Proposed Response

Page and line numbers in P802.3ayD2.3. Want to mention the optional EEE functionality in 35.1.1 Summary of major concepts.

Suggested Remedy

Per comment. State that this option is for use only with 1000BASE-KX.

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

The commenter is correct that this should be included in 35.1.1. However, it is defined for both 1000BASE-KX and 1000BASE-T.

Add bullet point h) to 35.1.1

h) The GMII may also support low power idle signaling as defined for Energy Efficient Ethernet for some PHY types (see Clause 78).
**Proposed Response**

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

Need to be clear that this is optional.

**Suggested Remedy:**

Change 'The mapping changes slightly when Low Power Idle signaling is in operation.' to 'If the optional Low Power Idle signaling feature is implemented, the mapping changes slightly when Low Power Idle signaling is in operation.'

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

PROPOSED ACCEPT IN PRINCIPLE.

Change 'The mapping changes slightly when Low Power Idle signaling is in operation.'

to 'The mapping changes slightly when optional Low Power Idle signaling is in operation.'

---

**Proposed Response**

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

Page and line numbers in P802.3ayD2.3. Need to make clear that the new codings in Table 36-3 are optional and of restricted application.

**Suggested Remedy:**

Add sentence: 'The ability to transmit or receive /LI/, /LI1/ and /LI1/ is an option, to support an option of 10GBASE-KX4 only.'

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

PROPOSED ACCEPT IN PRINCIPLE.

Add sentence: 'The ability to transmit or receive /LI/, /LI1/ and /LI1/ is an option for certain PHYs to support Energy Efficient Ethernet (see Clause 78).'</n

---

**Proposed Response**

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

Consistent spelling

**Suggested Remedy:**

To align with base document, change 'advertized' to 'advertised', 'advertizes' to 'advertises'. Two more in Clause 69.

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

PROPOSED ACCEPT.

---

**Proposed Response**

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

Multi-Word

**Suggested Remedy:**

Multi-word

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

PROPOSED REJECT.

See #14

---

**Proposed Response**

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

P802.3ba is providing a very welcome third column in Table 45-3, called 'Clause', with clickable entries giving the subclause for each register.

**Suggested Remedy:**

Please do the same.

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

PROPOSED ACCEPT.

---

**Proposed Response**

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

j) Ability to signal...

**Suggested Remedy**

j) Optionally, ability to signal...?

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

PROPOSED ACCEPT.
**Comment ID # 12**

**Cl 45 SC 45.2.1.6 P 38 L 29 # 12**

Dawe, Piers Avago Technologies

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

Missing subclause heading

**SuggestedRemedy**

Insert the heading for 45.2.1.6, which contains Table 45-7. Check for any other missing headings.

**Proposed Response**

**Response Status** W

PROPOSED ACCEPT IN PRINCIPLE.

The registers are moving, however the new clause subheading must be included.

---

**Comment ID # 13**

**Cl 45 SC 45.2.1.6 P 39 L 9 # 13**

Dawe, Piers Avago Technologies

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

Pre-existing entries all say ’... PMA/PMD type’. As the table title is PMA/PMD control 2 register bit definitions and the entries are grouped as ‘PMA/PMD type selection’ this seems superfluous, but one should be consistent.

**SuggestedRemedy**

To remove the clutter, strike out ‘PMA/PMD type selection’ from all the pre-existing entries.

**Proposed Response**

**Response Status** W

PROPOSED REJECT.

This project has no reason to edit that register.

---

**Comment ID # 14**

**Cl 45 SC 45.2.3 P 43 L 8 # 14**

Dawe, Piers Avago Technologies

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

Table too narrow for the new contents

**SuggestedRemedy**

Resize column widths to contents

**Proposed Response**

**Response Status** W

PROPOSED REJECT.

It is unclear which table is too narrow - neither the subclause nor the page number correspond to a table that needs changing.

The commenter is advised to review 802.3av that may be more appropriate for this comment.
Comment Type: T  Comment Status: D

Continuing the growing clause title length, and as the medium isn't baseband (it's just a wire, it doesn't know; it's the modulation scheme that's baseband)

Suggested Remedy
Delete 'baseband' before medium.

Proposed Response  Response Status: W
PROPOSED REJECT.
Page/line reference seems to be incorrect. Will reconsider after resolving page/line number reference

Comment Type: T  Comment Status: D

Does ISO/IEC 9314-10 exist? I understand the FCD was withdrawn in 2005.

Suggested Remedy
If there is no ISO/IEC 9314-10, don't delete the ANSI reference

Proposed Response  Response Status: O

Comment Type: E  Comment Status: D

I thought it had been decided not to maintain 'ISO/IEC 8802-3 LAN International Standard'. Anyway, a document referring to itself as 'International Standard' is posturing.

Suggested Remedy
'Change
'The relationship of this clause to the entire ISO/IEC 8802-3 LAN International Standard is shown in Figure 14-1.'
to
'Figure 14-1 shows the relationship of the 10BASE-T or 10BASE-Te PMA, MDI and medium (shown shaded) with other sublayers, to the ISO/IEC Open System Interconnection (OSI) reference model.'

Proposed Response  Response Status: W
PROPOSED REJECT.

The same language is used to define the relationship of all the clauses defining a particular PHY type to the overall standard.
Page 5 of 70

Comment ID # 24

Proposed Response

Response Status W

PROPOSED ACCEPT.

Comment ID # 25

Proposed Response

Response Status W

PROPOSED ACCEPT.

Comment ID # 26

Proposed Response

Response Status W

PROPOSED REJECT.

The use of capital letters are in original text.

Comment ID # 27

Proposed Response

Response Status W

PROPOSED ACCEPT.

There are more text to be underlined in subclause 24.3 and 24.4.

Comment ID # 28

Proposed Response

Response Status W

PROPOSED ACCEPT.

The definition of XGMII with LPI is still continuous, so e) doesn't need to be changed.

Add bullet item:

h) The XGMII may also support low power idle signaling as defined for Energy Efficient Ethernet for some PHY types (see Clause 78).
Proposed Response   
PROPOSED ACCEPT.

Resize tables 46-3 and 46-4.

Proposed Response   
PROPOSED ACCEPT.

Proposed Response   
PROPOSED ACCEPT.

Proposed Response   
PROPOSED ACCEPT IN PRINCIPLE.

Add sentence after 'is specified in Table 48-3':
'The ability to transmit or receive Low Power Idle is an option, to support an option of 1000BASE-KX only.'

Add sentence after 'is specified in Table 48-3':
'The ability to transmit or receive Low Power Idle is an option for certain PHYs to support Energy Efficient Ethernet (see Clause 78).'

The style is used because RXC is a vector, therefore using a single line (high or low) is considered inappropriate. Furthermore, the style is consistent for all of the diagrams in the base clause.
Cl 49 SC 49.2.4.4 P 268 L 11 # 35
Dawe, Piers Avago Technologies

Comment Type TR Comment Status D
Page and line numbers in P802.3ayD2.3. Need to make clear that the new codings in Table 49-1 are optional.

SuggestedRemedy
Add sentences after 'The control characters and their mappings to 10GBASE-R control codes and XGMII control codes are specified in Table 49-1. All XGMII and 10GBASE-R control code values that do not appear in the table shall not be transmitted and shall be treated as an error if received.':

The ability to transmit or receive Low Power Idle is an option, to support an option of 10GBASE-KR only. If this option is not supported or not enabled, Low Power Idle shall not be transmitted and shall be treated as an error if received.' Add PICS to support the shalls.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Change 49.2.4.4

After "shall not be transmitted and shall be treated as an error if received."

Add
'The ability to transmit or receive Low Power Idle is an option, to support Energy Efficient Ethernet (see Clause 78). If this option is not supported Low Power Idle shall not be transmitted and shall be treated as an error if received.'

Cl 55 SC 55.6.1.2 P 146 L 1 # 37
Dawe, Piers Avago Technologies

Comment Type E Comment Status D
Wrong table number, no subclause heading. Table is too long.

SuggestedRemedy
Insert '55.6.1.2 10GBASE-T Auto-Negotiation page use'. Change 'Table 55-10' to 'Table 55-11'. Resize column widths to contents.

Proposed Response Response Status W
PROPOSED ACCEPT.

The editor will redo the table with the suggested changes.

Cl 70 SC 70.6.4 P 151 L 9 # 38
Dawe, Piers Avago Technologies

Comment Type E Comment Status D
manditory

SuggestedRemedy
mandatory Also 70.6.5, 71.6.6

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 70 SC 70.6.10.2 P 152 L 19 # 39
Dawe, Piers Avago Technologies

Comment Type E Comment Status D
usec, msec

SuggestedRemedy
us, ms (and use a mu not a u). At least four tables.

Proposed Response Response Status W
PROPOSED ACCEPT.
Cl 70 SC 70.1 P 149 L 18 # 40
Dawe, Piers Avago Technologies

Comment Type E Comment Status D
Table too narrow. Frame won't take the table notes into account when sizing columns

Suggested Remedy
Make the table wider so that the table note takes just two lines. Also Table 71-1, 72-1.
Also make Table 72-1 wider

Proposed Response Response Status W
PROPOSED ACCEPT.
Expanding table does bring note down to two lines.

Cl 72 SC 72.7.4.2 P 184 L 30 # 41
Dawe, Piers Avago Technologies

Comment Type E Comment Status D
FS12 Status O

Suggested Remedy
FS12 Status LPI:M ? Also CF43 and following

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.
If TF agrees to LPI:M, editor will replace O with "LPI:M" ins FS12 and CF43-CF47

Cl 76 SC 76.2.3.3 P 193 L 36 # 42
Dawe, Piers Avago Technologies

Comment Type E Comment Status D
bit <0> ... bit <1>

Suggested Remedy
bit 0 ... bit 1

Proposed Response Response Status W
PROPOSED REJECT.
This comment was WITHDRAWN by the commenter.

Intended for av
Cl 99 SC 99 P 11 L 49 # 46
Dawe, Piers Avago Technologies

Comment Type E Comment Status D
There is a newer version of this page

Suggested Remedy
Ask P802.3av for it

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 25 SC 25.4.11.5 P 60 L 19 # 47
Healey, Adam LSI Corporation

Comment Type T Comment Status D
The wake time for the 100BASE-TX receiver is dependent on the time required to activate the far-end transmitter. Furthermore, the receiver should have some assurance of a compliant input signal upon which to base timing recovery and adaptive equalization. Neither of these aspects of transmitter behavior are currently defined in the draft.

Suggested Remedy
Specify that the transmitter:
1. Shall deliver a signal that will assert signal detect within TBD1 us following transmitter activation
2. Shall deliver a fully compliant 100BASE-TX signal within TBD2 (> TBD1) us following transmitter activation

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 36 SC 36.2.4.8 P 72 L 25 # 49
Healey, Adam LSI Corporation

Comment Type T Comment Status D
Table 36-3, by itself, does not adequately describe the low power idle encoding process. Per the PCS transmit ordered_set state diagram (Figure 36-5), TX_EN = FALSE is encoded as /I/, regardless of TX_ER and TXD<7:0>.

Suggested Remedy
Modify the PCS transmit ordered_set state diagram (Figure 36-5) and PCS transmit code-group state diagram (Figure 36-6) to clearly define /LI/ encoding, mark the modifications as optional, and define new state variables as appropriate.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Significant changes will be required to the clause to reflect the additions to the state machines and the operation of Low Power Idle in the transmit and receive directions.

The editor will work with the commenter to prepare a more complete definition in the next draft.

I'm not sure where to anchor this comment, but Annex 28D should also be amended to outline extensions of Clause 28 for Energy Efficient Ethernet and I propose that Clause 28 extensions for EEE include:

1. Auto-Negotiation is mandatory for a EEE PHY (this is currently not the case for 100BASE-TX)
2. The exchange of additional next pages for EEE capability and mode negotiation extends the time required to complete Auto-Negotiation. To reduce this time, a EEE PHY may use the extended next page mechanism introduced by IEEE 802.3an-2006 (it is not currently an option for 100BASE-TX).

Suggested Remedy
Add amendment to Annex 28D per comment.

Proposed Response Response Status W
PROPOSED ACCEPT.
Proposed Response

50

Cl: 36  SC: 36.2.4.8  P: 72  L: 25  # 50
Healey, Adam  LSI Corporation

Comment Type: T  Comment Status: D

Table 36-3, by itself, does not adequately describe the low power idle decoding process. Per the PCS receive state diagram (Figures 36-7a and 36-7b), /LI/ would be decoded as RX_DV = FALSE and RX_ER = FALSE (e.g. normal inter-frame).

Suggested Remedy

Modify the PCS receive state diagram (Figures 36-7a and 36-7b) to clearly define /LI/ decoding, mark the modifications as optional, and define new state variables as appropriate.

PROPOSED ACCEPT IN PRINCIPLE.

See #49

51

Cl: 40  SC: 40.1.3  P: 75  L: 1  # 51
Healey, Adam  LSI Corporation

Comment Type: E  Comment Status: D

Referring to Figure 40-3, since Energy Efficient Ethernet is an optional feature, clearly highlight optional functions and signals using dashed lines and add a note below the figure indicating that dashed lines denote optional features.

Suggested Remedy

Per comment.

PROPOSED ACCEPT.

52

Cl: 40  SC: 40.2.2  P: 78  L: 1  # 52
Healey, Adam  LSI Corporation

Comment Type: E  Comment Status: D

Referring to Figure 40-4, since Energy Efficient Ethernet is an optional feature, clearly highlight optional primitives using dashed lines and add a note below the figure indicating that dashed lines denote optional features.

Suggested Remedy

Per comment.

PROPOSED ACCEPT.

53

Cl: 40  SC: 40.3  P: 81  L: 1  # 53
Healey, Adam  LSI Corporation

Comment Type: E  Comment Status: D

Referring to Figure 40-5, since Energy Efficient Ethernet is an optional feature, clearly highlight optional functions and signals using dashed lines and add a note below the figure indicating that dashed lines denote optional features.

Suggested Remedy

Per comment.

PROPOSED ACCEPT.

54

Cl: 40  SC: 40.3.1.3.4  P: 82  L: 8  # 54
Healey, Adam  LSI Corporation

Comment Type: E  Comment Status: D

In the PHY Control state diagram, as proposed for Energy Efficient 1000BASE-T, it is possible that loc_rcvr_status = OK while SEND_Z is asserted. Unless the definition of Sdn[2] is modified, channel C may not send zero as desired.

Suggested Remedy

Modify definition of Sdn[2] to read:

\[
\]
\[
Scn[1]*1 \text{ else if (loc_rcvr_status=OK) * (tx_model!=SEND_Z)}
\]
\[
Scn[2] \text{ else}
\]

PROPOSED ACCEPT.

55

Cl: 40  SC: 40.3.1.3.4  P: 82  L: 8  # 55
Healey, Adam  LSI Corporation

Comment Type: T  Comment Status: D

In the PHY Control state diagram, as proposed for Energy Efficient 1000BASE-T, it is possible that loc_rcvr_status = OK while SEND_Z is asserted. Unless the definition of Sdn[2] is modified, channel C may not send zero as desired.

Suggested Remedy

Modify definition of Sdn[2] to read:

\[
\]
\[
Scn[1]*1 \text{ else if (loc_rcvr_status=OK) * (tx_model!=SEND_Z)}
\]
\[
Scn[2] \text{ else}
\]

PROPOSED ACCEPT.
Proposed Response

#56
Healey, Adam  
LSI Corporation

Comment Type: E  
Comment Status: D

Referring to Figure 40-10a, since Energy Efficient Ethernet is an optional feature, clearly highlight optional states and transitions by encapsulating the LP_IDLE state and associated transitions in the dashed box labeled “optional implementation.”

Suggested Remedy

Proposed Response  
Response Status: W

PROPOSED ACCEPT.

#57
Healey, Adam  
LSI Corporation

Comment Type: E  
Comment Status: D

Referring to Figure 40-14, since Energy Efficient Ethernet is an optional feature, clearly highlight optional functions and signals using dashed lines and add a note below the figure indicating that dashed lines denote optional features.

Suggested Remedy

Proposed Response  
Response Status: W

PROPOSED ACCEPT.

#58
Healey, Adam  
LSI Corporation

Comment Type: T  
Comment Status: D

What does it mean to have the transmit PMA/PMD “receive” low power idle signaling? Is it supposed to interpret the code-groups (or data-groups or symb_vectors or...) received from the transmit PCS, or is it based on the assertion of some status flag by the PCS? Assuming there is no breakdown in the communication between the PCS and PMA, it seems it would be cleaner to associate this bit with the PCS.

Suggested Remedy

Proposed Response  
Response Status: W

PROPOSED ACCEPT IN PRINCIPLE.

See #91

#59
Healey, Adam  
LSI Corporation

Comment Type: T  
Comment Status: D

EEE mode control register, 7.62, includes R/W bits that a management entity may use to request modes of operation from the link partner. However, no register is maintained that reflects whether or not the local device actually supports a given mode.

I understand that these control are only placeholders, but for example bit 7.62.4 is used to request 10GBASE-KR reduced energy refresh. There is no bit in the management register space that tells the management entity that the local device actually supports reduced energy refresh.

Suggested Remedy

Proposed Response  
Response Status: W

PROPOSED ACCEPT IN PRINCIPLE.

This warrants a similar response to #88, however, if #216 is accepted then the point is moot.

#60
Healey, Adam  
LSI Corporation

Comment Type: T  
Comment Status: D

What does it mean for the Rx PMA/PMD to “receive” LP idle? The LP Idle signal is decoded by the Rx PCS. Presumably, the PCS indicates to the PMA/PMD that the loss of signal it is about to experience is related to quiet-refresh cycling and not a loss of link. Furthermore, in 1000BASE-T, it is possible to receive LP idle signal without quiet-refresh cycling. For these reasons, it seems cleaner to associate this bit with the Rx PCS.

Suggested Remedy

Proposed Response  
Response Status: W

PROPOSED ACCEPT IN PRINCIPLE.

See #91
What does it mean for the Rx PMA/PMD to "receive" LP idle? The LP idle signal is decoded by the Rx PCS. Presumably, the PCS indicates to the PMA/PMD that the loss of signal it is about to experience is related to quiet-refresh cycling and not a loss of link. Furthermore, in 1000BASE-T, it is possible to receive and LP idle signal without quiet-refresh cycling. For these reasons, it seems cleaner to associate this bit with the Rx PCS.

Suggested Remedy
Clarify the definition of this bit or relocate accordingly.

PROPOSED ACCEPT IN PRINCIPLE.

Regarding the 1000BASE-T wakeup time advertisement...

Based on the premise that longer wake time corresponds to additional power savings (e.g., PHY layer circuitry may be put into a deeper sleep state) and there will exist applications that do not require a wake time as fast as 16 us, there is an advantage to increasing the upper bound on the advertised wake time.

Also, based on the premise that management may manipulate the advertised wake time to be larger than the minimum value supported by the PHY, this mechanism does not allow the local device to indicate that it supports a faster wake time than advertised. Consider a local device that has prioritized power savings and therefore advertises a slower wake time than the PHY can support but would be able to support the faster wake time if necessary. A link partner with an application that requires lower latency, and requests a faster wake time, may not be able to arbitrate a suitable wake time with the local device despite the fact the local device actually supports the desired wake time.

Suggested Remedy
Proposal for modified 1000BASE-T wake time negotiation to be presented to the Task Force (tentative name healey_01_1108.pdf).

PROPOSED REJECT.

There is currently no register defined for negotiated wake times corresponding to 40.4.5.2. If comment #209 is accepted then the point is moot.

Otherwise, if a different proposal is accepted then the register must be changed to match that proposal.
<table>
<thead>
<tr>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Comment ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>D</td>
<td>63</td>
</tr>
<tr>
<td>T</td>
<td>D</td>
<td>64</td>
</tr>
<tr>
<td>T</td>
<td>D</td>
<td>65</td>
</tr>
<tr>
<td>T</td>
<td>D</td>
<td>66</td>
</tr>
</tbody>
</table>

**Comment 63**

**Cl**: 48  
**SC**: 48.2.4.2  
**P**: 110  
**L**: 18  
**Comment Type**: T  
**Comment Status**: D

"Low Power Idle is indicated by inserting /D20.5/ randomly in one column of each row during ||I||."

A /D20.5/ code-group is randomly inserted into one LANE of each ||K|| or ||R|| COLUMN. ||I|| also includes the align column ||A||, and inserting /D20.5/ into an ||A|| will result in repeated deskew_error indications and eventually loss of alignment indication (align_status = FAIL).

**Suggested Remedy**

Correct definition per comment.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

Add after 'during ||I||'

'to replace ||K|| or ||R|| (not ||A||)'.

---

**Comment 64**

**Cl**: 48  
**SC**: 48.2.4.2  
**P**: 108  
**L**: 39  
**Comment Type**: T  
**Comment Status**: D

The text in 48.2.4.2 and Table 48-2 do not adequately describe the low power idle encoding process. The normative transmit process is defined in 48.2.6.2.4 and the PCS transmit state diagram (Figure 48-6). Per Figure 48-6, I believe Low Power Idle would be encoded as K30.7 (Invalid XGMII character) which contrary to the definition in this subclause.

**Suggested Remedy**

Modify the PCS transmit state diagram (Figure 48-6) to clearly define Low Power Idle encoding, mark the modifications as optional, and define new state variables as appropriate.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

See #64

---

**Comment 65**

**Cl**: 48  
**SC**: 48.2.4.2  
**P**: 110  
**L**: 18  
**Comment Type**: T  
**Comment Status**: D

How does a user of the standard know if the implementation meets the requirement of randomness?

**Suggested Remedy**

Rigorously define the desired progression of /D20.5/ code-group insertion for each successive column.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

The user of the standard has already overcome his fear of "randomness" when he implemented bullet item "e) When not sending an ||A||, either ||K|| or ||R|| is sent with a random uniform distribution between the two."

However, the term "random" needs a little more clarity.

Replace "inserting /D20.5/ randomly in one column"

with "inserting /D20.5/ with a random uniform distribution in one of the columns"
<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Proposed Response</th>
<th>Response Status</th>
</tr>
</thead>
</table>
| 49 | 49.2.4.7 | 111 | 45 | 87 | T           | D             | In Table 49-1, the possible 8B/10B codes for Low Power Idle include /D20.5/.
| SC | 49.2.4.7 | P | L | # | Comment Status | D             | PROPOSED ACCEPT. |
| 70 | 70.1 | 149 | 33 | 68 | E           | D             | It seems like "deactivates transmit" should be "deactivates transmit functions."
| SC | 70.1 | P | L | # | Comment Status | D             | PROPOSED ACCEPT. |
| 70a | 70.3a | 149 | 47 | 89 | E           | D             | I believe the feature in question is actually "Energy Efficient Ethernet" and not "Low Power Idle."
| SC | 70.3a | P | L | # | Comment Status | D             | PROPOSED ACCEPT. |
| 70 | 70.6.10.5.2 | 155 | 6 | 70 | T           | D             | Clause 70 defines 1000BASE-KX PMD sub-layer but the LPI Transmit state diagram (Figure 70-1) includes PCS layer functions such as low power idle encoding. The definition of these functions is misplaced and should be properly described in Clause 36 (the subject of a different comment). The functions defined in this clause should be limited in scope to the PMD-level functions. PCS state information required to implement PMD functions, and vice versa, should be communicated to the PMD using service interface primitives. It is imperative to preserve the IEEE 802.3 layering model. In the future, it is likely that additional 1000BASE-X PMDs will be amended to support EEE. It is wasteful to repeat the definition of the PCS low power idle encoding for each PMD, and potentially disastrous if the definitions are inconsistent.
| SC | 70.6.10.5.2 | P | L | # | Comment Status | D             | PROPOSED ACCEPT. |

Proposed Remedy
A proposal will be made to the Task Force illustrating the layer model and modifications required to adhere to the layer model (tentatively named healey_02_1108.pdf).

Suggested Remedy
Per comment.

Proposed Response
response to be based on approval of presentation.

Proposed Remedy
Update text per comment.

Proposed Response
Editor will change "Low Power Idle" to "Energy Efficient Ethernet".

Proposed Remedy
response to be based on approval of presentation.
Cl 70  SC 70.6.10.2  P 152  L 19  # 72
Healey, Adam  LSI Corporation

Comment Type  T  Comment Status  D
T_WL does not appear to be used.

Suggested Remedy
Delete the parameter definition.

Proposed Response  Response Status  W
PROPOSED ACCEPT.

Cl 70  SC 70.6.10.2  P 152  L 9  # 73
Healey, Adam  LSI Corporation

Comment Type  T  Comment Status  D
Define a minimum value for T_SL. Obviously, T_SL = 0 is not acceptable.

Suggested Remedy
Specify the minimum value of T_SL. As a placeholder, suggest T_SL(min.) = 64 us for a
greater than +/-10% tolerance. All timer values should be subject to further review.

Proposed Response  Response Status  W
need consensus from group.

Cl 70  SC 70.6.10.2  P 152  L 16  # 74
Healey, Adam  LSI Corporation

Comment Type  T  Comment Status  D
Define a minimum value for T_UL. Obviously, T_UL = 0 is not acceptable.

Suggested Remedy
Specify the minimum value of T_UL. As a placeholder, suggest T_UL(min.) = 160 us for a
greater than +/-10% tolerance. All timer values should be subject to further review.

Proposed Response  Response Status  W
need consensus from group.

Cl 70  SC 70.6.10.3  P 152  L 32  # 75
Healey, Adam  LSI Corporation

Comment Type  T  Comment Status  D
I do not understand the purpose of T_SR. The receiver SLEEP period ends when the
transmitter ceases transmission.

Suggested Remedy
Delete the parameter definition, delete associated state variables, and delete it as a
transition condition from the RX_SLEEP state (Figure 70-2).

Proposed Response  Response Status  W
PROPOSED REJECT.

Cl 70  SC 70.6.10.3  P 152  L 41  # 76
Healey, Adam  LSI Corporation

Comment Type  T  Comment Status  D
T_UR does not appear to be used.

Suggested Remedy
Delete the parameter definition.

Proposed Response  Response Status  W
PROPOSED ACCEPT IN PRINCIPLE.

This value can be defined a the Min for T_UL per comment #74.
Referring to Table 39-1, the term "signal_detect assertion threshold" is not used hence the reference is ambiguous. In addition, "signal_detect deassertion threshold" is not a term used in Table 39-1 and constitutes another ambiguous reference. Finally, Table 39-1 defines what one might interpret to be the thresholds in terms of the 1000BASE-CX minimum differential sensitivity which has no comparable value in 1000BASE-KX. Should the -CX value be used?

The cross-reference to Table 39-1 does not appear to be adding any useful information. Define the signal_detect assertion and de-assertion criteria for Energy Efficient Ethernet directly in 70.6.4a.

Suggested Remedy
Remove cross reference to Table 39-1 and specify the assertion/de-assertion criteria in this subclause.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Editor needs recommended text to specify assertion/de-assertion criteria for PMD signal detect here.

The wake-up time for the 1000BASE-KX receiver is dependent on the time required to activate the far-end transmitter. Furthermore, the receiver should have some assurance of a compliant input signal upon which to base timing recovery and adaptive equalization (if included). Neither of these aspects of transmitter behavior are currently defined in the draft.

Specify that the transmitter:
1. Shall deliver a signal that will assert signal detect within TBD1 ms following transmitter activation
2. Shall deliver a fully compliant 1000BASE-KX signal within within TBD2 (> TBD1) ms following transmitter activation

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

This may not belong in 70.6.5, but certainly within 70.6. Editor will propose new text in an appropriate section.
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>SC</th>
<th>Type</th>
<th>Status</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>81</td>
<td>40</td>
<td>T</td>
<td>D</td>
<td>Per the current Energy Efficient Ethernet PHY Control state diagram, it is possible that the MASTER will be required to decode rem_lpi_req from the SLAVE while the SLAVE is receiving zeros from the MASTER (e.g. the timing loop is broken). This scenario would occur when the MASTER's lpi_update_timer expires and the MASTER transitions to WAIT QUIET, transmitting zeros to the SLAVE while the SLAVE is still in the UPDATE state. Prior to the SLAVE detecting zeros from the MASTER, it chooses to exit low power idle. The MASTER will need to detect the SLAVE's rem_lpi_req = FALSE with the timing loop open. Since the timing loop will be open for a very short period of time, this is likely not an issue. However a very simple change to lpi_update_timer can eliminate this corner case. The change would make the duration of MASTER lpi_update_timer longer than the SLAVE lpi_update_timer. This ensures that the SLAVE always enters WAIT QUIET before the MASTER, and hence maintains timing. In addition, it has negligible impact on the total refresh time since the SLAVE transition to WAIT QUIET will force the MASTER to transition to WAIT QUIET. SuggestedRemedy Define that the duration of lpi_update_timer for the SLAVE is 0.18 to 0.2 ms and duration of lpi_update_timer for the MASTER is 0.23 to 0.25 ms. Proposed Response PROPOSED ACCEPT.</td>
</tr>
<tr>
<td>82</td>
<td>40</td>
<td>T</td>
<td>D</td>
<td>The criteria of the assertion and de-assertion of signal_detect and the corresponding maximum assertion and de-assertion must be define to ensure inter-operability. SuggestedRemedy Proposal to be presented to the Task Force (tentative name healey_01_1108.pdf). Proposed Response PROPOSED ACCEPT IN PRINCIPLE. Response pending planned presentations on this subject.</td>
</tr>
<tr>
<td>83</td>
<td>40</td>
<td>T</td>
<td>D</td>
<td>There may be ambiguity regarding the definition of scr_status with the addition of the signal_detect function for Energy Efficient Ethernet. To ensure correct interpretation of the operation of the state diagram, such ambiguity should be removed. Per the current definition of scr_status, it may assume one of the following two values: OK: The descrambler has achieved synchronization. NOT_OK: The descrambler is not synchronized. It seems to follow that once you have determined there is no input signal (e.g. signal_detect = FALSE), the scrambler cannot be synchronized. SuggestedRemedy Specify that, for Energy Efficient Ethernet, when signal_detect = FALSE, scr_status must be set to NOT_OK. Proposed Response Response Status W PROPOSED ACCEPT.</td>
</tr>
</tbody>
</table>
The abbreviated state names may bias the perception of the function of each state in a manner that was not intended. Additional text may be provided to 40.4.2.4 to guide a user of the standard and reduce the possibility of misunderstanding that could lead to interoperability issues.

A key issue in question is whether the adaptive filter coefficients should be updated during the WAKE_TRAINING state. The intended behavior was to have the filter coefficients adapted during the UPDATE state per the current text in Draft 1.0.

"If both PHYs continue to request low power operation, then both PHYs remain in the UPDATE state and continue to transmit for time defined by lpi_update_timer. This time is intended to allow the remote PHY to refresh its receiver state (e.g. timing recovery, adaptive filter coefficients) and thereby track long term variation in the timing of the link or the underlying channel characteristics."

It was not intended that adaptive filter coefficient would be updated during WAKE_TRAINING, and attempting to do so could makes the implementation subject to undesirable corner cases. However, this is not clearly stated.

It is proposed that the current text be updated to make the intention clear.

Suggested Remedy

- Clearly state that adaptive filter coefficients should be updated in the UPDATE and SEND IDLE OR DATA states and not in the WAKE_TRAINING or WAKE_SLAVE states.

Proposed Response  Response Status  W

PROPOSED ACCEPT IN PRINCIPLE.

Refer to #191 which may modify the response to this comment.

---

EEE advertisement register, 7.60, includes R/W bits that a management entity may use to constrain the modes advertised to the link partner. However, no register is maintained that reflects the actual capabilities of the local device.

Further to the point, 45.2.6.13a.1 (and other subclauses), state that "If the device supports EEE operation for 10GBASE-KR..." How does the management entity know the device supports EEE operation for 10GBASE-KR?

Suggested Remedy

- Define EEE capabilities register with contents identical to 7.60 (with the exception of the Next page bit). All bits in this register are RO, and will reflect the capabilities of the local device.

Proposed Response  Response Status  W

PROPOSED ACCEPT IN PRINCIPLE.

Add register 3.20 EEE Capability register

All supported PCS types listed in the register.
<table>
<thead>
<tr>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Comment ID</th>
<th>Healey, Adam</th>
<th>LSI Corporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>D</td>
<td>45 45.2.7.15a</td>
<td>P 99</td>
<td>23</td>
</tr>
<tr>
<td>T</td>
<td>D</td>
<td>45 45.2.1.2.1a</td>
<td>P 96</td>
<td>39</td>
</tr>
<tr>
<td>T</td>
<td>D</td>
<td>45 45.2.1.2.1b</td>
<td>P 96</td>
<td>46</td>
</tr>
</tbody>
</table>

**Comment Type**: T (technical), E (editorial), G (general)

**Comment Status**: D (dispatched), A (accepted), R (rejected)

**Response Status**: W (written), C (closed), U (unsatisfied), Z (withdrawn)

**Type**: TR (technical required), ER (editorial required), GR (general required)

**Comment**: Referring to Table 45-145, bit 15, not bit 10, is the Next page bit. However, it is not clear that this should be defined here. The scope of this register should be constrained to the unformatted code field.

**Suggested Remedy**: Change Table 45-145, 7.60.10 to Reserved, Ignore on read.

**Proposed Response**: PROPOSED ACCEPT.

---

**Comment**: Referring to Table 45-146, bit 15, not bit 10, is the Next page bit. However, it is not clear that this should be defined here. The scope of this register should be constrained to the unformatted code field.

**Suggested Remedy**: Change Table 45-146, 7.62.10 to Reserved, Ignore on read.

**Proposed Response**: PROPOSED ACCEPT.

---

**Comment**: What does it mean to have the transmit PMA/PMD "receive" low power idle signaling? Is it supposed to interpret the code-groups (or data-groups or symb_vectors or...) received from the transmit PCS, or is it based on the assertion of some status flag by the PCS? Assuming there is no breakdown in the communication between the PCS and PMA, it seems it would be cleaner to associate this bit with the PCS.

**Suggested Remedy**: Clarify the definition of this bit or relocate accordingly.

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

---

**Comment**: The receive link status bit shall be implemented with latching high behavior.

**Suggested Remedy**: Change bit name per comment.

**Proposed Response**: Change "The receive link status bit shall be implemented with latching high behavior." To "This bit shall be implemented with latching high behavior."

2 instances - 45.2.1.2.1a and 45.2.1.2.1b

---

**Comment**: The receive link status bit shall be implemented with latching high behavior.

**Suggested Remedy**: Change bit name per comment.

**Proposed Response**: See #92

---

**Comment**: The four LP Idle bits in register 1.1 should have been placed in the PCS register space.

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

The four LP Idle bits in register 1.1 should have been placed in the PCS register space.

Move all four bits to register 3.1, bits 8-11.
Cl  22  SC 22.2.2.9a  P 33  L 4  # 94  CHOU, JOSEPH  REALTEK SEMICON

Comment Type  TR  Comment Status  D

Need to modify the Figure 22-9a and the third paragraph of this subclause to comply to baseline proposal by extending several clocks after the assertion of LP IDLE command of MII.

Suggested Remedy
Add the following statements in subclause as follows and modify Fig 22-9a accordingly. "The MAC device may halt RX_CLK at any time more than 9 clock cycles after the start of the low power idle state as shown in Figure 22-9a if the RX_CLK_stoppable bit is asserted"

Proposed Response  Response Status  W
PROPOSED ACCEPT IN PRINCIPLE.

See text from #242.

Modify the figure to show (at least) 9 cycle delay.

Cl  45  SC 45.2.1.2.3a  P 96  L 52  # 96  Koenen, David  Hewlett Packard

Comment Type  T  Comment Status  D

Should bit 1.1.4 indicate the the transmit PFA/PMD is currently transmitting low power idles signal instead of receiving them?

Suggested Remedy
Change "receiving" to "transmitting" in this paragraph.

Proposed Response  Response Status  W
PROPOSED REJECT.

This is a matter of semantic preference. The sublayer is receiving and transmitting low power idles. The current wording is unambiguous, so the editor suggests no change is necessary.

Cl  45  SC Table 45-145  P 98  L 18  # 97  Koenen, David  Hewlett Packard

Comment Type  T  Comment Status  D

Missing support for 1000Base-KX. Please add to table.

Suggested Remedy
Change definition of bit 7.60.4 to read:

1000BASE-KX  |  1 = EEE is supported for 1000BASE-KX  |  R/W
|  0 = EEE is not supported for 1000BASE-KX  |

Proposed Response  Response Status  W
PROPOSED ACCEPT.

Cl  45  SC 45.2.7.13a  P 98  L 40  # 98  Koenen, David  Hewlett Packard

Comment Type  T  Comment Status  D

Missing section on definition for 1000BASE-KX, please add.

Suggested Remedy
Add a section under 45.2.7.13a for "1000BASE-KX EEE Supported (7.60.4)"

If the device supports EEE operation for 1000BASE-KX as defined in 70.3a, and EEE operation is desired, this bit shall be set to 1.

Proposed Response  Response Status  W
PROPOSED ACCEPT.
Table 45-146

Comment Type: Support for 1000BASE-KX in the EEE mode control register.

Suggested Remedy:
- For bit 7.62.2: Change to:
  
  1000BASE-KX | 1 = Reduced energy refresh for 1000BASE-KX LPI | R/W
  | 0 = Normal energy refresh for 1000BASE-KX LPI |

Proposed Response: PROPOSED ACCEPT IN PRINCIPLE.

There is no function to reference, therefore the registers should be deleted. See #216

---

Comment Type: Need to add description for 1000BASE-KX reduced energy bit

Suggested Remedy:
- Add the following section in 45.2.7.15a:

  1000BASE-KX reduced energy (7.62.2)

  If the device supports reduced energy refresh cycle for 1000BASE-KX LPI as define in 70.3.x, this bit shall be set to 1. If this bit is set for both the local device and the link partner then both shall operate LPI using the reduced energy method.

Proposed Response: PROPOSED ACCEPT.

See also #216

---

Comment Type: Several paragraphs have duplicate "the the" in the last sentence.

Suggested Remedy:
- Fix.

Proposed Response: PROPOSED ACCEPT ACCEPT.
Cl 78  SC 78.3  P 191  L 46  # 105
Koenen, David  Hewlett Packard

Comment Type E  Comment Status D
Paragraph should include backplane PHYs: KX, KX4, KR for Auto-Negotiation.

Suggested Remedy
Include sentence for backplane PHY’s Autonegotiation method. Allow editor to include as they see fit.

Proposed Response  Response Status W
PROPOSED ACCEPT.

Editor will include clause 73 AN overview to cover backplane PHY’s.

Cl 78  SC 78.3  P 102  L 1  # 106
Koenen, David  Hewlett Packard

Comment Type E  Comment Status D
Many typos and grammatical errors in top paragraph, looks rushed.

Suggested Remedy
Fix grammatical errors as editor sees fit to do so.

Proposed Response  Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

See responses to comments ## 253, 254.

Editor would appreciate more constructive approach - comment-wise and suggested remedy as one - next time around.

Cl 78  SC 78.4.2.2  P 193  L 47  # 107
Hajduczenia, Marek  ZTE Corporation

Comment Type E  Comment Status D
"Receive Tw_sys, 2 octets, is the time, in microseconds, that the system is requesting that the link partner wait before it starts to transmit data following Low Power Idle." poor English ...

Suggested Remedy
Change to "Receive Tw_sys (2 octets wide) is the time (expressed in microseconds) that the system is requesting the link partner to wait before it starts transmitting data following the Low Power Idle."

Proposed Response  Response Status W
PROPOSED ACCEPT.
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Comment</th>
<th>Proposed Response</th>
<th>Response Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>111</td>
<td>E</td>
<td>D</td>
<td>&quot;Transmit Tw_sys, 2 octets, is the time, in microseconds, that the system is capable of waiting before it starts to transmit data following Low Power Idle.&quot; poor English ...</td>
<td>PROPOSED ACCEPT.</td>
<td></td>
</tr>
<tr>
<td>112</td>
<td>E</td>
<td>D</td>
<td>Unresolved references &quot;48.2.x&quot;, &quot;71.6.x&quot;, &quot;71.6.x&quot;, &quot;70.6.x&quot;. Need to be resolved to a specific location in the draft or any other specification.</td>
<td>References will be resolved.</td>
<td></td>
</tr>
<tr>
<td>113</td>
<td>E</td>
<td>D</td>
<td>File 3av_0811_hajduczenia_1.pdf contains a series of minor editorial changes, style alignments, etc. Putting them into separate comments is pointless. Please consider the editorial changes proposed therein.</td>
<td>PROPOSED ACCEPT IN PRINCIPLE.</td>
<td></td>
</tr>
<tr>
<td>114</td>
<td>E</td>
<td>D</td>
<td>802.3av extended the list of special symbols and operators. You might want to include the latest version. I am not sure whether it is already published, though please contact Glen Kramer for a copy.</td>
<td>PROPOSED ACCEPT.</td>
<td></td>
</tr>
<tr>
<td>115</td>
<td>E</td>
<td>D</td>
<td>I think it is not very common to use &quot;a&quot; and &quot;b&quot; in the subclause numbers. There are other locations in the draft where a similar comment would apply.</td>
<td>PROPOSED REJECT.</td>
<td></td>
</tr>
<tr>
<td>116</td>
<td>E</td>
<td>D</td>
<td>The term &quot;Low Power Idle&quot; is used heavily in this document, making it an ideal target for inclusion in the list of abbreviations (1.5)</td>
<td>PROPOSED ACCEPT.</td>
<td></td>
</tr>
</tbody>
</table>
Proposed Response

1. Table 72-3 cuts into a block of text. Beat on Frame and avoid doing that. Either divide the section into two paragraphs or enable orphan control and make sure the table is not aligned to the top of the page.

Suggested Remedy

As per comment.

PROPOSED REJECT.

Those type of edits will be performed when all sections are re-numbered.

2. Simplyfing "is used as an indicator of signal presence." to "is used to indicate signal presence." Also applicable on:
   - page 151, line 20
   - page 161, line 31

Suggested Remedy

As per comment

PROPOSED ACCEPT.

3. (1) I have not found any precedence for the use of term "enumerated variable". There are some use cases in 802.3-2008 though in the management section and all possible values are enumerated and described. Is the list of possible values complete or any other values can be asserted?
   (2) what is a "variant" variable? This terms is somehow alien to me in the context of 802.3

Suggested Remedy

(1) clarify the use of "enumerated variables"
(2) define what a "variant variable" is ...

PROPOSED ACCEPT IN PRINCIPLE.

4. "A variant variable that contains the state of the transmitters current coefficient values and other values." this sentence is way off the edge. Please clarify it, define "other values" are

Suggested Remedy

As per comment.

PROPOSED ACCEPT IN PRINCIPLE.
**Comment ID # 121**

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

"This counter counts the number of training frames during the training frames sent." - this sentence is either incomplete or I am missing something.

**Suggested Remedy**

Either complete the sentence or clarify it.

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

PROPOSED ACCEPT IN PRINCIPLE.

Will change to:

"This counter counts the number of training frames sent during the TX_WAKE and REFRESH states.

---

**Comment ID # 122**

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

Figures in this draft contain "<=" characters instead of proper "Assignment operator", which can be found in the Symbols' table.

Affected figures 71-1, 71-2, 72-1, 72-2, 70-1, 70-2 (problem spots marked in the 3az_0811_hajduczenia_1.pdf)

**Suggested Remedy**

Please check all the newly added / modified figures and replace "<=" characters with the proper "Assignment operator", which can be found in the Symbols' table.

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

PROPOSED ACCEPT.

Editor will use symbol instead of "<=".

---

**Comment ID # 123**

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

(1) Empty element CF48 in the PICS table in 72.7.4.4.
(2) missing references and descriptions for elements CF43 - CF47

**Suggested Remedy**

(1) Either remove or fill in with appropriate text, if needed.
(2) correct the missing references and fill in the text descriptions, as necessary

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

PROPOSED ACCEPT.
Cl 00 SC 0 L 0 # 126
Hajduczenia, Marek ZTE Corporation

Comment Type ER Comment Status D
Consistency in definitions:
"low Power Mode"
"Low Power mode"
"Low Power Mode"
Pick one and stick to it consistently ...

SuggestedRemedy
IMHO pick "Low Power Mode", add it to list of abbreviations and use "LPM" consistently to avoid repeating this term everywhere (LPM is free in 1.5 in 802.3-2008)

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Terminology will be rationalized

Cl 00 SC 0 L 0 # 127
Hajduczenia, Marek ZTE Corporation

Comment Type ER Comment Status D
Consistency in definitions
"quiet mode"
"Quiet mode"
Pick one and stick to it consistently ...

SuggestedRemedy
IMHO, "Quiet Mode" since it is something specific to EEE and should be emphasized.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

What is the difference between "Low Power Mode" and "Low Power operation" ? If none, why create two terms to refer to the same thing ?

SuggestedRemedy
As per comment.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Eliminate "Low Power operation" term, use "Low Power Mode" of operation.

Cl 78 SC 78.1.3 L 50 # 129
Hajduczenia, Marek ZTE Corporation

Comment Type ER Comment Status D
When referring to an Idle codeword, it should be named "Idle" and not "IDLE". "Idle" is what is used currently in 802.3

SuggestedRemedy
Global search & destroy: "IDLE" > "Idle" when referring to an idle character / symbol.

Proposed Response Response Status W
PROPOSED REJECT.

Needs to be checked. I see IDLE when referring to an idle character/symbol

Cl 78 SC 78.1.3 L 22 # 130
Hajduczenia, Marek ZTE Corporation

Comment Type ER Comment Status D
Figure 78-2 has very large gaps between accompanying text and the figure. Eliminate them. Additionally, the text in the figure could be larger. It is hard to read on a print-out.

SuggestedRemedy
As per comment.

Proposed Response Response Status W
PROPOSED ACCEPT.
By "defacement" do you mean "The act of damaging the appearance or surface of something"? I suspect it is a typo. Does not seem to make any sense in this case.

Suggested Remedy:
Change into something appropriate in this case (various, different etc.)

Proposed Response
Response Status W
PROPOSED ACCEPT.

See response to comment #325

"71.6.5 PMD lane-by-lane signal detect function during normal operations" vs "72.6.4 PMD signal detect function during normal operation"

Suggested Remedy:
Change title of 71.6.5 to read "PMD lane-by-lane signal detect function during normal operation". Need to define also what "normal operation" is ...

Proposed Response
Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Editor will change to "PMD lane-by-lane signal detect function during normal operation".

"assertion threshold as defined in TBD" ... this TBD needs to be replaced with correct reference to the location where Signal_Detect assertion threshold is defined.

The same is true for page 161, line 43.
The same is true for page 173, line 37 & 43.

Suggested Remedy:
As per comment.

Proposed Response
Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

.x will be replace with actual references.

The KX4 signal detect should be similar as that defined for CX4 in clause 54.5.4. Text will be proposed for TF approval at meeting.
There are several locations, where cross-references are not live e.g. page 149, line 49.

Proposed Response

As per comment. Make all cross-references in this draft live.

PROPOSED ACCEPT IN PRINCIPLE.

We will do this, but it will be a continuing exercise as the draft changes so the commenter is requested to maintain a vigilant eye on any non-live cross references that remain.

Editor needs help in linking crossreferences to times not in the draft but in the larger 802.3 document.

There are several locations in the draft e.g. page 172, line 6, where "state machines" are referenced. Per 802.3 guidelines, there are no "state machines" but "state diagrams".

Proposed Response

Global hunt & destroy: all references to "state machine" must be replaced with "state diagram".

PROPOSED ACCEPT IN PRINCIPLE.

Editor will perform global hunt and remove state machine and replace with either "state" or "state diagram" where appropriate.

In the draft, there are several references to "<units>", e.g. page 173, line 37. What does this mean and why is it there?

Proposed Response

Either replace with appropriate units or remove altogether if it is only some editorial marker.

PROPOSED ACCEPT IN PRINCIPLE.

It was a editorial marker. If no one objects to the time values, that's what we'll use.
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Type</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Comment</th>
<th>Suggested Remedy</th>
<th>Proposed Response</th>
<th>Response Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>142</td>
<td></td>
<td>ER</td>
<td>D</td>
<td>Consider using the format of variable definition adopted by 802.3av in D2.1, Clause 77/76. It is much more readable and presents the size of the variable as well as potential default values.</td>
<td>As per comment</td>
<td>PROPOSED REJECT.</td>
<td></td>
</tr>
<tr>
<td>143</td>
<td></td>
<td>T</td>
<td>D</td>
<td>Definitions of the variables need (probably) more careful consideration. They are given value only during the autonegotiation process. What happens if the negotiation process fails? EEE will not work? If it will start anyway, then variables need default values.</td>
<td>Add default values to variables if under link negotiation failure EEE mechanism can still operate.</td>
<td>PROPOSED REJECT.</td>
<td></td>
</tr>
<tr>
<td>144</td>
<td></td>
<td>T</td>
<td>D</td>
<td>There is some naming inconsistency. When both link partners enter the mode, it is &quot;synchronous&quot;. I would expect the opposite situation to be called &quot;asynchronous&quot; and not &quot;asymmetric&quot;</td>
<td>Change &quot;asymmetric&quot; in line 27 to read &quot;asynchronous&quot;.</td>
<td>PROPOSED ACCEPT IN PRINCIPLE.</td>
<td></td>
</tr>
<tr>
<td>145</td>
<td></td>
<td>T</td>
<td>D</td>
<td>&quot;EEE defines Low power operational modes for the following six 802.3 protocols, use Table 78-1 for the associated clauses.&quot; change to &quot;EEE defines the Low Power Mode of operation for the following six 802.3 PHYs. Table 78-1 lists the clauses associated with each PHY.&quot;</td>
<td>As per comment</td>
<td>PROPOSED ACCEPT.</td>
<td></td>
</tr>
</tbody>
</table>

Some of these values need to be deleted as they will not be negotiated during Auto-Neg. There is only two sets of Quiet/Refresh ratios that can be negotiated now.
Proposed responses IEEE

IEEE P802.3az D1.0 Energy Efficient Ethernet comments
Nov 2008

Cl 78 SC 78.4.1 P 193 L 11 # 146
Hajduczenia, Marek ZTE Corporation

Comment Type T Comment Status D
(1) "shall support the EEE Type, Length, Value (TLV) defined in 78.1.2." - there are no TLVs defined in 78.1.2 as far as I can say.
(2) "the corresponding MIB objects defined in TBD" ... - TBD in a reference. Cannot resolve it in any way ...

Suggested Remedy
(1) Update the reference to point to the appropriate location (78.4.2 ???).
(2) reslove this missing reference to some subclause

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Change reference to 78.4.2.

Cross reference to Clause 30 will be added when Clause 30 is completed.

Cl 78 SC 78.4.2 P 193 L 18 # 147
Hajduczenia, Marek ZTE Corporation

Comment Type T Comment Status D
The whole first paragraph is repeated from 78.4.1. Seems unnecessary, strike the first paragraph in 78.4.2

Suggested Remedy
As per comment

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Delete the first paragraph in 78.4.2

Cl 78 SC 78.5 P 195 L 1 # 148
Hajduczenia, Marek ZTE Corporation

Comment Type T Comment Status D
Table 78-2 is full of TBDs

Suggested Remedy
Change the TBDs with at least temporary values You have been working on. Leaving TBDs sends a wrong message. You can always change these values later on if that is the TF's consensus.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

TBD will be replaced by real values after TF discussion on draft 1.0

Cl 71 SC 71.5 P 160 L 36 # 149
Hajduczenia, Marek ZTE Corporation

Comment Type T Comment Status D
Comparing tables 71-2 and 72-2, it is hard to say why they have different format (one is centered, the other one left aligned) and why the added entry is named differently in both cases, if after all, it is the same. Either name it "LPI enable" or "Low Power Idle" - IMHO "LPI enable" is OK but need to add an abbreviation in section 1.5

Suggested Remedy
As per comment.
Align the style of all tables in the draft into a consistent form.

Proposed Response Response Status W
PROPOSED REJECT.

The LPI enable will be deleted per comment #227

Cl 71 SC 71.6.5 P 161 L 5 # 150
Hajduczenia, Marek ZTE Corporation

Comment Type T Comment Status D
It is really inconsistent to use "LPI" in some places and "LP Idle" in others.

Suggested Remedy
Replace "LP Idle" with "LPI". Add "LPI<tab>Low Power Idle" to 1.5. Make sure only the first use in the Clause of LPI is expanded i.e. has the form "Low Power Idle (LPI)". The remaining uses should be already based on the abbreviation. Scrub the whole draft

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Should be E not T.
Cl 72 SC 72.7.4.2 P 184 L 30 # 151
Hajduczenia, Marek
ZTE Corporation

Comment Type: T  Comment Status: D
TBD in FS12 in 72.7.4.2 PICS. Needs an update

Suggested Remedy
As per comment.

Proposed Response  Response Status: W
PROPOSED ACCEPT IN PRINCIPLE.

"Enters LowPower_st when requested"

Cl 55 SC 55.1 P 114 L 13 # 152
Tidstrom, Rick
Broadcom

Comment Type: E  Comment Status: D
References the Energy Efficient Clause as Clause 72.

Clause 72 is titled "Physical Medium Dependent Sublayer and Baseband Medium, Type 10GBASE-KR".

Suggested Remedy
Change from Clause 72 to Clause 78.

Clause 78 is titled "Energy Efficient Ethernet (EEE)".

Proposed Response  Response Status: W
PROPOSED ACCEPT.

Cl 55 SC 55.1.1 P 114 L 36 # 153
Tidstrom, Rick
Broadcom

Comment Type: E  Comment Status: D
References the Energy Efficient Clause as Clause 72.

Clause 72 is titled "Physical Medium Dependent Sublayer and Baseband Medium, Type 10GBASE-KR".

Suggested Remedy
Change from Clause 72 to Clause 78.

Clause 78 is titled "Energy Efficient Ethernet (EEE)".

Proposed Response  Response Status: W
PROPOSED ACCEPT.

Cl 55 SC 55.1.3 P 114 L 43 # 154
Tidstrom, Rick
Broadcom

Comment Type: E  Comment Status: D
References the Energy Efficient Clause as Clause 72.

Clause 72 is titled "Physical Medium Dependent Sublayer and Baseband Medium, Type 10GBASE-KR".

Suggested Remedy
Change from Clause 72 to Clause 78.

Clause 78 is titled "Energy Efficient Ethernet (EEE)".

Proposed Response  Response Status: W
PROPOSED ACCEPT.

Cl 55 SC 55.1.3.3 P 116 L 24 # 155
Tidstrom, Rick
Broadcom

Comment Type: T  Comment Status: D
The following sentence is vague with regards to how many LP_IDLE codewords are required for a transition to Low Power Idle:

"In the transmit direction the transition to the LPI transmit state is initiated by the reception of LP_IDLE codewords on the XGMII interface."

Suggested Remedy
Change the sentence to define the number of LP_IDLE codewords required for a transition to LPI.

Proposed Response  Response Status: W
PROPOSED ACCEPT.

The editor will rewrite the text to clarify and make the number explicit.

The number is defined later, but this is an overview clause so it was not included here. To avoid confusion the editor will add it to this subclause.
**IEEE P802.3az D1.0 Energy Efficient Ethernet comments**

**Proposed Response**

Cl 55 SC 55.1.3.3 P 117 L 4 # 156
Tidstrom, Rick Broadcom

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

The sentence below indicates that the EEE Receive state machine is in the PCS.

"The EEE Receive state machine is contained in the PCS Receive function and is specified in Figure 55-TBD."

**Suggested Remedy**

The EEE Receive state machine as currently defined is in the PMA sublayer.

Possible remedies:

1. Change PCS to PMA.
2. Redefine the state machine to be in the PCS.
3. The state machine location is vendor determined.

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

For discussion by the group.

New state diagrams will be presented to the group.

---

Cl 55 SC 55.3.5.4 P 132 L 1 # 158
Tidstrom, Rick Broadcom

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

The state machines in the current draft have a hole with regards to the synchronization of a link partners. The state machines will not be updated upon resolution of this draft.

**Suggested Remedy**

The details for resolution of this issue to be submitted in a presentation for the November Plenary meeting.

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

For discussion by the group.

At least one synchronization proposal will be presented at the November meeting.

---

Cl 35 SC 35.2.2.9a P 69 L 16 # 157
Tidstrom, Rick Broadcom

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

In the Editor's notes, the following question is asked:

"Do we need a test mode, and what should be tested?"

**Suggested Remedy**

Currently, there are three test mode bits, and 8-modes defined. If test modes are required for EEE, then another test mode bit will need to be added.

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

PROPOSED ACCEPT.

If we need extra test modes then we need other test mode bits.

At least one presentation on test modes will be made at the November meeting.

---

Cl 36 SC 36 P 72 L 1 # 160
Hajduczenia, Marek ZTE Corporation

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

Missing reference in "as shown in .... if"

**Suggested Remedy**

Provide the missing reference

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

PROPOSED ACCEPT IN PRINCIPLE.

See #206
**Comment ID # 161**

Cl 40 SC 40.3.4 P 84 L 1

Hajduczenia, Marek, ZTE Corporation

**Comment Status** D

**Comment Type** ER

**Comment Status** D

**Comment ID** 40_svc_to_humanity

Figure 40-10a has several problems as marked in 3az_0811_hajduczenia_3.pdf

Make sure:
1. Lines do not cross (hard to guess which goes where) - see Figure 76-20 in 802.3av D2.1 for an example of how to solve it in a clear manner
2. Lines are not broken in the middle
3. Arrows do not meet as it happens on the left side of the figure (marked with a red box)

Similar problems also exist in Figure 40-15a on page 89

**Suggested Remedy**

As per comment

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

The referenced figures are largely as they appear in the current revision of IEEE Std. 802.3. The modifications required to realize optional Energy Efficient Ethernet features were minor in nature.

How such "services to humanity" should be addressed is a question of project scope and thus should be discussed by the Task Force.

See also comment #162.

---

**Comment ID # 164**

Cl 40 SC 40.12 P 93 L 1

Hajduczenia, Marek, ZTE Corporation

**Comment Status** D

**Comment Type** TR

This comment is to make sure You do not forget to fill in PICS for clause 40.

**Suggested Remedy**

As per comment.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

PICS will be entered per Draft 1.0 and the adopted responses to comments against Draft 1.0.

---

**Comment ID # 165**

Cl 45 SC 45.2.7.15a.2 P 100 L 1

Hajduczenia, Marek, ZTE Corporation

**Comment Status** D

**Comment Type** ER

Figure 40-16a has some problems:
1. Arrows should not meet as marked in 3az_0811_hajduczenia_3.pdf (red box)
2. NOTEs are too close to each other and become hard to read when printed - add some space

**Suggested Remedy**

As per comment

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

Refer to #161.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

There is no function to reference, therefore the registers should be deleted. See #216
Proposed Response

CL 45 SC 45 P 101 L 1
Hajduczenia, Marek ZTE Corporation

Comment Type TR Comment Status D

This comment is to make sure You do not forget to fill in PICS for clause 45

Suggested Remedy

As per comment

Proposed Response Response Status W
PROPOSED ACCEPT.

CL 00 SC 0 P 00 L 0
Hajduczenia, Marek ZTE Corporation

Comment Type T Comment Status D

Term clutter
I already saw "low power idle mode", "low power state", "low power idle state", "low power mode" etc. Do all of these refer to the same thing? If so, why have several names for the same thing? Scrub the draft accordingly

Suggested Remedy

As per comment

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Editors will rationalize terminology

CL 46 SC 46.3.1.2 P 103 L 40
Hajduczenia, Marek ZTE Corporation

Comment Type T Comment Status D

Text says "in the absence of errors or low power idle," but should probably say "in the absence of errors and low power idle," since TXC signals are de-asserted by the RS for each octet of the preamble only when there is no transmission going on. Similar comment on page 105, line 26.

Suggested Remedy

As per comment

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

The commenter is correct to highlight the ambiguity, but the addition of "or low power idle" is unnecessary for that sentence. Low power idle cannot be signaled during a frame.

Change "in the absence of errors or low power idle," back to "in the absence of errors,"

Also on page 105, line 26

CL 46 SC 46.3.1.5a P 104 L 41
Hajduczenia, Marek ZTE Corporation

Comment Type ER Comment Status D

Reference missing; also on page 107, line 12

Suggested Remedy

Please update

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

See #218
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Comment Type</th>
<th>Page</th>
<th>Line</th>
<th>Comment Status</th>
<th>Proposed Response</th>
<th>Comment Status</th>
<th>Proposed Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>170</td>
<td>E</td>
<td>55</td>
<td>100</td>
<td>D</td>
<td>I am not sure I understand &quot;25.4.11.1 Change to 7.1.2 &quot;Encoder&quot;&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>171</td>
<td>TR</td>
<td>63</td>
<td>1</td>
<td>D</td>
<td>Clause 30 is missing - it would be good to have at least a rough look at it before the next recirculation of the draft.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>172</td>
<td>E</td>
<td>65</td>
<td>1</td>
<td>D</td>
<td>In clause 35, there are again references to subclauses using &quot;a&quot; and &quot;b&quot; in the number. Avoid it. Insert a new subclause if needed and call for renumbering of the remaining subclauses.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>173</td>
<td>ER</td>
<td>68</td>
<td>42</td>
<td>D</td>
<td>The text reads:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Encoder and Decoder blocks in original TPPMD standard do not allow the capability to deactivate or set the park state, while in EEE their function need to be halted and restarted.

PROPOSED REJECT.

As per comment.

PROPOSED ACCEPT.

Update text to include possibility to enter LPI mode also when Link Partner has entered LPI mode.

PROPOSED ACCEPT IN PRINCIPLE.

The text needs to clarify that the transition to LPI state can occur in transmit and receive directions.

The editor will change the text appropriately.

IEEE Standards Association staff editors have instructed the editors of 802.3 amendments to use this approach when added clauses between existing clauses of the base document. To renumber all the clauses of the base document would open too much of the base to changes and would cause confusion about what was being changed.

The clauses will all be renumbered during the next revision, when all amendments are gathered together and brought into the main document (along with maintenance changes).
We need to define additional test modes to verify:
1. Alert pattern implementation
2. LPI cycle implementation - for all possible Tr values
3. Transmit path frequency stability in LPI mode

Suggested Remedy
See “10GBASE-T LPI Test modes” Teranetics’ presentation

Additional test modes need to be defined for EEE-capable PHYs.

At least one proposal will be presented in November.

Editorial comment reads:
“The process by which PCS scrambler synchronization is maintained during quiet signaling has not been specified. Simple solutions would be to freeze the scramblers during quiet. [scramblers are not used for the alert sequence].”

I suspect that freezing scramblers during Quiet Time and enabling them for Refresh/Data is unnecessary transition process sophistication and can raise yet another sync concern. Typical scramblers implementation takes virtually no power, why don’t we leave them running all the time, during Quiet periods as well?

Suggested Remedy
Editor to put specific note in the text that PCS scrambler should be running constantly and not be affected by LPI mode states/transitions

MAC is only responsible for transitions to and from the LPI state of the Transmit path. Receive path operational mode depends on the Link Partner Operational Mode (Normal or LPI).
This primitive is generated by the Receive Process of PCS, when Low Power Idle mode is implemented, to indicate that the transmitter is in Low Power Transmit state and the line is in Quiet state. See Clause 24.2.4.2 and Figure 24-8.

Suggested Remedy
>> Should it not be the Transmit Process, >> the clause reference is not traceable and it makes better to refer to figure 24-4 and not 24-11 or 24-8

PROPOSED ACCEPT.

In the transmit direction entrance to Low Power mode of operation is triggered by the reception of LP_IDLE codewords on the MAC interface.

Suggested Remedy
It would be more clear to mention at as "...reception of LP_IDLE codewords on the MII interface."

PROPOSED REJECT.

SLEEP state. The start of a Low Power Idle stream is indicated by a series of SLEEP codegroups with fixed amount of time denoted.

Suggested Remedy
SLEEP state. The start of a Low Power Idle stream is indicated by a series of SLEEP codegroups for fixed amount of time denoted

PROPOSED ACCEPT.
Upon successfully receiving SLEEP code-groups, the 100BASE-X PCS will enter Low Power Receive state if the Energy Efficient Ethernet option is implemented.

**Suggested Remedy**
Upon successfully receiving SLEEP code-groups, the 100BASE-X PCS will enter Low Power Receive state >>if the Energy Efficient Ethernet option is implemented.<< this part is understood in the larger context may be omitted at frequent places.

PROPOSED ACCEPT.

---

In this section all the timers description begins with ; "In the low power receive state", this makes some definitions not so clear. without the state diagram right next. They could be better started off as "In the low power receive state, when it is in the Quite state... etc."

PROPOSED REJECT.

However, it's open to other opinion.

---

Each PHY advertises most energy-efficient combination (combination with lowest Tr/Tq ratio value) supported and negotiates to lowest common value to ensure robust and quality link. >>A least negotiated value would guarantee maximum power savings, is there any relation with "robust" and "quality link". If robust and link quality are meant here to be technical terms.

**Suggested Remedy**
Suggest to remove it.

PROPOSED ACCEPT IN PRINCIPLE.

See comment #236
Proposed Response

What is the idea behind introducing the concept (of asynchronous, symmetric)? If it is relevant it would be under the scope of Control Plane, which will trigger and stop LPI.

Suggested Remedy

Perhaps can be added as an Optional Control Plane behavior in a separate Appendix section. Further a symmetric behavior could be better described as a scheme where both partners enter LPI (may not be at the same time) and contrary for asymmetric (If there is no relation that with both going into LPI simultaneously would cause a different behavior other than the what is specified in the draft elsewhere)

PROPOSED REJECT.

Symmetric and asymmetric modes of operations are different in their nature.

When both link partners can only enter Low Power Mode simultaneously, this mode is called symmetric. That is, after link partner-1 indicates that it is ready for Low Power Mode (by sending LP_Sleep codeword), it has to wait for link partner-2 to do the same before both can enter Low Power Mode.

On contrary, when asymmetric mode is supported, link partner-1 enters Low Power Mode immediately following LP_Sleep codeword transmission, while link partner-2 can still stay in normal operational mode.

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

This timer shall have a period between 1.2 µs and 1.4 µs.

To:

This timer shall have a period between 0.8 µs and 1.0 µs.

PROPOSED ACCEPT IN PRINCIPLE.

The state diagram in figure 40-15b has an exit condition from the wake_silent state that depends on scr_status. scr_status is ambiguous and therefore this condition can lead to interoperability issues. Also, allowing the wake_silent state in LPI mode to be executed under some conditions and bypassed under others unnecessarily introduces additional combinations of state transition sequences that also can contribute to interoperability issues.

Suggested Remedy

A presentation will be submitted proposing a remedy.

Proposed Response

PROPOSED ACCEPT IN PRINCIPLE.

Response pending planned presentations on this subject.
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Comment</th>
<th>Proposed Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>192</td>
<td>TR</td>
<td>D</td>
<td>lpi_wake_time is specified to be less than or equal to 16 µs. However, under best-case implementation assumptions and propagation delays, it is still possible that wake can take up to 3.8 µs since this is the sum of the minimum lpi_wakemz_timer and lpi_waitwt_timer values. Therefore, the parameter range and associated allowable autonegotiation values should be constrained such that wake time is greater than or equal to 3.8 µs and less than or equal to 16 µs. Because the wake time is negotiated in 1 µs increments, the allowable range for lpi_wake_time should be 4 µs to 16 µs.</td>
<td>Suggested Remedy: Change: Duration: This timer is a negotiated parameter [add reference] not to exceed 16 µs. To: Duration: This timer is a negotiated parameter [add reference] with a value greater than or equal to 4 µs and less than or equal to 16 µs.</td>
</tr>
<tr>
<td>193</td>
<td>T</td>
<td>D</td>
<td>In Table 45-145 EEE advertisement register, bit 7.60.10 is specified as &quot;Next page Always set to 1...&quot;. Since this is always set to 1, do we need to send this indication? Recommend changing the bit to reserved for potential future use.</td>
<td>Suggested Remedy: Change: 7.60.15:11 Reserved Ignore on read To: 7.60.15:7 Reserved Ignore on read Delete the following two rows in the table: 7.60.10 Next page Always set to 1, indicating that another page follows 7.60.9:7 Reserved Ignore on read</td>
</tr>
<tr>
<td>194</td>
<td>T</td>
<td>D</td>
<td>In Table 45-146 EEE mode control register, bit 7.62.10 is specified as &quot;Next page Always set to 0...&quot;. Since this is always set to 0, do we need to send this indication? Recommend changing the bit to reserved for potential future use.</td>
<td>Suggested Remedy: Change: 7.62.15:11 Reserved Ignore on read To: 7.62.15:10 Reserved Ignore on read Delete the following: 7.62.10 Next page Always set to 0, indicating that no page follows</td>
</tr>
</tbody>
</table>
As pointed out in the editor's comment number 4): "If both PHYs enter LPI at the same time, how do they resolve who was the first to enter LPI in order to ensure appropriate synchronization of refresh periods? This seems to require additional signaling."

This is a critical issue to resolve. Also we need to not only resolve the "first to enter" issue, but also ensure a mechanism exists to synchronize and align refresh periods for each of the respective link partners.

Suggested Remedy
The details for resolution of this issue to be submitted in a presentation for the November Plenary meeting.

Proposed Response
For discussion by the group.

At least one proposal for a synchronization mechanism will be presented at the November meeting.

The 10GBASE-T editor will work with the Clause 79 editor to resolve this issue.

The first normal idle codeword in the first wake frame after an alert is likely to contain errors and should not be used as a criterion for any wake frame error detection.

Suggested Remedy
Reword so as not to include the first idle code word after an alert in any wake frame error detection.

Proposed Response
For discussion by the group.

At least one proposal for a synchronization mechanism will be presented at the November meeting.

The 10GBASE-T editor will work with the Clause 79 editor to resolve this issue.
Cl 24 SC 24.1.1 P 36 L 12 # 199
Barrass, Hugh Cisco

Comment Type E Comment Status D
This seems to indicate that 100BASE-TX is the only supported PHY - it needs to be made clearer.

Suggested Remedy
Change
This capability is currently only supported in 100BASE-TX.

PROPOSED ACCEPT.

Cl 24 SC 24.1.2 P 36 L 33 # 200
Barrass, Hugh Cisco

Comment Type E Comment Status D
The use of the words "option" and "mode" is misleading.

Suggested Remedy
Change
Support the option of Energy Efficient Ethernet with the function of Low Power Idle mode as described in Clause 78 for the embodiment of 100BASE-TX.

PROPOSED ACCEPT.

Cl 24 SC 24.1.4.1 P 36 L 53 # 201
Barrass, Hugh Cisco

Comment Type E Comment Status D
The use of the words "optionally" and "mode" is misleading.

Suggested Remedy
Change
Interpret and generate MII opcodes to optionally enable or disable the Low power Idle mode.

PROPOSED ACCEPT IN PRINCIPLE.
Please refer to comment #2

Cl 24 SC 24.2.3.4 P 43 L 27 # 202
Barrass, Hugh Cisco

Comment Type T Comment Status D
There doesn't seem to be any point in negotiating the value of the lpi_rx_tw_timer. The transmitter must wait for at least 30us before it can send data, so there's no benefit to negotiating a smaller value (and it's very small anyway). Negotiating a longer wakeup time would not allow any extra power savings as the transmitter has already started sending IDLE or /P/P/.

Suggested Remedy
Change
This timer is set to a default value 30us and can be negotiated during Auto-negotiation or with LLDP.

PROPOSED ACCEPT IN PRINCIPLE.
The value of this timer is fixed to 24us.

PROPOSED ACCEPT IN PRINCIPLE.
Would like to keep the timer vaue to 30us since it is used to determine if the link fails.
Comment Type: T  Comment Status: D
There is no enable for the LPI function.

SuggestedRemedy
Change
implemented and enabled
to
implemented

Proposed Response: W
PROPOSED ACCEPT.

Comment Type: T  Comment Status: D
There is no enable for LPI.

SuggestedRemedy
Change "enabled" to "implemented"

Proposed Response: W
PROPOSED ACCEPT.

Comment Type: T  Comment Status: D
There is no enable for LPI.

SuggestedRemedy
Change "enabled" to "implemented"

Proposed Response: W
PROPOSED ACCEPT.
Proposed Response
There is no enable for LPI.
Suggested Remedy
Replace
When LPI mode is enabled (see [Editor's note add reference]), the PHY shall interpret...
with
The PHY shall interpret...
PROPOSED ACCEPT.

Proposed Response
There is no enable for LPI.
Suggested Remedy
Change
When this capability is enabled, the assertion of low power...
to
The assertion of low power...
PROPOSED ACCEPT.

Proposed Response
The programmable wake timer seems to be too complex for a very small benefit.
The timer should be fixed to the smallest value that is generally acceptable.
Suggested Remedy
Change
Duration: This timer is a negotiated parameter [add reference] not to exceed 16 us.
to
Duration: This timer shall have a period of 16 us.
PROPOSED ACCEPT IN PRINCIPLE.
Response pending planned presentations on this subject.
See also #62.

Proposed Response
The programmable wake timer is unnecessary (addressed in a separate comment)
If the programmable wake timer is fixed to 16uS then the duration of lpi_wakemz_timer can also be fixed.
Suggested Remedy
Change
Duration: The period of lpi_wakemz_timer is related to the resolved value of lpi_wake_timer and shall have the nominal period shown in Table 40-3

to
Duration: This timer shall have a period of 5 us.
Also, delete Table 40-3
PROPOSED ACCEPT IN PRINCIPLE.
Refer to #209.
This clause should reference the new autonegotiation requirements for EEE.

Suggested Remedy

Insert below bullet item b):

- To negotiate Energy Efficient Ethernet capabilities as specified in 28C.12.

PROPOSED ACCEPT.

---

New registers defined in 45.2.1.2 need to be added to the table

Suggested Remedy

Add the register descriptions into the table.

PROPOSED ACCEPT.

---

New registers defined in 45.2.1.2 need to be added to the table

Suggested Remedy

Add the register descriptions into the table.

PROPOSED ACCEPT.

---

A bit is required for "clock stoppable" as used in Clause 22 etc.

Suggested Remedy

- Change Table 45-83 to add "clock stoppable" bit

PROPOSED ACCEPT.

---

Table designation is wrong

Suggested Remedy

Change 45-1 to 45-5

PROPOSED ACCEPT.
Proposed Response

Cl 45 SC 45.2.7.15a P 99 L 46 # 216
Barrass, Hugh Cisco

Comment Type T Comment Status D

The editor's note suggests that this register is a placeholder awaiting a definition for reduced energy settings in the PHY clauses. There is no such definition, therefore delete this and the link partner register.

Suggested Remedy
Delete clause 45.2.7.15a and 45.2.7.15b (mis-numbered as 45.2.7.15a.6)

PROPOSED ACCEPT.

Cl 45 SC 45.2.7.15b P 100 L 31 # 217
Barrass, Hugh Cisco

Comment Type E Comment Status D

sub-clause is mis-numbered

Suggested Remedy
Change 45.2.7.15a.6 to 45.2.7.15b

PROPOSED ACCEPT.

Cl 46 SC 46.3.2.4a P 106 L 12 # 218
Barrass, Hugh Cisco

Comment Type T Comment Status D

The editor's note indicates that a control bit is needed to indicate "clock stoppable"

Suggested Remedy
Add a control bit in Clause 45 PCS registers (separate comment)

While the PHY device is indicating low power idle the PHY device may halt the RX_CLK as shown in .... if the RX_CLK_stoppable bit is asserted [Editor's note add reference].

With

While the PHY device is indicating low power idle the PHY device may halt the RX_CLK as shown in [figure 46-8a] if and only if the RX_CLK_stoppable bit is asserted [45.2.3.1.3a].

PROPOSED ACCEPT IN PRINCIPLE.

Accept the remedy for this comment, additionally replace similar paragraph in 46.3.1.5a (page 104 line 40) as follows:

While the MAC device may halt TX_CLK at any time more than 128 clock cycles after the start of the low power idle state as shown in Figure 46-7a if the TX_CLK_stoppable bit is asserted [Editor's note add reference].

With

The MAC device may halt TX_CLK at any time more than 128 clock cycles after the start of the low power idle state as shown in Figure 46-7a if and only if the TX_CLK_stoppable bit is asserted [45.2.3.1.3a].
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Page</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Proposed Response</th>
<th>Response Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>219</td>
<td>103</td>
<td>T</td>
<td>D</td>
<td>There is no enable for LPI. Replace When LPI mode is enabled (see [Editor's note add reference] ), the PHY shall interpret... with The PHY shall interpret...</td>
<td>PROPOSED ACCEPT.</td>
</tr>
<tr>
<td>220</td>
<td>118</td>
<td>T</td>
<td>D</td>
<td>The editor's note asks a question. The answer is that the resolution of the negotiable timer parameters will be defined in Annex 28C, no definition of the negotiation is required in this section. Delete the editor's note.</td>
<td>PROPOSED ACCEPT.</td>
</tr>
<tr>
<td>221</td>
<td>149</td>
<td>T</td>
<td>D</td>
<td>There is no enable for LPI. Replace When this capability is enabled, the assertion of low power... with The assertion of low power...</td>
<td>PROPOSED ACCEPT.</td>
</tr>
<tr>
<td>222</td>
<td>149</td>
<td>T</td>
<td>D</td>
<td>There is no enable for LPI. Replace ...if the Low Power Idle feature is enabled and the PCS transmit function receives... with ...if the PCS transmit function receives...</td>
<td>PROPOSED ACCEPT.</td>
</tr>
<tr>
<td>223</td>
<td>150</td>
<td>T</td>
<td>D</td>
<td>There is no enable for LPI. Delete the row from Table 70-2</td>
<td>PROPOSED ACCEPT.</td>
</tr>
</tbody>
</table>
proposed responses IEEE

IEEE P802.3az D1.0 Energy Efficient Ethernet comments

Nov 2008

---

Comment Type: T
Comment Status: D

There are separate status bits for Tx & Rx.

Suggested Remedy:
- Modify Table 70-3 to match 45.2.1.2 (Table 45-5).

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

Table 70-3 will be modified to match 45.2.1.2.

---

Comment Type: T
Comment Status: D

There is no enable for LPI.

Suggested Remedy:
- Replace

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

Replace

When this capability is enabled, the assertion of low power...

with

The assertion of low power...

---

Comment Type: T
Comment Status: D

There is no enable for LPI.

Suggested Remedy:
- Delete the row from Table 71-2

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

Delete the row from Table 71-2

---

Comment Type: T
Comment Status: D

There are separate status bits for Tx & Rx.

Suggested Remedy:
- Modify Table 71-3 to match 45.2.1.2 (Table 45-5).

Proposed Response: 
- Response Status: W
- PROPOSED ACCEPT.
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Type</th>
<th>Comment Status</th>
<th>Comment Type</th>
<th>Proposed Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>229</td>
<td>T</td>
<td>D</td>
<td>T</td>
<td>Replace When this capability is enabled, the assertion of low power... with The assertion of low power...</td>
</tr>
<tr>
<td>230</td>
<td>T</td>
<td>D</td>
<td>T</td>
<td>Replace If the Low Power Idle feature is enabled and the PCS... with The PCS... Two instances - lines 5 and 8</td>
</tr>
<tr>
<td>231</td>
<td>T</td>
<td>D</td>
<td>T</td>
<td>Delete the row from Table 72-2</td>
</tr>
<tr>
<td>232</td>
<td>T</td>
<td>D</td>
<td>E</td>
<td>Modify Table 71-3 to match 45.2.1.2 (Table 45-5).</td>
</tr>
<tr>
<td>233</td>
<td>T</td>
<td>D</td>
<td>E</td>
<td>Change 10BASE-T to 100BASE-TX</td>
</tr>
<tr>
<td>234</td>
<td>T</td>
<td>D</td>
<td>E</td>
<td>Change 100BASE-T to 100BASE-TX</td>
</tr>
</tbody>
</table>

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

Comment Status: D

Comment Type: E

The first 2 paragraphs are incorrect.

Suggested Remedy

Replace first 2 paragraphs of this page with

During the link establishment process, both link partners indicate their EEE capabilities. If
EEE is supported by both link partners for the negotiated PHY type then the EEE function
may be used independently in either direction.

The autonegotiation process uses next page messages or extended next page messages
as defined in 28C.12, 28C.13 and 73A.4.

Proposed Response

Response Status: W

PROPOSED ACCEPT.
The use of "may" implies that the indication is optional. It needs to be clear that the indication is mandatory when the LPI signaling is received.

**Suggested Remedy**

Replace

"While RX_DV is de-asserted, the PHY may indicate that it is receiving..."

With

"While RX_DV is de-asserted, a PHY that supports low power idle operation shall indicate that it is receiving"

**Proposed Response**

PROPOSED ACCEPT.

---

The editor's note indicates that a control bit is needed to indicate "clock stoppable"

**Suggested Remedy**

Add a control bit in Clause 45 PCS registers (separate comment)

Change

While the PHY device is indicating low power idle the PHY device may halt the RX_CLK as shown in .... if the RX_CLK_stoppable bit is asserted [Editor's note add reference].

With

While the PHY device is indicating low power idle the PHY device may halt the RX_CLK as shown in [figure 22-9a] if and only if the RX_CLK_stoppable bit is asserted [45.2.3.1.3a].

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

Merge the resolution of this comment and #94 to produce:

While the PHY device is indicating low power idle it may halt the RX_CLK at any time more than 9 clock cycles after the start of the low power idle state as shown in [figure 22-9a] if and only if the RX_CLK_stoppable bit is asserted [45.2.3.1.3a].

---

at the risk of getting the 8-ball, I think we should be consistent about capitalization of Low Power Idle. For example:

- page 30:
  - line 13 Low Power Idle
- page 36:
  - line 10 low power idle
  - line 13 low Power Idle
  - line 53 low power Idle

**Suggested Remedy**

Use "Low Power Idle" in sentences. Use "low power idle" in labels in figures and tables.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

Capitalized and use "Low Power Idle" when it is refers to a standard defined state. Leave it in lower case when it is just normal English.

---

there needs to be a space between the words "for" and 10BASE-Te

**Suggested Remedy**

Insert a space

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

Duplicate of comment #237.
The cable plant specifications for untwisted shielded pair (UTP) of TP-PMD 11.1 are actually in 25.4.6.

Proposed Response
- Response Status: W
- Proposed Accept in Principle.

Note: This error exists in the original text.

There is no EEE advertisement bit definition to 1000BASE-KX in Table 45-145.

Proposed Response
- Response Status: W
- Proposed Accept.

It looks like an editor's note follows the primitive PLS_DATA_VALID.indication on the same line.

Proposed Response
- Response Status: W
- Proposed Accept.

In the protocol column of Table 78-2, 10GBASE-KX should be 1000BASE-KX.

Proposed Response
- Response Status: W
- Proposed Accept.
Proposed Response

Comment Type: ER
Comment Status: D
We should be consistent in the use of terms such as Low Power mode (see line 25), Low Power Idle mode and EEE mode. Since the method we use to reduce energy use is called Low Power Idle, that is the term we should use.

Suggested Remedy
replace EEE mode with Low Power Idle mode

Proposed Response
Response Status: W
PROPOSED ACCEPT IN PRINCIPLE.

Low Power Idle mode will be used instead of Low Power mode.

Proposed Response

Comment Type: ER
Comment Status: D
there are no units associated with Tw_phy

Suggested Remedy
add "nsec" after Tw_phy

Proposed Response
Response Status: W
PROPOSED ACCEPT.

Proposed Response

Comment Type: E
Comment Status: D
"advertisement. See Annexes 28A and 73A on additional details" needs a space after the period and "on" should be "for"

Suggested Remedy
replace "advertisement. See Annexes 28A and 73A on additional details" with "advertisement. See Annexes 28A and 73A for additional details"

Proposed Response
Response Status: W
PROPOSED ACCEPT.

Comment regarding last row of table 55-10: No need for reset PMA training. This was for initial PAM2 acquisition. The current draft claims the PAM2 PRBS33 will be continuously operating since start-up. This generates full power repeating sequence which could have EMI issues

Suggested Remedy

Proposed Response
Response Status: W
PROPOSED ACCEPT.

The comment isn't clear to me, but I think this is the same conclusion as the editor's note on page 128, line 12.

See also comment 303
Comment Type: TR/technical required  ER/editorial required  GR/general required  T/technical  E/editorial  G/general
COMMENT STATUS: D/dispatched  A/accepted  R/rejected  RESPONSE STATUS: O/open  W/written  C/closed  U/unsatisfied  Z/withdrawn
SORT ORDER: Comment ID

---

Comment concerning Editor note: This is an implementation detail of the rx. Alert signal is easy to detect with very low latency. Filter/timing updates per lane are happening every 128x4 frames. Making the update a couple of frames later (<<512) will have no effect

Regarding corruption of subsequent LDPC codewords:
This is implementation detail also. We will have several Wake LDPC codewords and will be transitioning rx from LPI to normal data mode. First LDPC Frame will likely be corrupted anyway and has no unique information. See presentation

Suggested Remedy

---

Comment about editor note: Make Tq+Tr = 128. This way LPI cycle period is independent of Tr and a power of 2. Less implementation headaches. Keeps multiple modems in a switch aligned (otherwise random based on LP)

Suggested Remedy

---

If link partner in LPI then offset by~1/2 LPI super-frame, otherwise Master starts refresh cycle~1/2 frame after Quiet and Slv 1 frame after. This prevents case where both enter simultaneously without knowing what LP is doing.

Suggested Remedy

---

-53dBm is too low. It's 58dB below the PBO=0 tx level and below tx PSD mask.

Suggested Remedy

---

More details are needed to support this comment and the synchronization mechanism. It is not clear what text is required in the standard to make this scheme work.

At least one synchronization proposal will be presented at the November meeting.

---

The editor believes that the comment may be valid, but requests that the commenter suggest a remedy.

[Note that the -53dBm value is taken from the 802.3an requirement for a disabled transmitter in 55.4.2.3.2]
Proposed Response  

**Cl 99 SC P 7 L 13 # 263**

Diab, Wael  
Broadcom

*Comment Type E*  
*Comment Status D*

Font on the TF Chair and Editor seems to be smaller and different than WG officer names.

**SuggestedRemedy**

*Please adjust font to match list above*

Proposed Response  

**Response Status W**  
PROPOSED ACCEPT.

---

**Cl 99 SC P 3 L 4 # 261**

Diab, Wael  
Broadcom

*Comment Type E*  
*Comment Status D*

The abstract still has a TBD for Backplane Ethernet.

**SuggestedRemedy**

*Suggest language similar to what is already there for TP Ethernet*

Proposed Response  

**Response Status W**  
PROPOSED ACCEPT.

---

**Cl 99 SC P 3 L 5 # 262**

Diab, Wael  
Broadcom

*Comment Type E*  
*Comment Status D*

The LLDP scheme is not covered in the abstract or keywords.

**SuggestedRemedy**

*Suggest adding some language to cover LLDP in the*  
*For example: "A new LLDP TLVs is defined for negotiation system level energy efficiency parameters" and "TLV, LLDP" to the keyword list*

Proposed Response  

**Response Status W**  
PROPOSED ACCEPT.
Comment Type   TR   Comment Status   D
Comment
There are several instances throughout the document where parameters are defined in multiple places, values are given in multiple places or different terminology is used for the same thing.

This can be more difficult to maintain and if there are subtle differences then it creates a potential conflict. Here are some examples:
- Table 78-2 summarizes key parameters and they are listed as TBD. However, a subset of these values are defined in the various PMD clauses that are being modified
- Section 78.1.3 overviews the LPI procedure. This text or portions of it are repeated in other places with inconsistent terminology. For instance, C78 used the terminology synchronous, while C55 uses the terminology symmetric.

Suggested Remedy
Please consolidate to normative requirements in one place and consistent terminology. If readability is desired, a suggestion would be to make use of cross references.

Proposed Response  Response Status   W
PROPOSED ACCEPT IN PRINCIPLE.

Harmonization of terms will be carried out by the editorial team.

Clause 78 will contain a summary of key parameters for different PMDs but the normative text will be left to the specific PMDs.

Comment Type   TR   Comment Status   D
Comment
As drawn, the figure seems to violate the layering conventions we use, specifically the system behaviour signals. I believe that the intent is for the system's management to be able to access LP_IDLE.request and the LP_IDLE.indicate not that there signals which are going around the MAC.

Suggested Remedy
Please delete the system transmit and receive behaviour arrows. The management access can be explained in the text.

Proposed Response  Response Status   W
PROPOSED ACCEPT IN PRINCIPLE.

See #282

The station management will be shown as the origin of these signals.

Comment Type   TR   Comment Status   D
Comment
It is unclear how frequently the /D20.5/ has to be inserted for all the XGMII columns to respond LPI. Conversely, it is also unclear how long of an absence of the /D20.5/ character for the XGMII to respond as Idle.

Suggested Remedy
Please specify the duration / rate that the /D20.5/ character has to appear

Proposed Response  Response Status   W
PROPOSED REJECT.
The text seems to be clear. Every time the XGMII coding of TXC/TXD indicates LPI, the PCS encodes K.28.0, K28.3 or K28.5 in all columns except one (chosen randomly) that is encoded K.20.5.

There is nothing to suggest that any "rate" or "frequency" is suggested other than the XGMII clock frequency.

Comment Type   TR   Comment Status   D
Comment
Has the TF decided how to handle TPPMD? There seems to be several references in the editor's notes that there is a possibility to pull in TPPMD. There is significant technical content in editor's notes related to this.

Suggested Remedy
Suggest that a decision is made on this prior to WG preview so that document can be cleaned up one way or the other.

Proposed Response  Response Status   W
PROPOSED ACCEPT IN PRINCIPLE.

While we originally considered pulling TPPMD into 802.3, we were unable to find the resources to take on this task.

Editors notes indicating that we will pull in TPPMD will be removed.
There are several definitions that seem to be missing for example LPI, LPI mode wake signal, refresh signal, 10BASE-TE etc.

Please add the definitions

PROPOSED ACCEPT IN PRINCIPLE.

For management, we will also need to work on the contents of the C30 Annexes like 30A.

Please add the Annexes prior to WG ballot

PROPOSED ACCEPT.

Once 802.3bc is completed, we will need to move the new TLVs into that section of the draft C77 (and any associated Annexes).

Please use this comment as a placeholder to do that prior to WG ballot. I will be happy to work with the editors as needed.

Editor will add editorial note to capture this comment
Comment Type: ER  Comment Status: D
Placement of optionally in e) is confusing. Needs clarification.

SuggestedRemedy
Change to read:
e) Optionally, interpret (generate) MII opcodes to enter or exit low power idle state.

Proposed Response  Response Status: W
PROPOSED ACCEPT IN PRINCIPLE.
Please refer to comment #2

Comment Type: TR  Comment Status: D
The PCS should avoid the statement about power reduction.

SuggestedRemedy
Change to read:
e) Optionally, receive and process low power idle state control signals from the PCS; and

Proposed Response  Response Status: W
PROPOSED ACCEPT IN PRINCIPLE.
In order to make the phrase style consistent with other text, change to "Optionally, receiving and processing low power idle state control signals from the PCS; and"

Comment Type: ER  Comment Status: D
Use of the term option is confusing.

SuggestedRemedy
Change to read:
The Receive process may support the low power idle state by...
Apply the change also to the Transmit:
The Transmit process may support the low power idle state by...

Proposed Response  Response Status: W
PROPOSED ACCEPT IN PRINCIPLE.
The use of "mode" is pending on the consensus of the terminology used in EEE draft.

(note: similar change will also be made on page 39 line 1)
Second paragraph is missing two references. RX_CLK_stoppable bit is undefined. Third paragraph is not required.

**Suggested Remedy**

Change to read:

"... as shown in Figure 22-9a if the...

Define RX_CLK_stoppable bit and add reference to 22.2.2.9a.

Delete third paragraph.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

See resolution to #242. The third paragraph matches the style of the base document for all of the figures in this subclause.

---

**Comment ID # 282**

Booth, Brad

AMCC

**Comment Type** TR

**Comment Status** D

**Comment**

Figure 22-20a conflicts with Figure 22-3.

**Suggested Remedy**

PLS_DATA.request arrow is in the wrong direction. TX_CLK and RX_CLK are missing. RX_DV mapping to PLS_DATA_VALID.indicate mapping is not shown. COL and CRS are not shown, and while not used in full duplex, they should be shown in the mapping. The LP_IDLE's should come from Station Management.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

The diagram needs redrawing, with the following:

1. PLS_DATA.request arrow is in the wrong direction in Figure 22-3 in 802.3-2008 - make the change as part of this amendment as a service to humanity.

2. Add in TX_CLK and RX_CLK.

3. Add a note that RX_DV, COL & CRS mapping is unchanged and not shown.

4. The LP_IDLE's should come from Station Management.

---

**Comment ID # 285**

Booth, Brad

AMCC

**Comment Type** ER

**Comment Status** D

**Comment**

Why is it Low Power Idle here but low power idle elsewhere in the clause.

**Suggested Remedy**

The lowercase version, low power idle, should be used.

**Proposed Response**

PROPOSED ACCEPT.
Terms seem to be mixed up again.

Suggested Remedy

There are various forms of low power mode, low power idle mode, Low Power Idle mode, low power idle state, etc. Use the term low power idle state.

For example, ... the PHY will enter the low power idle state during periods...

PROPOSED ACCEPT IN PRINCIPLE.

Pending on the consensus of the terminology used in EEE draft.

---

I'm concerned about the choice to break up XAUI coded idle columns with the /D20.5/ character to indicate LPI. From my limited knowledge of the XGXS PCS receiver it appears to me that breaking the ||A|| columns will prevent the PCS from finding or maintaining column alignment and breaking the ||R|| column may prevent the PCS from performing clock rate compensation, thus causing fault conditions which would be indicated by local fault at the XGMII and requiring additional recovery time.

Suggested Remedy

I would like to hear comment from vendors of the XGXS PCS on whether this change is of any concern. Or, if this has already been reviewed within the task force perhaps the editor can direct me to a presentation justifying the change.

PROPOSED ACCEPT IN PRINCIPLE.

See #63

---

Sentence is awkward: The SLEEP signal is signaled using 9 full LDPC frames

Suggested Remedy

The SLEEP signal uses 9 full LDPC frames

PROPOSED ACCEPT.

The editor will clarify the text as suggested.

---

lpi_quiet_period should be replaced with lpi_quiet_time

Suggested Remedy

PROPOSED ACCEPT.

---

lpi_wake_period is not defined

Suggested Remedy

Change to lpi_wake_time

PROPOSED ACCEPT.
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Type</th>
<th>Page</th>
<th>Line</th>
<th>Comment</th>
<th>Proposed Response</th>
<th>Response Status</th>
<th>Comment Status</th>
<th>Commenter</th>
<th>Response</th>
<th>Suggested Remedy</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>295</td>
<td>ER</td>
<td>143</td>
<td>24</td>
<td>Lundy, Sean</td>
<td>PHY Frame should be LDPC Frame. This occurs on line 24 and line 25.</td>
<td>PROPOSED ACCEPT.</td>
<td>Late</td>
<td>Aquantia</td>
<td>W</td>
<td>The editor will replace PHY frame with LDPC frame.</td>
<td></td>
</tr>
<tr>
<td>296</td>
<td>E</td>
<td>119</td>
<td>10</td>
<td>Parnaby, Gavin</td>
<td>Sentence is not grammatically correct</td>
<td>PROPOSED ACCEPT.</td>
<td>Late email</td>
<td>Solarflare</td>
<td>W</td>
<td>Remove 'and' from '...and the transmit function...'</td>
<td></td>
</tr>
<tr>
<td>297</td>
<td>E</td>
<td>118</td>
<td>23</td>
<td>Parnaby, Gavin</td>
<td>Figure 55-4 contains two descriptions 'dashed rectangles are used to indicate signals...'</td>
<td>PROPOSED ACCEPT.</td>
<td>Late email</td>
<td>Solarflare</td>
<td>W</td>
<td>Delete one description</td>
<td></td>
</tr>
<tr>
<td>298</td>
<td>E</td>
<td>126</td>
<td>L</td>
<td>Parnaby, Gavin</td>
<td>Active pair is not defined.</td>
<td>PROPOSED ACCEPT.</td>
<td>Late email</td>
<td>Solarflare</td>
<td>W</td>
<td>State that the active pair defines only which pair will be used for the next refresh. [Some earlier alert proposals also used active pair to determine where the alert would appear but this is no longer the case].</td>
<td></td>
</tr>
</tbody>
</table>

TYPE: TR/technical required  ER/editorial required  GR/general required  T/technical  E/editorial  G/general
COMMENT STATUS: D/dispatched  A/accepted  R/rejected  RESPONSE STATUS: O/open  W/written  C/closed  U/unsatisfied  Z/withdrawn
SORT ORDER: Comment ID
I am concerned that receivers may synchronize training to a refresh signal which is replaced by the alert sequence. In the present proposal alert is pam-2, but not precoded, and therefore cannot be used to update coefficients in the same manner as the pam-2 precoded refresh signal. Therefore the alert could corrupt coefficients or timing. This is particularly a concern if the alert replaces a refresh signal. The alert is followed immediately by PAM-16 so there is little opportunity to recover the coefficients.

[however, alert corrupts only 1 pair]

Suggested Remedy
See presentation.

Proposed Response
For discussion by the group.

What happens if an alert occurs at the same time as a refresh on another pair? None of the proposals make clear whether this refresh is transmitted or not.

If the refresh is not transmitted, this could cause problems with adaptive filters, which are expecting valid PAM-2 precoded data at that time.

Suggested Remedy
See presentation.

Proposed Response
For discussion by the group.

Editor's note recommends that we require LPI capable PHYs to support the long LFSR PAM-2 training sequence.

This seems sensible, as it reduces the number of options in the standard.

Suggested Remedy
Make it a requirement that LPI capable PHYs support the long LFSR PAM-2 training sequence.

Proposed Response
PROPOSED ACCEPT IN PRINCIPLE.

The editor will add a requirement that EEE capable PHYs shall support the long LFSR PAM-2 training sequence after initial training. The long LFSR training sequence will be used for refresh signals during the LPI state. It is not a requirement that EEE capable PHYs use the long LFSR sequence during initial training.
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Type</th>
<th>Comment Status</th>
<th>Response Status</th>
<th>Comment</th>
<th>Proposed Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>#304</td>
<td>T</td>
<td>D</td>
<td>W</td>
<td>tx_lpi_state_active should be defined more rigorously.</td>
<td>The editor will clarify that the LPI state begins immediately after the sleep finishes and lasts until the alert is sent completely (on the transmit side) and on the receive side lasts from when the sleep is detected until the alert is detected.</td>
</tr>
<tr>
<td>#305</td>
<td>E</td>
<td>D</td>
<td>W</td>
<td>The timer names do not match those used in other clauses (e.g. Clause 40).</td>
<td>The dashed box linestyle does in the proposed Figure 55-15 does not match that in the proposed Figure 55-17 on page 137. Several figures are missing text specifying that the transitions/states in the dashed boxes are for EEE capable PHYs only.</td>
</tr>
<tr>
<td>#306</td>
<td>E</td>
<td>D</td>
<td>W</td>
<td>The state diagrams are old.</td>
<td>The state diagrams are old.</td>
</tr>
<tr>
<td>#307</td>
<td>E</td>
<td>D</td>
<td>W</td>
<td>The state diagrams are old.</td>
<td>The state diagrams are old.</td>
</tr>
</tbody>
</table>

**Comment ID:** #304  
Cl 55 SC 55.3.5.2  P 129 L 42  Parnaby, Gavin  Solarflare Communica  
Comment Type: T  Comment Status: D  Late email  
**Suggested Remedy:**  
Define that the LPI state begins immediately after the sleep finishes and lasts until the alert is sent (on the tx side) / detected (on the rx side).  
**Proposed Response:**  
PROPOSED ACCEPT IN PRINCIPLE.  
When does the LPI state start and end?  
**Suggested Remedy:**  
Define that the LPI state begins immediately after the sleep finishes and lasts until the alert is sent (on the tx side) / detected (on the rx side).  
**Proposed Response:**  
PROPOSED ACCEPT IN PRINCIPLE.  

**Comment ID:** #305  
Cl 55 SC 55.3.5.2.1  P 131 L 632  Parnaby, Gavin  Solarflare Communica  
Comment Type: E  Comment Status: D  Late email  
**Suggested Remedy:**  
Replace lpi_tx_phy_wake_timer with lpi_wake_timer  
There may be other similar changes.  
**Proposed Response:**  
PROPOSED ACCEPT IN PRINCIPLE.  
The editor will attempt to match terms as much as possible in next draft.  

**Comment ID:** #306  
Cl 55 SC 55.3.5.4  P 133 L 728  Parnaby, Gavin  Solarflare Communica  
Comment Type: E  Comment Status: D  Late email  
**Suggested Remedy:**  
See presentation at November meeting  
**Proposed Response:**  
The state diagrams are old.  
They should be updated.  
**Suggested Remedy:**  
See presentation at November meeting  
**Proposed Response:**  
For discussion by the group.  
New state diagrams will be presented at the November meeting.  

**Comment ID:** #307  
Cl 55 SC 55.3.5.4  P 135 L 728  Parnaby, Gavin  Solarflare Communica  
Comment Type: E  Comment Status: D  Late email  
**Suggested Remedy:**  
Use the linestyle on page 137 throughout the text for eee states.  
**Proposed Response:**  
PROPOSED ACCEPT.
IEEE P802.3az D1.0 Energy Efficient Ethernet comments

#308

Cl 55 SC 55.3.5.4 P 140 L 308

Parnaby, Gavin
Solarflare Communica

Comment Type T Comment Status D Late email

Proposed Figure 55-9

This state machine should not be in the PCS. Move it to the PMA.

The wake state is not required.

Suggested Remedy

See presentation.

Move the state machine into the PMA Rx, remove the wake state.

Proposed Response Response Status W

For discussion by the group.

New state diagrams will be presented in the November meeting.

#309

Cl 55 SC 55.3.5.2 P 139 L 310

Parnaby, Gavin
Solarflare Communica

Comment Type T Comment Status D Late email

Proposed Figure 55-19

With the current state machine the sleep signal could be sent for 9 or 10 frames [since up to 1 complete frame could be transmitted in state TX_NORMAL].

The last sleep frame may not be detected by the PCS if it powers down the PMA as soon as it detects sleep.

If the end of the sleep signal is used to time refreshes then this ambiguity needs to be eliminated. There is still an ambiguity if the start of the sleep signal is used to time refreshes.

Suggested Remedy

Use the synchronization mechanism described in the submitted presentation.

If the synchronization mechanism depends on timing based on the sleep signal then this problem needs to be solved another way.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Resolving this issue is contingent upon synchronization mechanism.

Any synchronization mechanism needs to take this issue into account.

At least one proposal for a synchronization mechanism will be presented at the November meeting.

#310

Cl 55 SC 55.1.3.1 P 116 L 311

Parnaby, Gavin
Solarflare Communica

Comment Type E Comment Status D Late email

Check capitalization of auto-negotiation

Suggested Remedy

Use a consistent capitalization.

Proposed Response Response Status W

PROPOSED ACCEPT.

The PMA supports both a low power idle transmit state and a low power idle receive state.

The current statement suggests there is only one PMA low power idle state.

Suggested Remedy

Change the text to '...the PMA supports a low power idle transmit state and a low power idle receive state.'

Proposed Response Response Status W

PROPOSED ACCEPT.

The editor will rewrite the text to make the transmit and receive states clear.
The clause does not define what quiet means for a non-active pair.

**Suggested Remedy**

State that pairs that are not transmitting the refresh signal must meet the tx power requirements of clause 55.3.5.1, except if the alert signal is being transmitted.

**Proposed Response**

PROPOSED ACCEPT.

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The editor's note states that the non-THP encoded signal could corrupt following symbols. If we require that the delay line of the THP is initialized appropriately then this problem goes away. [this initialization is required during link training so the capability already exists].

**Suggested Remedy**

Require that the delay line of the THP is initialized during the alert signal.

**Proposed Response**

PROPOSED ACCEPT.

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The definitions suggests that the request goes away once the PHY transitions to LPI state.

**Suggested Remedy**

Rewrite:

"Set to True when the MAC is requesting that the PHY operate in the LPI transmit state."

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.
The transition out of RX_W should not be 'R_TYPE(rx_coded)=C', since in this case the state machine can exit back to data mode with an error condition.

Suggested Remedy
The transition should be R_TYPE(rx_coded) = I

Proposed Response
Response Status W
For discussion by the group.

New state diagrams will be presented at the November meeting.

Proposed Response
Response Status W
For discussion by the group.

This comment needs supporting data.

According to this text, lpi_wake_time is chosen from 1 to 9 PHY frames.

I think we need to look closely at this requirement, to ensure that in the worst conditions PHYs are able to return to an error free PAM-16 data mode after the wake frames, without compromising PHY and system power savings.

Suggested Remedy
Increase the number of frames allowed for the wake time. Exact number TBD, needs more discussion.

A presentation will be submitted for the November meeting.

Proposed Response
Response Status W
For discussion by the group.
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Tw_Phy as defined does not match the description in Clause 55.

The first idles transmitted on the MDI do not indicate that real data is capable of being transmitted. My understanding was that the first idles are the wake signal, during which time it is guaranteed that idles are transmitted by the MAC and no data may be sent.

Also, in clause 55, the wake time is defined as the time the wake signal is sent.

Why does the definition here include the MDI interface?

**Suggested Remedy**

Define Tw_PHY as the time between IDLE appearing on the XGMII interface and when the first codewords on the XGMII are guaranteed to be received by the remote PHY, assuming error-free operation.

 Clarify definition of wake time / phy wake time.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

Agree in general, Tw_PHY should be defined as period of time between reception IDLE signal on xxMII interface and moment PHY is ready to transmit Data.

Draft 1.0 has following wake definition (subclause 55.3.2.2.21, page 124, lane 19): "After the ALERT message the PCS completes the transition from low power idle mode to normal mode by sending a WAKE signal which is composed of lpi_wake_time repeated /I/ codewords encoded using the 65B-LDPC coding technique. Are these "/I/ codewords" XGMII-driven or pre-defined valid codewords”. If latest assumption is correct then current Tw_PHY definition holds, otherwise it should be modified.

Proposed remedy suggests to include Tp (Propagation delay) into Tw_PHY. Not clear whether there is any advantage in doing so.

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The minimum system wake time also needs to be bounded.

e.g. for 10GBASE-T the minimum wake has to allow for sleep, alert, phy wake at a minimum before data will be passed. [this is at least 9+4+1=14 LDPC frames with the current draft]

**Suggested Remedy**

Add a description of the minimum wake time for each PHY type.

**Proposed Response**

PROPOSED ACCEPT IN PRINCIPLE.

This is good point - but these parameters are not necessarily negotiable but rather fixed per each PHY type. Thus they should be defined first in the appropriate subclauses and then reflected in the subclause 78.5

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The sentence regarding refresh duty cycle changes is very vague.

What is ’reasonably sure’?

In 10GBase-T the timing of this parameter change is critical.

**Suggested Remedy**

Clarify when the parameter change takes place on the link; is it only after a link retrain?

If there is another case, it may be problematic to time the change on both sides of the link.

**Proposed Response**

PROPOSED REJECT.

The earlier part of the paragraph recommends sending at least 4 LLDP messages to ensure that the link partner has received them.

Also, none of these parameters have any effect unless LPI is being asserted therefore it seems clear that the new parameters will be used during the next assertion of LPI. LLDP messages cannot be sent when LPI is being asserted.
Cl 78 SC 78.5 P 194 L 45 # 325
Parnaby, Gavin Solarflare Communications

Comment Type E Comment Status D Late email

'The maximal PHY recovery time is defacement for different protocols' seems to be a typo.

Suggested Remedy
change to 'A maximum PHY recovery time is defined for each physical protocol'

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 78 SC 78.1.4 P 190 L 33 # 326
Parnaby, Gavin Solarflare Communications

Comment Type E Comment Status D Late email

There are 7 protocols listed in the table. The text says 6 protocols.

Suggested Remedy
Change text to ...the following seven...

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 78 SC 78.2.1 P 191 L 6 # 327
Parnaby, Gavin Solarflare Communications

Comment Type E Comment Status D Late email

The subclause defines an LPI state. For PHYs that support asymmetric LPI, there are LPI transmit and receive states.

Suggested Remedy
Add LowPowerTx_st and LowPowerRx_st to the description, for PHYs that support asymmetric LPI states.

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 24 SC 24.2.3.4 P 43 L 22 # 528
Dove, Daniel ProCurve Networking

Comment Type ER Comment Status D LATE

Spelling - continuos

Suggested Remedy
Spelling - change continuos to continuous.

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 24 SC 24.2.3.4 P 43 L 43 # 529
Dove, Daniel ProCurve Networking

Comment Type ER Comment Status D LATE

Grammar: "is waked up"

Suggested Remedy
Change to "is woken up"

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 25 SC 25.4.11.1 P 57 L 16 # 530
Dove, Daniel ProCurve Networking

Comment Type ER Comment Status D LATE

Figure 25-1 has a spelling error in the PLUS_V state. "Positove"

Suggested Remedy
Change to "Positive"

Proposed Response Response Status W
PROPOSED ACCEPT.

Cl 40 SC 40.4.6.1 P 88 L 44 # 531
Dove, Daniel ProCurve Networking

Comment Type ER Comment Status D LATE

Spelling

Suggested Remedy
Change "PHY Contrl" to "PHY Control"

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

**Comment:** There is an Angstrom symbol in the text.

**Suggested Remedy:** Replace with proper symbol which I believe is an "@".

**Comment Status:** D

**Response Status:** W

Dove, Daniel ProCurve Networking

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**Proposed Response**

**Comment:** Figure 46-8a shows wake time being 4 bit times long

**Suggested Remedy:** Insert squiggly "some time later" symbols into the figure to indicate that the time duration of wake time is variable.

**Comment Status:** D

**Response Status:** W

Dove, Daniel ProCurve Networking

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**Proposed Response**

**Comment:** Table values for Assert Time and Deassert Time are set to 5uS. These periods of time are inconsistent with the Assert Threshold of 1000mV pk/pk and the Deassert Threshold of 200mV.

Those thresholds apply for 350uS because the 100BASE-T encoding of IDLE guarantees a "fat pulse" (pulse duration of 10 bits) will arrive at the receiver in this timeframe.

If we are to reduce the Assert/Deassert times, we cannot guarantee the "fat pulse" arrival any more, and need to change the thresholds.

**Suggested Remedy:** Since we want to keep the 5uS timers, my recommendation is to analyze the amplitude requirements and change the Assert/Deassert thresholds

**Comment Status:** D

**Response Status:** W

Dove, Daniel ProCurve Networking

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**Proposed Response**

**Comment:** Incorrect code shown in TXD[7:0]

**Suggested Remedy:** Change from "0001" to "01"

**Comment Status:** D

**Response Status:** W

Dove, Daniel ProCurve Networking

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**Proposed Response**

**Comment:** Incorrect code shown in TXD[7:0]

**Suggested Remedy:** Change from "0001" to "01"

**Comment Status:** D

**Response Status:** W

Dove, Daniel ProCurve Networking
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<td>48.2.4.2</td>
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Dove, Daniel  
ProCurve Networking

**Comment Type**: TR  
**Comment Status**: D  
**Response Status**: W  
**Type**: TR/technical required, ER/editorial required, GR/general required  
**Comment Status**: D/dispatched, A/accepted, R/rejected  
**Response Status**: O/open, W/written, C/closed, U/unsatisfied, Z/withdrawn

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

The words column and row are transposed

**Suggested Remedy**
Replace with "randomly in one row of each column during \[\[\]."

**Proposed Response**: PROPOSED ACCEPT.