<td>Change: C; The vector contains one of the following: a) eight valid control characters other than /O/, /S/, /I/ and /E/ and, if the LPI function is supported, less than eight valid control characters of /LI/ and less than eight valid control characters of /I/;</td>
<td>PROPOSED ACCEPT.</td>
</tr>
<tr>
<td>55</td>
<td>55.3.5.2.4</td>
<td>182</td>
<td>28</td>
<td></td>
<td>TR</td>
<td>D</td>
<td>In the T_BLOCK_TYPE definition, type C conflicts with LII. Redefine LII to eliminate conflict (another comment addresses C).</td>
<td>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/;</td>
<td>PROPOSED ACCEPT.</td>
</tr>
<tr>
<td>55</td>
<td>55.3.5.2.4</td>
<td>182</td>
<td>8</td>
<td></td>
<td>T</td>
<td>D</td>
<td>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).</td>
<td>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/;</td>
<td>PROPOSED ACCEPT.</td>
</tr>
<tr>
<td>55</td>
<td>55.3.5.2.4</td>
<td>182</td>
<td>28</td>
<td></td>
<td>T</td>
<td>D</td>
<td>Clarify which of the five types T_BLOCK_TYPE may be classified if LPI is not supported.</td>
<td>Change: &quot;...one of the five types...&quot; to: &quot;...one of the first five types...&quot;</td>
<td>PROPOSED ACCEPT.</td>
</tr>
</tbody>
</table>

Proposed responses

- Grimwood, Michael Broadcom

**Comment Status:** D/dispatched  A/accepted  R/rejected  W/written  C/closed  U/unsatisfied  Z/withdrawn
**Response Status:** O/open  W/written  C/closed  U/unsatisfied  Z/withdrawn

**Sort Order:**  Clause, Subclause, page, line
<table>
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<th>Proposed Response</th>
<th>Response Status</th>
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<tbody>
<tr>
<td>E</td>
<td>&quot;to the eight types&quot; to &quot;to one of eight types&quot;</td>
<td>PROPOSED REJECT.</td>
<td></td>
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</table>

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.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>E</td>
<td>&quot;that counts transmitted LDPC frames&quot; to &quot;that counts transmit LPDC frame periods&quot;</td>
<td>PROPOSED ACCEPT.</td>
<td></td>
</tr>
</tbody>
</table>

On line 47
- change "that counts transmitted LDPC frames" to "that counts transmit LPDC frame periods"

On line 53
- change "that counts received LDPC frames" to "that counts receive LPDC frame periods"

PROPOSED ACCEPT.

In the current draft the criteria used to drop the link during LPI is not specified. Since PHYs can monitor link quality only during refreshes (and then only for 4 LDPC frames (~1.2us)) and since some PHYs may choose not to wake for all refreshes, it may take multiple refresh cycles before link drop is detected by both sides of the link. Then both sides need to go through a complete training sequence, taking up to 2s, to return to the normal operation mode.

If the link is disturbed during LPI the ability of the PHY to recover is limited by the quiet-refresh signaling since only 4 LDPC frames out of 512 can be used for equalizer/echo training. It would be extremely valuable to include a method by which EEE-10GBASE-T PHYs are able to recover a disturbed link without a full retrain.

SuggestedRemedy
- See presentation.
<table>
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<td>55</td>
<td>55.3.5.4</td>
<td>185</td>
<td>7</td>
<td>254</td>
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</tbody>
</table>

**Comment Type**: TR

**Comment Status**: D

When LPI is supported, valid sets of control characters and should not trigger transitions to TX_E and subsequent transmission of the Error control block. Currently, 4/LI/ followed by 4/I/ causes transitions to TX_E.

**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

**Proposed Response**: PROPOSED ACCEPT.

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<tr>
<td>55</td>
<td>55.3.5.4</td>
<td>186</td>
<td>24</td>
<td>242</td>
</tr>
</tbody>
</table>

**Comment Type**: TR

**Comment Status**: D

In Figure 55-15a state TX_WE, local fault blocks are sent to indicate that the link has failed. It is previously sent only form transmit when transmit is in reset mode and from receive when receive is in reset or the input has failed (e.g., loss of block lock). A stream of local faults generates a local fault alarm at the RS and indicates that a link is failed and triggers re-calculation of routing tables at higher layers. Also, the state is wake error not wake fault :).

Normally, error characters or blocks are used to convey that an error event has occurred. In TX_WE state, send error blocks instead of local faults.

**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".

**Proposed Response**: PROPOSED ACCEPT IN PRINCIPLE.

- Local faults sent by the LPI state machine will be converted to errors by the rx state machine in the link partner, so local faults will not be seen at higher system layers with the present state diagrams.
- Neither error or local fault helps the link in any way - they force the receiving LPI PHY to exit the LPI state with an error condition due to a problem with MAC-PHY signaling on its link partner, which is undesirable.
- A better solution is to transmit IDLEs in the WE state. Then the PHY enforces 9 frames of IDLEs which gives the receiving PHY the best chance to return to the normal operational mode without errors. Also use a counter to count error events on wake on both tx and rx sides.

See comment 195
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.

**Proposed Response**

Add a counter which increments in the RX_W rx wake on error condition and the management to support this counter.

Add a counter which increments in the TX_WE tx wake on error condition and the management to support this counter.

**Proposed Response**

PROPOSED ACCEPT.

Add counters

lpi_bk_err_cnt
lpi_rxw_err_cnt

lpi_bk_err_cnt increments in a delayless state added to the transition between TX_WE and TX_C
lpi_rxw_err_cnt increments in a delayless state added to the transition between RX_W and RX_E

**Proposed Response**

PROPOSED ACCEPT.

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

**Proposed Response**

PROPOSED ACCEPT.

 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.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

The receive state ... signalling sleep.

**Proposed Response**

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

Proposed responses

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

Comment Type  E  Comment Status  D
Comment
Last sentence refers to deleted state diagram.

SuggestedRemedy
Delete sentence...
"PHYs with the EEE ... figure 55-27a."

Proposed Response  Response Status  W
PROPOSED ACCEPT.

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

Comment Type  TR  Comment Status  D
The MDI/MDIX function should apply to the ALERT signal as well. Sentence should be re-worded, regardless.

SuggestedRemedy
Change sentence to...
For EEE capable PHYs, the MDI/MDIX function shall apply to refresh and alert signalling.

Proposed Response  Response Status  W
PROPOSED ACCEPT.

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

Comment Type  TR  Comment Status  D
The frequency variation should apply when 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.

Proposed Response  Response Status  W
PROPOSED ACCEPT.

Cl  69  SC  69.1.1  P  192  L  1  #  10186
Ganga, Ilango  Intel

Comment Type  ER  Comment Status  A
Clause 69 is also being amended by P802.3ba. Update the editing instructions and base text to indicate appropriate source (IEEE Std 802.3-2008 or P802.3ba).

SuggestedRemedy
As per comment

Response  Response Status  W
ACCEPT IN PRINCIPLE.
There doesn't appear to be any conflicting or overlapping changes.

But editor will add editor's note to indicate P802.3ba may also affect clause 69 and, in parenthesis, and identify draft if the edit is based on a draft

Cl  69  SC  69.1.1  P  198  L  7  #  119
Dawe, Piers  Independent

Comment Type  E  Comment Status  D
As D2.0 comment 118: P802.3ba will be adding the objective "a 4 lane 40Gb/s PHY". The addition by 802.3az of "Optionally support Energy Efficient Ethernet will imply that 40GBASE-KR4 will support EEE.

SuggestedRemedy
If you intend to mandate EEE as an option for 40GBASE-KR4, Table 69-1 will make this clear. If you don't, change "Backplane Ethernet optionally supports Energy Efficient Ethernet (EEE) to reduce energy consumption." to "1000BASE-KX, 10GBASE-KX4 and 10GBASE-KR optionally support Energy Efficient Ethernet (EEE) to reduce energy consumption.

Proposed Response  Response Status  W
PROPOSED ACCEPT IN PRINCIPLE.
See response to comment 26.
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<td>D'Ambrosia, John</td>
<td>Force10 Networks</td>
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**Comment Type: ER**  **Comment Status: D**

P802.3ba will be adding the objective "a 4 lane 40Gb/s PHY. The addition by 802.3az of "Optionally support ENergy Efficient Ethernet will imply that 40GBASE-KR4 will support EEE.

**SuggestedRemedy**

Change added objective text to
"Optionally support Energy Efficient Ethernet for PHYs that support MAC rates of 10 Gb/s or lower."

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

PROPOSED ACCEPT IN PRINCIPLE.

See response to comment 26.

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<td>Marris, Arthur</td>
<td>Cadence</td>
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**Comment Type: TR**  **Comment Status: D**

This is a pile on to comment 118 against 2.0.

"Optionally support EEE" implies 40GBASE-KR4 can also support EEE.

**SuggestedRemedy**

Change:
Optionally support EEE.

To:
Optionally support EEE for 10 Gb/s rates or lower.

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

PROPOSED ACCEPT. Also answered as an editorial comment.

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

AUTO-NEGOTIATION

**SuggestedRemedy**

Auto-Negotiation

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

PROPOSED ACCEPT.
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<td>Remove underlining from the word 'optional' on line 7 page 205.</td>
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<td>Change &quot;FED&quot; to &quot;FEC&quot; to fix typo.</td>
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Marris, Arthur Cadence

**Comment** Incorrect underlining

- Remove underlining from 'is optional and' on line 46.
- Remove underlining from the word 'optional' on line 7 page 205.

**Proposed Response** PROPOSED ACCEPT.

---

Ganga, Ilango Intel

**Comment** 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

**Proposed Response** 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).
Comment Type: TR
Comment Status: D

"The value of the SIGNAL_DETECT is defined by the training state diagram shown in Figure 72-5 when rx_quiet = FALSE." Does not sound correct. The rx_quiet = FALSE happens several times when the PHY is in EEE. Change this line to

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."

Proposed Response

Response Status: W

PROPOSED REJECT.

There currently is no rx_lpi_active signal defined from the PMA to the KR PHY. But based on other proposals, I believe there should be.

Comment Type: E
Comment Status: D

Remove underlining from 'is' and 'optional'

Suggested Remedy

as above

Proposed Response

Response Status: W

PROPOSED ACCEPT.

Comment Type: TR
Comment Status: D

The variable fec_rapid_block_lock_edge "is set to TRUE to detect when fec_rapid_block_lock changes state from FALSE to TRUE." When is it set to FALSE?

Referring the FEC Lock state diagram (Figure 74-3).

1. If rx_lpi_active is TRUE and the link partner's transmission ceases during the quiet period (!signal_ok), the state diagram will not transition to FEC_LOCK_INIT state. It is not clear why this transition is inhibited; perhaps to stop fec_block_lock from being set to FALSE. However, there will be repeated parity check failures corresponding to the lack of an input signal. It seems that it can be safely assumed that fec_block_lock will be set to FALSE at some point during the quiet period and held there until refresh or wake.

2. As long as fec_rapid_block_lock_edge is TRUE, the state diagram is held in the RESET_CNT state.

3. When fec_rapid_block_lock_edge transitions from TRUE to FALSE, the state diagram tests the next available block. It proceeds to check for n = 4 consecutive good parity checks before fec_block_lock is set back to TRUE.

4. The variable fec_signal_ok is defined (page 219, line 10) to be signal_ok*(fec_block_lock+fec_rapid_block_lock_edge). Therefore, this value will be set to TRUE while fec_rapid_block_lock is TRUE, and then be set to FALSE for at least n = 4 FEC blocks before being set to TRUE again.

5. This fec_signal_ok variable is communicated to the PCS via the FEC_SIGNAL.indication primitive, and used in the PCS Lock state diagram (Figure 49-12). The behavior of fec_signal_ok implies that the PCS lock diagram will first try to obtain block synchronization, and then be forced to lose it, and then try to obtain it again. The intended behavior is unclear.

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.

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

Agree with the commenter. The way fec_rapid_bloc_lock_edge is used in the state machine is not going to work correctly. The basic idea is to find the SLIP through the deterministic block and guide the FEC lock state machine to achieve fec_block_lock gracefully.

Suggestions:

#1. Remove text under 74.7.4.7

#2. Change the fec_signal_ok description for EEE capability to the following:

If EEE capability is supported, then fec_signal_ok is a Boolean variable that is set based on the most recently received value of PMA_UNITDATA.indication(SIGNAL_OK) and (fec_block_lock + fec_rapid_block_lock). It is set to true if the fec_block_lock or fec_rapid_block_lock value is true and PMA_UNITDATA.indication(SIGNAL_OK) value was OK and set to false otherwise. The value is sent to the PCS layer through the primitive FEC_SIGNAL.indication as specified in 74.5.3.

#3. Remove the variable fec_rapid_block_lock_edge and the associated description.

#4 Add this new variable

fec_rapid_block_lock

This variable is set to true when FEC Rapid block synchronization mechanism locks to the deterministic FEC frame. And it is set to false when this mechanism does not receive the deterministic frame or rx_lpi_active = FALSE.

#5 Changes to Fig 74-3

#a: Remove fec_rapid_block_lock_edge transition to RESET_CNT and the note associated with it.

#b: replace rx_lpi_active = FALSE to rx_quiet = TRUE

#c: Change the transition condition between TEST_FEC_BLOCK and VALID PARITY from "parity_good_cnt = n" to "(parity_good_cnt = n + fec_rapid_block_lock)"

#d: Change the transition condition between TEST_FEC_BLOCK and INVALID PARITY from "parity_invalid" to "parity_invalid * !fec_rapid_block_lock"

#e: Change the transition condition between VALID PARITY and FEC_BLOCK_LOCK from "test_fec_block * parity_good_cnt < n" to "(test_fec_block * parity_good_cnt < n * fec_rapid_block_lock)"

These state diagram changes will gracefully set the fec_block_lock as soon as the fec_rapid_block_lock is achieved. Since the fec_rapid block lock mechanism will set the correct SLIP, the blocks that follows will also match the parity. Hence the FEC lock state diagram will maintain the fec_block_lock status.

These state diagram changes will gracefully set the fec_block_lock as soon as the fec_rapid_block_lock is achieved. Since the fec_rapid block lock mechanism will set the correct SLIP, the blocks that follows will also match the parity. Hence the FEC lock state diagram will maintain the fec_block_lock status.

Response Status

W

Proposed Response

from "parity_good_cnt = n" to "parity_good_cnt = n + fec_rapid_block_lock"

#d) Change the transition condition between VALID PARITY and TEST_FEC_BLOCK from "test_fec_block * parity_good_cnt < n" to "(test_fec_block * parity_good_cnt < n * fec_rapid_block_lock)"

These state diagram changes will gracefully set the fec_block_lock as soon as the fec_rapid_block_lock is achieved. Since the fec_rapid block lock mechanism will set the correct SLIP, the blocks that follows will also match the parity. Hence the FEC lock state diagram will maintain the fec_block_lock status.
Cl 74 SC 74.11 P 221 L 8 # 176
Kasturia, Sanjay Teranetics

Comment Type TR Comment Status D
Add row in major capabilities table to cover EEE. Remove editor's note. Add shalls if needed in the clause text.

SuggestedRemedy

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.
Please refer to Suggested remedy of #134

Cl 74 SC 74.11.3 P L # 134
Pillai, Velu Broadcom

Comment Type TR Comment Status D
Add EEE to CL 74 PICS

SuggestedRemedy
Under 74.11.3 Major capabilities/options

Item: LPI
Feature: Rapid block lock
Subcals: 74.7.4.8
Value/Comment: Device implements Rapid block lock mechanism to suport EEE.
Status: O
Support: Yes [ ] / No [ ]

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 74 SC 74.4.1 P 215 L 215 # 156
Healey, Adam LSI Corporation

Comment Type TR Comment Status D
10GBASE-R service interface primitive names now map to several different functions. Bad idea. In the use of these primitive that follows, the parameter names suddenly become upper case (e.g. "tx_quiet" becomes "TX_QUIET").

SuggestedRemedy
Recommend the following changes:
d) "FEC_SIGNAL.request(tx_quiet)" should become "FEC_TXQUIET.request(tx_quiet)"
e) "FEC_SIGNAL.request(rx_quiet)" should become "FEC_RXQUIET.request(rx_quiet)"
f) "FEC_SIGNAL.indication(energy_detect)" should become "FEC_ENERGY.indication(energy_detect)"
g) "FEC_SIGNAL.request(rx_lpi_active)" should become "FEC_LPIACTIVE.request(rx_lpi_active)"

This will also align with service interface primitive names used in the Clause 51 PMA.

In addition, consistently use lower case for the parameter names.

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 74 SC 74.4.1 P 215 L 40 # 157
Healey, Adam LSI Corporation

Comment Type T Comment Status D
In Figure 74-2...

1) There is a typ-o in the title -- "diagra" should be "diagram"
2) The figure implies that rx_lpi_active is passed from the FEC sublayer to the PMA sublayer. It is not, remove it.

SuggestedRemedy
Per comment.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Accepting #1.

#2: There is a comment against CL72 (#133), if that gets accepted, then CL72 will be using rx_lpi_active
Cl 74 SC 74.4.1 P 215 L 46 # 10
Anslow, Peter Nortel Networks
Comment Type E Comment Status D
In title of Figure 74-2 "diagra" should be "diagram"
Suggested Remedy
Change "diagra" to "diagram"
Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 74 SC 74.4.1 P 221 L 40 # 169
Koenen, David Hewlett-Packard
Comment Type T Comment Status D
rx_lpi_active is not an output of the FEC nor an input to the PMA sublayer.
Suggested Remedy
Delete from signal name from FEC to PMA on diagram.
Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Cl 74 SC 74.5 P 214 L 12 # 10184
Ganga, Ilango Intel
Comment Type ER Comment Status A
Underline new primitive defined in item e) RX_LPI_ACTIVE
Also subclause numbering and Figure numbers for functional block diagram are incorrect.
Update the numbering as per the base spec (for example 74.0.1 should be 74.4.1 and Figure 74-1 should be Figure 74-2).
Suggested Remedy

Response Response Status W
ACCEPT IN PRINCIPLE.
Please refer to comments 364 and 8

Cl 74 SC 74.5.1.4 P 216 L 37 # 27
Marris, Arthur Cadence
Comment Type TR Comment Status D
74.5.4 should really be 74.5.1.4
74.5.5 should really be 74.5.1.5
74.5.6 should really be 74.5.1.6
74.5.7 should really be 74.5.1.7
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
Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 74 SC 74.5.4.1 P 216 L 51 # 23
Marris, Arthur Cadence
Comment Type E Comment Status D
74.5.4 should really be 74.5.1.4
Suggested Remedy
Change
To
The FEC
as above
Proposed Response Response Status W
PROPOSED ACCEPT.
Cl 74 SC 74.5.5 P 216 L 38 # 158
Healey, Adam LSI Corporation

Comment Type ER Comment Status D
Subclause headings make it impossible to reference the desired subject matter from
the bookmarks.

"74.5.4 Service primitive from FEC for EEE support (optional)" should be "74.5.5
FEC_ENERGY.indication (optional)"

"74.5.5 Service primitive from PCS for EEE support (optional)" should be
"74.5.5 FEC_LPIACTIVE.request (optional)"

"74.5.6 Service primitive from PCS for EEE support (optional)" should be "74.5.6
FEC_RXQUIET.request (optional)"

etc...

Suggested Remedy
Please review the structure of the base document, as amended by P802.3ba, and be
consistent with it. It would also be be nice if the primitive were defined in the same order
they are listed in 74.5.1.

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 74 SC 74.7.4.7 P 218 L 16 # 159
Healey, Adam LSI Corporation

Comment Type TR Comment Status D
It is proposed that the following paragraph be added to the end of this subclause.

"Fec_block_lock is identical to fec_normal_block_lock when the optional EEE capability is
not implemented. Otherwise fec_block_lock is fec_normal_block_lock OR
fec_rapid_block_lock."

What is fec_normal_block_lock and where is it defined? I can find no occurence of it other
than this paragraph. From the FEC Lock state diagram (Figure 74-3), it appears
fec_block_lock is defined as it has always been defined. For some reason, the
assignments of fec_block_lock in the FEC_LOCK_INIT, FEC_BLOCK_LOCK, and SLIP
states are shown in underscore text as if they have been inserted via this amendment. In
fact, this is no different than what is in the base document.

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).

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 74 SC 74.7 P 218 L 48 # 10185
Hajduczenia, Marek ZTE Corporation

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: Clause, Subclause, page, line

Proposed Response Response Status W
PROPOSED ACCEPT.
Comment Type | Comment Status | Proposed Response | Response Status
---|---|---|---
T | D | (1) I thought that MAC was not operated at any specific data rate. I suggest to drop "EEE supports the IEEE 802.3 MAC operation at 100 Mb/s, 1000 Mb/s, and 10 Gb/s.". EEE should not care about what data rate the MAC is operating it, since it does not use MAC directly in any way. EEE does not extend MAC in any specific way.

(2) Change sentence "For operation over twisted pair cabling systems, the PHYs supported are 100BASE-TX, 1000BASE-T and 10GBASE-T. For operation over electrical backplanes, the PHYs supported are 100BASE-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: 100BASE-KX, 10GBASE-KX4 and 10GBASE-KR."

Suggested Remedy
Per comment.

Proposed Response | Response Status | W
---|---|---
PROPOSED ACCEPT IN PRINCIPLE.

Re (1), as per comment.

Re (2) Change sentence:
"For operation over twisted pair cabling systems, the PHYs supported are 100BASE-TX, 1000BASE-T and 10GBASE-T. For operation over electrical backplanes, the PHYs supported are 100BASE-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: 100BASE-KX, 10GBASE-KX4 and 10GBASE-KR."

Comment Type | Comment Status | Proposed Response | Response Status
---|---|---|---
E | D | "EEE also specifies a means to exchange capabilities between" change to "EEE also specifies means to exchange capabilities between"

Suggested Remedy
Per comment.

Proposed Response | Response Status | W
---|---|---
PROPOSED ACCEPT.

---

Cl 78 | SC 78.1 | P 222 | L 15 | # B1
Hajduczenia, Marek | ZTE Corporation

Cl 78 | SC 78.1.2.1.2 | P 228 | L 18 | # 10197
Grow, Robert | Intel

Comment Type | Comment Status | Proposed Response | Response Status
---|---|---|---
ER | A | "EEE also specifies a means to exchange capabilities between" change to "EEE also specifies means to exchange capabilities between"

Suggested Remedy
Per comment.

Proposed Response | Response Status | W
---|---|---
PROPOSED ACCEPT.

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Cl 78 | SC 78.1 | P 222 | L 26 | # B2
Hajduczenia, Marek | ZTE Corporation

Cl 78 | SC 78.1.2.1.2 | P 228 | L 18 | # 10197
Grow, Robert | Intel

Comment Type | Comment Status | Proposed Response | Response Status
---|---|---|---
ER | A | "EEE also specifies a means to exchange capabilities between" change to "EEE also specifies means to exchange capabilities between"

Suggested Remedy
Per comment.

Proposed Response | Response Status | W
---|---|---
PROPOSED ACCEPT.
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
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 is clear in the xMII clauses.

"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

PROPOSED ACCEPT.

"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

PROPOSED ACCEPT IN PRINCIPLE.

The comma will be added as suggested. No other change will be made as there is a reference to 78.4 already in the last sentence of the paragraph
"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

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Change:
"At the start of 'assert LPI' encoding on the xMII, the PHY signals sleep"
to:
"When the start of 'assert LPI' encoding on the xMII is detected, the PHY signals "

Also see response to comment #87

"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

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

I don't see "sleep mode" used in the draft.

"quiet mode" is used in two places - Page 226 lines 19 and 32.

Replace:
"...the transmit function of the local PHY enters a quiet mode...

with:
"...the local PHY transmitter goes quiet...

on Page 226, lines 29 and 32 and any other place.

"quiet" refers to the state of a transmitter.

Depending on the PHY, LPI mode can involve a repeating sequence of sleep and refresh states.

"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

Proposed Response Response Status W
PROPOSED ACCEPT.
<table>
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| CI 78 SC 78.1.3.3.1 | E | D | Change "Figure 78-3 illustrates general principles of the EEE-capable transmitter operation." to read "Figure 78-3 illustrates a general operating principle of an EEE-capable transmitter."
| | Suggested Remedy | Per comment |
| Proposed Response | Response Status | W | PROPOSED ACCEPT. |

<table>
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| CI 78 SC 78.1.3.3.2 | TR | D | "assert LPI" on the xMII and the local receiver can disable some functionality to reduce power consumption" - change "some functionality" to "certain functional blocks" - this seems more precise.
| | Suggested Remedy | Per comment |
| Proposed Response | Response Status | W | PROPOSED REJECT. |

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| CI 78 SC 78.1.4 | TR | D | "EEE defines a low power mode of operation for the following 802.3 PHYs. Table 78-1 lists the clauses associated with each PHY"
| | Suggested Remedy | Per comment |
| Proposed Response | Response Status | W | PROPOSED ACCEPT IN PRINCIPLE. |

The sleep signal is defined in individual PHY clauses.

The suggested remedy is not actionable

Also see response to comment #87

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**Type**: TR/technical required  ER/editorial required  GR/general required  T/technical  E/editorial  G/general

**Comment Status**: D/dispatched  A/accepted  R/rejected  O/open  W/written  C/closed  U/unsatisfied  Z/withdrawn

**Sort Order**: Clause, Subclause, page, line

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**Page** 70 of 74  
**Date**: 11/13/2009 4:45:10 AM
Proposed responses  IEEE P802.3az D2.1 Energy Efficient Ethernet comments  November 2009

Cl 78  SC 78.1.4  P 227  L 35  # 94
Hajduczenia, Marek  ZTE Corporation

Comment Type  T  Comment Status  D
Change caption of Table 78-1 to "PHY types supporting EEE"

SuggestedRemedy
Per comment

Proposed Response  Response Status  W
PROPOSED REJECT.

The existing table title seems adequate.

Cl 78  SC 78.2  P 228  L 31  # 95
Hajduczenia, Marek  ZTE Corporation

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

SuggestedRemedy
Per comment

Proposed Response  Response Status  W
PROPOSED REJECT.

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

Cl 78  SC 78.2  P 228  L 34  # 11
Anslow, Peter  Nortel Networks

Comment Type  E  Comment Status  D
comment 12 against Draft 2.0 has not been fully implemented

SuggestedRemedy
In Table 78-2 change greek letter mu followed by "sec" to greek letter mu followed by "s" in
3 places

Proposed Response  Response Status  W
PROPOSED ACCEPT.

This comment is out of scope as it is on unchanged text and not related to outstanding
disapprove, however, the commenter is correct in that the terminology was not updated to
align with the one decided by the wake-shrinkage ad-hoc.
Comment Type: TR  Comment Status: D

The parameter Tw_sys (actual Tw_sys_tx) can be a decimal number based on the value in the column Tw_sys_tx of the table 78-4. However, the value holders of negotiated parameter described in this subclause ask for an integer with microsecond as the unit.

It needs clarification on how to convert the intended Tw_sys_tx, which could consist of fraction of microseconds, to an integer number.

Suggested Remedy
Add in the text of 78.4.2.2 something like:
"This parameter should be rounded up to the nearest integer number when it is calculated and examined according to 78.2 and Table 78-4."

Proposed Response  Response Status: W
PROPOSED ACCEPT.

This comment is out of scope as it is on unchanged text and not related to outstanding disapprove, however, the commenter is correct in that the current TLV fields do not take into account decimal locations. The proposed remedy is an efficient way to accommodate the issue.

Comment Type: E  Comment Status: D

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

Suggested Remedy
Per comment

Proposed Response  Response Status: W
PROPOSED ACCEPT.
The two exit conditions of the TX UPDATE state in Figure 78-4 "EEE DLL Transmitter State Diagram" should be swapped. That means the branch from TX UPDATE with conditions "(NEW_TX_VALUE < LocResolvedTxSystemValue) * (NEW_TX_VALUE < TempRxVar)" goes to MIRROR UPDATE state, while the branch with conditions "(NEW_TX_VALUE >= LocResolvedTxSystemValue) + (NEW_TX_VALUE >= TempRxVar)" goes to SYSTEM REALLOCATION state.

**Suggested Remedy**

Per comment

**Proposed Response**

PROPOSED ACCEPT.

This comment is out of scope as it is on unchanged text and not related to outstanding disapprove, however, the commenter is correct that this is an error in the SM.

The figure number of "Figure 78-4 EEE DLL Transmitter State Diagram" duplicates with that of "Figure 78-4 LPI mode timing parameters and their relationship to minimum system wake time".

**Suggested Remedy**

Change the correspondent number of "Figure 78-4 EEE DLL Transmitter State Diagram" to 78-5 and make the correspondent change on all the subsequent figures.

**Proposed Response**

PROPOSED ACCEPT.
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."

**Proposed Response**
This comment is out of scope as it is on unchanged text and not related to outstanding disapprove, however, the commenter is correct in that the text does not match the SM.

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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"

**Proposed Response**
PROPOSED ACCEPT.

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IEEE 802.3 subtype for EEE is not yet assigned. This comment serves as a reminder to get the IEEE 802.3 subtype for EEE TLVs.

**Suggested Remedy**
Per comment

**Proposed Response**
PROPOSED ACCEPT IN PRINCIPLE.

This will be assigned by the IEEE 802.3 WG Chair or his designee at the IEEE-SA Sponsor Ballot stage.