Cl **00** *SC* *P* *L* # 334

Hamano, Hiroshi Fujitsu Labs. Ltd.

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

The document structure introducing the EEE texts into the old ones must have already been fully discussed in the TF. But I still have a little concern that the current old texts will be mixed up and become confusing for the readers, when the editorial underlines finally disappear and conditional statements appear everywhere; if the optional EEE function is supported.., if the optional low power idle function is implemented.., and when the PHY supports EEE..

SuggestedRemedy

The new Section6 of 802.3 with new Clause numbers may possibly be allocated to the whole EEE specifications, and old texts up to Section5 can basically keep the current description..

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Comment submitted on Clause 99 - changed by editor to Clause 00

Task force is taking a different approach and not the suggested remedy
See response to comment #410

Cl **00** *SC* **0** *P* *L* # 403

Thaler, Pat Broadcom

Comment Type **E** *Comment Status* **A** *terminology*

Terminology consistancy, the draft varies between calling the functionality. Energy Efficient Ethernet (in some cases only Energy is capitalized), EEE, some varient of Low Power Idle (such as low power idle signaling in Clause 22), and LPI.

It also varies between "with ___ capability", "supported", "___-compliant" and "implemented" referring to the option's presence. Often these are used where it should say "enabled" because EEE capability is something that can be disabled for backwards compatibility with devices that don't support it.

SuggestedRemedy

Try to be consistant across clauses in referring to this capability especially in the name for the capability. My preference is to use "EEE" as the name for the capability and leave LPI as the name for a signal that is used by that capability.

Review all statments that describe new behavior such as sending of LPI and ensure that they apply only when the capability is enabled. I've tried to catch these and put in specific comments but I may not get them all. 49.2.4.4 contains a good example of what should be done except that "supported" should be "enabled."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In general, use EEE capability when referring to the ability to support Energy Efficient Ethernet.

Use LPI mode when being in the low power state.

Cl **00** *SC* **0** *P* *L* # 2

Anslow, Pete Nortel Networks

Comment Type **ER** *Comment Status* **A** *editing instruction*

When modifying existing clauses, the change instructions are: change, delete and insert.
For "change" strikethrough and underscore are used to indicate removal of old material and adding of new material respectively.
For "delete" and "insert" normal font is used.
Throughout the draft, this convention is not followed.

SuggestedRemedy

The following are example corrections. Therec are many, many more places that need to be fixed.
Page 15 remove underscore from text added with insert (2 places)
Page 16 show the added text (change) in the clause 14 title with an underscore
Page 24 show the added text (change) in the 14.10 title with an underscore
Page 24 show the changes to LS4 (change)
Page 25 the "22-3" on line 15 should not be underlined
Page 34 remove underscore from text added with insert in 24.1.1
Page 214 remove underscore from text added with insert in 74.5.4
Page 215 remove strikeout text from 74.5.4.1 which has been added with an (insert)

Response *Response Status* **W**

ACCEPT.

Cl **00** *SC* **0** *P* *L* # 12

Anslow, Pete Nortel Networks

Comment Type **E** *Comment Status* **A** *notation*

To be consistent with the base standard "usec" should be shown as the greek letter mu followed by "s"
This occurs in 8 places in the draft and also in Table 78-2 where mu followed by sec should also be mu followed by s

SuggestedRemedy

change "usec" to the greek letter mu followed by "s" in 8 places in the draft
change mu followed by sec sto mu followed by s in Table 78-2

Response *Response Status* **C**

ACCEPT.

Cl **00** *SC* **0** *P* *L* # 173

Frazier, Howard Broadcom Corporation

Comment Type **E** *Comment Status* **A** *editing instructions*

Strikethru and underscore are used inconsistently throughout the draft, which makes it more difficult to review. Some editors have used underscore for all new material (see Clause 25) and others have used it only when adding material to an existing subclause (see Clause 36).

SuggestedRemedy

Consistent usage of strikethru and underscore would be appreciated.

Response *Response Status* **C**

ACCEPT.

See response to comment #2

Cl **00** *SC* **0** *P* *L* # 113

D'Ambrosia, John Force10 Networks

Comment Type **E** *Comment Status* **R** *terminology*

The "xMII" notation does not cover XGMII and is inconsistent with other places in the draft where "xxMII" is used

SuggestedRemedy

change "xMII" to "xxMII"

Response *Response Status* **C**

REJECT.

The "x" in "xMII" does not have a length in characters

Cl **00** *SC* **0** *P* *L* # 467

Kim, Yong Broadcom

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

Agree with H. Frazier's (and others') concerns (raised in July meeting) regarding existing compliant pre-802.1az 802.3 PHY needs to be preserved and clearly referenceable as valid 802.3 PHY. I see numerous area of concern when 802.3az text is integrated into exisitng 802.3-2008 PHY sections, including invalidating current compliant PHY as non-compliant.
Also my assumption is
1) PHY behavior without .3az option must not change,
2) PHY with .3az option connected to a legacy PHY, they must interoperate (presumably without the benefits of .3az),
in dealing with this issue.

SuggestedRemedy

Also agree with that H. Frazier's proposal presented during teleconference on this subject to create normative annex to reflect 802.3az changes into existing PHY clauses to be the cleanest method to both 1) minimize delays, 2) clearly reflect 802.3az PHY while preserving existing PHY conformance. Please adopt this approach (or suitable equivalent).

FYI - My technical comments (TRs) would clearly state whether the use of normative annex would satisfy comment.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See response to comment #410

Cl **00** *SC* **0** *P* *L* # 410

Thaler, Pat Broadcom

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

The way that EEE operation has been added to the base clauses for PHYs other than 10BASE-T produces a risk that existing non-EEE PHYs and Reconcilliation sublayers will be made non-compliant. The requirements have also been added in a way that will make EEE PHYs incompatible with currently compliant non-EEE devices. My comments on 22.2.2.4 and 22.2.2.7 are examples of where that has happened.

The addition of EEE to IEEE 802.3 should not make existing IEEE 802.3 compliant devices non-compliant. EEE devices should be able to work with non-EEE devices at the xMII and MDI interfaces. It should be optional to support and any new requirements and behaviors should only apply to devices that support EEE/LPI operation. Any behaviors at the xMII or MDI that are outside what is specified for non-EEE devices should only apply when EEE operation is enabled so that EEE devices interoperate properly with non-EEE devices.

SuggestedRemedy

The safest way to do this would be to create separate clauses for behavior when EEE is enabled similar to the creation of annex 4A for full-duplex, though that would greatly increase the size of the document. The alternative is to carefully use the same type of formula any time you change a requirement for EEE. That is, the old requirement needs to be proceeded by something like "When EEE operation is not enabled," and the new requirement by "When EEE operation is enabled,".

I have used enabled rather than supported because a device that supports EEE should not exhibit a new behavior when attached to a device that doesn't support EEE. For a PHY, this applies both to the xMII interface when attached to a Reconcilliation layer that doesn't support EEE and to the MDI when the link partner PHY doesn't support EEE or isn't able to enable it because the link partner's Reconcilliation sublayer doesn't support it.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Carefully draw a distinction between requirements/variables/timers that are required for EEE operation.

New variables/timers may be kept as a separate list instead of being integrated alphabetically into existing lists.

The text should be clear that when EEE is not in use (due to something in the chain -e.g. link partner capability etc) the behavior of the PHY should be identical to that of a non EEE PHY.

The text should also be clear that non-EEE capable PHYs need not implement the EEE related counters/timers etc.

Cl **00** *SC* **0** *P* *L* # 214

Grow, Robert Intel

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

This draft uses the term 'state machine' extensively. This term is not generally used in the base standard. In general an implementation may have a state machine, but we have state diagrams, functions, etc.

SuggestedRemedy

Search and replace 'state machine" with appropriate terminology.

Response *Response Status* **C**

ACCEPT.

An automatic "search and replace" without review is not recommended as there are places where a blind replacement does not make sense

Cl **00** *SC* **0** *P* *L* # 209

Grow, Robert Intel

Comment Type **E** *Comment Status* **A** *formatting*

Inconsistent format for MII data signals. For example, TXD<3:0> or TXD <3:0>. It doesn't look like the base document is consistent either.

SuggestedRemedy

Consult with the WG Chair on prefered format, request he put it on the list of things that could be fixed in a future revision, and used the prefered format throughout.

Response *Response Status* **C**

ACCEPT.

Use the style TXD<3:0> in the 802.3az draft - remove space between THX<3:0>

Cl **00** *SC* **0** *P* *L* # 208

Grow, Robert Intel

Comment Type **E** *Comment Status* **A** *formatting*

Though the style manual could be more clear, the base document generally uses the form '(see 35.2.1)' not the square form(s) used on this draft.

SuggestedRemedy

Replace square brackets with parenthesis, use the prevaling format consistently. Some examples (not an exhaustive list) that should be fixed include P. 30, L. 5, 6, and P. 68, L. 50, 51 and P. 122, L. 13.

Response *Response Status* **C**

ACCEPT.

An automatic "search and replace" without review is not recommended as there are places where a blind replacement does not make sense

Cl **00** *SC* **0** *P* *L* # 436

Thaler, Pat Broadcom

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

Across Clauses 49, 51, 72 and 74 there is a disconnect on what primitives are crossing the interface.

Clause 49 shows energy_detect going up the stack and tx_quiet, rx_quiet, scrambler_reset and rx_lpi_active going down the stack. tx_quiet and rx_quiet appear to be fine and consistant across the Clauses.

rx_lpi_active is defined as an indication in some places but it is a request. indications are signals that go up the stack.

It isn't clear what the benefit of using energy_detect is. The only difference between it and signal_detect is that signal_detect is not produced when there is energy but the FEC hasn't locked yet. Why move the PCS LPI state out of RX_QUIET when the FEC hasn't locked yet?

None of the lower layers use scrambler_reset so the primitive should be removed.

SuggestedRemedy

Make the primitive interfaces between these Clauses consistant. Delete scrambler_reset.

Perhaps delete energy_detect and use signal_detect.

Indicate in Clause 49 that rx_lpi_active is only used by FEC and need not be supplied when FEC is not used.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The suggested remedy has several requests:
1) As for making the primitives consistent, all the primitives going down are:
tx_quiet.request
rx_quiet.request
rx_lpi_active.request.

There is no need for scrambler_reset to be going from the PCS to lower layers so it will be deleted.

The primitive going up is:
energy_detect.indication

2) We cannot replace energy_detect with signal_detect.
Fundamentally all the three backplane PHYs uses energy_detect (an early signal) to deassert rx_quiet, which in effect wakes up the front end circuits, some of which generates signal_detect. The proposed change defeats the whole purpose of having energy_detect.
Cannot delete energy_detect

3) Indicate in Clause 49 that rx_lpi_active is only used by FEC and need not be supplied when FEC is not implemented.

Cl **00** *SC* **0** *P* *L* # 121

D'Ambrosia, John Force10 Networks

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

There are references in diagrams in either captions or notes that a diagram or a portion of the diagram is optional or "NOTE-Signals and functions shown with dashed lines are optional."

These diagrams, signals and functions are not optional if LPI is supported.

Found in Clause 40, 48, 74

SuggestedRemedy

Determining a global consisten manner to highlight what it necessary to support LPI is needed.

For notes in drawing change text to

NOTE- If optional Low Power Idle mode is supported, signals and functions shown with dashed lines are mandatory.

Correct captions to indicate Mandatory if optional Low Power Idle mode is supported.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

In Clause 40, 48, 74

For relevant notes in drawing change text to

NOTE- Signals and functions shown with dashed lines are mandatory for the EEE capability.

Correct captions to indicate Mandatory for the EEE capability.

Cl **00** *SC* **0** *P* *L* # 206

Grow, Robert Intel

Comment Type **E** *Comment Status* **A** *editing instructions*

The draft contains far more text than considered appropriate for publication. For example it is very typical to say change the nth paragraph as follows and not include the complete subclause as seems to be the case for much of this draft. In some clauses the the changes instructions are written for the smaller volume of text and others not.

SuggestedRemedy

Either remove superflous text (my preference) or include Editor's Note (to be removed prior to publication) that indicates that more base text than is required for publication is included for convienence of review and will be removed during publication preparation.

Response *Response Status* **C**

ACCEPT.

Cl **00** *SC* **0** *P* **1** *L* **1** # 174

Frazier, Howard Broadcom Corporation

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

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

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

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

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

SuggestedRemedy

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

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

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

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

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to Comment #410

Cl **00** *SC* **0** *P* **1** *L* **25** # 190

ghiasi, ali Broadcom

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

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

SuggestedRemedy

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

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See response to comment #410

Cl **00** *SC* **0** *P* **27** *L* **50** # 196

Grow, Robert Intel

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

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

SuggestedRemedy

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

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

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

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

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

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

Cl **00** *SC* **0** *P* **30** *L* **36** # 406
Thaler, Pat Broadcom

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

Insert new subclauses with numbering like 7a to avoid renumbering later ones will make the standard more complex to maintain.

It also isn't clear what the expectation is when this becomes part of a new edition or revision of 802.3 - will the number-letter designations be retained or will renmubering be done then?

SuggestedRemedy

Make 22.7a be 22.7 and renumber the PICS to 22.8. Treat other insertions of new subclauses, figures and tables similarly.

If the current numbering is to be maintained, put in an editorial instruction at the beginning on what is expected when this is integrated into IEEE Std 802.3.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #196.

Cl **00** *SC* **0** *P* **33** *L* **4** # 5
Anslow, Pete Nortel Networks

Comment Type **E** *Comment Status* **A** *editing instructions*

"Add" is not a valid change instruction

SuggestedRemedy

Change all instances of "Add" change instructions to "Insert"
e.g. pages 33, 51, 59, 60, 65, 69, etc.

Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1.4** *P* **15** *L* **20** # 115
D'Ambrosia, John Force10 Networks

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

add definition for "Low Power Idle Mode"

SuggestedRemedy

Low Power Idle Mode - an optional mode intended to save power that may be enabled during periods of low link utilization in which both sides of a link may disable portions of device or system functionality.

Response *Response Status* **W**

ACCEPT.

Cl **01** *SC* **1.5** *P* **15** *L* **32** # 366
Obara, Satoshi Fujitsu Limited

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

Add abbreviation "EEE" which is used in Clause 45 and 78.

SuggestedRemedy

Add the description "EEE Energy Efficient Ethernet" in Clause 1.5.

Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1.5** *P* **15** *L* **34** # 109
Chalupsky, David Intel Corp.

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

The abbreviation "EEE" is used pervasively throughout this draft before it is defined. Add an abbreviation definition to section 1.5.

SuggestedRemedy

Add an abbreviation definition to section 1.5., i.e.
"EEE Energy Efficient Ethernet"

Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1.5** *P* **15** *L* **34** # 205
Grow, Robert Intel

Comment Type **E** *Comment Status* **A** *capitalization*

Incorrect style.

SuggestedRemedy

The acronym should be in lower case "low power idle" unless consistently used as a proper noun throughout the draft. (I don't think capitalization is consistent.)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Will be capitalized consistently but recommend use of Capitals as this term has a specific meaning beyond what is implied by just the English phrase.

Cl **14** *SC* **0** *P* *L* # 444

Thaler, Pat Broadcom

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

There are 86 occurences of "10BASE-T" in 802.3 section 1 not counting the Table of contents and 95 in section 2. This supplement adds 28 occurences of 10BASE-Te and it added some occurences of 10BASE-T so it is clear that it has not inserted "or 10BASE-Te" everywhere where 10BASE-T occurs in IEEE 802.3. Even just Clause 14 in 802.3 has 44 occurences of 10BASE-T.

Examples of three places where this causes problems are in Clause 28, Clause 30 and Clause 33.

The draft contains no edits to Clause 28 and its annexes so there is no way to auto-negotiate for 10BASE-Te operation. Bits A0 and A1 of the technology ability field apply to only 10BASE-T. Also 28.2.1.1 still requires "Compliant 10BASE-T MAUs transmit link integrity pulses" for autonegotiation so any device wanting to do auto-neg would still have to deliver the 10BASE-T voltage during auto-neg which defeats some of the purpose of doing 10BASE-Te.

In Clause 30, 10BASE-Te hasn't been added to the MAU types in 30.5.1.1.2 aMAUType.

The draft contains no edits to Clause 33 so it only allows DTE power operation with 10BASE-T and not with 10BASE-Te MAUs.

SuggestedRemedy

My preferred solution to this would be to define two subtypes of 10BASE-T operation, e.g. classic (10BASE-Tc) and EEE (10BASE-Te). Use the subtypes where there is a difference between the two such as transmit voltage level. Use 10BASE-T in statements that apply to both subtypes. I can understand the desire to not change the existing meaning of 10BASE-T, but it isn't working and not including the new subtype in 10BASE-T will cause problems - existing devices won't know that a new technology ability indicates something that is backward compatible with 10BASE-T over the appropriate cable.

If that isn't done, every instance of 10BASE-T in all of 802.3 needs to be examined and modified to include 10BASE-Te as appropriate.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #356

Delete all new text from item C on line 10 on page 17.

This overrides other comment responses on item C.

Change Page 18, Line 19 to read:

This twisted-pair model shall be constructed according to Figure 14–7 for a type 10BASE-T MAU that is not a type 10BASE-Te MAU and according to Figure 14–7a for a type 10BASE-Te MAU with component tolerances as follows:

Cl **14** *SC* **1.1.1** *P* **17** *L* **14** # 469

Kim, Yong Broadcom

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

"The 10BASE-Te PHY operation requires ISO/IEC 11801:1995 Class D or better cabling. This requirement can also be met by Category 5 cable and components as specified in ANSI/TIA/EIA-568-A-1995." is not clear.

Does the referenced cable meet 10BASE-T as well as 10BASE-Te? I know what the answer is, but not clear as written. Also 10BASE-Te PHY operation *requires* ISO/IEC... cable. If intended, then I did not find corresponding "shall* statement anywhere...

SuggestedRemedy

Please fix editorial issues and clarify. Thanks.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Take the last two sentences of item c which currently read:
"The 10BASE-Te PHY operation requires ISO/IEC 11801:1995 Class D or better cabling. This requirement can also be met by Category 5 cable and components as specified in ANSI/TIA/EIA-568-A-1995."

Change to:
"The 10BASE-Te PHY operation requires the simplex link segment specification found in 14.4.1."

Cl **14** *SC* **14** *P* **16** *L* **10** # 356

Law, David 3Com

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

It is not clear if the 10BASE-Te MAU is a separate type of MAU or is a subtype of the 10BASE-T MAU. The way the introductory subclause is written it appears that a 10BASE-Te MAU is a separate distinct MAU type but then if that is true the whole of IEEE Std 802.3 would need to be modified to replace every instance of '10BASE-T' with '10BASE-T and 10BASE-Te' - except where 10BASE-Te has a different requirements from 10BASE-T.

As a simple examples consider Clause 13 system considerations for 10Mb/s networks - it has tables that list numbers for 10BASE-T - are these the same for 10BASE-Te or not - similarly for all the mentions for 10BASE-T in Clause 28 Auto-Negotiation.

SuggestedRemedy

Suggest either [1] replace every instance of '10BASE-T' with '10BASE-T and 10BASE-Te' except where 10BASE-Te has a different requirements from 10BASE-T or [2] state somewhere that the all requirements and specifications for 10BASE-T apply to 10BASE-Te as well unless otherwise stated.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add statement in section 14.1.1.1 as follows:

j) All references to 10BASE-T include 10BASE-Te unless otherwise stated.

Cl **14** *SC* **14.1.1** *P* **16** *L* **15** # 345

Law, David 3Com

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

The overview text for the 10BASE-Te MAU should parallel the construct of the similar text for the 10BASE-T MAU, in addition I don't think that the one mention of the 10BASE-Te MAU name in the first overview paragraph should be parenthetical.

SuggestedRemedy

Suggest that 'This clause also specifies characteristics of the Energy Efficient version of 10BASE-T (type 10BASE-Te) MAU.' should be changed to read 'This Clause also specifies the functional, electrical, and mechanical characteristics of the Energy Efficient version of 10BASE-T, the type 10BASE-Te MAU, and one specific medium for use with that MAU.

Response *Response Status* **C**

ACCEPT.

Cl **14** *SC* **14.1.1** *P* **16** *L* **16** # 346

Law, David 3Com

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

Isn't 'new' a relative term - in a few years this text could be read to mean legacy devices did do this - also to me the text could be simplified as suggested below.

SuggestedRemedy

Suggest that 'NOTE - It is expected that new 10 Mb/s devices for twisted pair media will not support both 10BASE-T and 10BASETe.' be changed to read 'NOTE - Support for both 10BASE-T and 10BASETe in a single device is not expected.'.

Response *Response Status* **C**

ACCEPT.

Cl **14** *SC* **14.1.1** *P* **16** *L* **21** # 252

Hajduczenia, Marek ZTE Corporation

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

PMD names should not be divided between the lines, which complicates understanding of the text. Either scrub it manually or prohibit FrameMaker from dividing the text on "-" characters. Contact me in case of doubts on how to do it. Occurences (page/line): 16/21, 17/24-25,

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Cl **14** *SC* **14.1.1** *P* **16** *L* **21** # 441

Thaler, Pat Broadcom

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

The grammar of the note is a bit ambiguous - it could be read as expecting that neither is supported.

SuggestedRemedy

"will support either 10BASE-T or 10BASE-Te." would be more clear. One could also use "will support either 10BASE-T or 10BASE-Te but not both."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See resolution of comment #346.

Cl **14** *SC* **14.1.1** *P* **16** *L* **21** # 114

D'Ambrosia, John Force10 Networks

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

The added note seems to imply an implementation, which seems unncessary, given that there are two distinct PHY types already.

SuggestedRemedy

Delete note.

Response *Response Status* **C**

REJECT.

The note was added in a previous version of the draft to address a reviewer's concern.

Cl **14** *SC* **14.1.1.1** *P* **17** *L* **12** # 468

Kim, Yong Broadcom

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

"This specification is generally met by 0.5 mm telephone twisted pair" is unclear and does not add any useful reference.

SuggestedRemedy

reference to (original) 14.4 is sufficient. Delete.

Response *Response Status* **W**

ACCEPT.

Delete the sentence:
"This specification is generally met by 0.5 mm telephone twisted pair"

Cl **14** *SC* **14.1.1.1** *P* **17** *L* **14** # 253

Hajduczenia, Marek ZTE Corporation

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

"by Category 5 cable and components" - 'components' of what ?

SuggestedRemedy

Either clarify what these 'components' are or where one can find what that means.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Components should be clear from the reference in the text

Cl **14** *SC* **14.1.1.1** *P* **17** *L* **14** # 442

Thaler, Pat Broadcom

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

The 10BASE-Te sentence isn't parallel to the 10BASE-T one. It doesn't specify a distance which gives the impression that perhaps only 10BASE-T provides for operation up to 100 m.

SuggestedRemedy

Add the distance for 10BASE-Te or remove the distance from the 10BASE-T one since the distance is already in the opening sentence.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
OBE.

Cl **14** *SC* **14.1.1.1** *P* **17** *L* **24** # 254

Hajduczenia, Marek ZTE Corporation

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

"Provides for operation with reduced transmit amplitude" - does EEE reduce the amplitude of the transmitted signal or provide a mechanism for the PMD to enter into sleep mode when not transmitting anything? This sentense is confusing

SuggestedRemedy

Clarify what "reduced transmit amplitude" means in this case and whether it is really the reduced signal amplitude that is meant in here.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change ". operation with reduced transmit amplitude for type 10BASE-Te ..." to ". operation with reduced peak differential voltage on the TD circuit for type 10BASE-Te ..."

Cl **14** *SC* **14.1.1.1** *P* **17** *L* **24** # 348

Law, David 3Com

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

I didn't think the reduced transmit amplitude was optional for 10BASE-Te (see 14.3.1.2.1) therefore don't understand the parenthetical 'optional' after 10BASE-Te.

SuggestedRemedy

Change the text '... for type 10BASE-Te (optional).' to read ' ... for type 10BASE-Te.'.

Response *Response Status* **C**

ACCEPT.

Cl **14** *SC* **14.1.1.2** *P* **17** *L* **39** # 347

Law, David 3Com

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

I don't think the medium for 10BASE-Te is 'a channel meeting ...', the medium for 10BASE-Te is twisted-pair wire. I believe that it is the performance specifications of the 10BASE-Te simplex link segment that has to meet the Class D channel. (See also similar comment on subclause 14.4.1)

SuggestedRemedy

[1] Suggest that (Page 17, line 32) 'The performance specifications of the simplex link ..' be changed to read 'The performance specifications of the 10BASE-t simplex link ..'.

[2] Suggest that 'The medium for 10BASE-Te is a channel meeting or exceeding the requirements of ..' be changed to read 'The medium for 10BASE-Te is twisted-pair wire. The performance specifications of the 10BASE-Te simplex link segment is a channel meeting or exceeding the requirements of ..'.

Response *Response Status* **C**

ACCEPT.

Cl **14** *SC* **14.1.1.2** *P* **17** *L* **40** # 199

Grow, Robert Intel

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

The standard footnote that the 1995 Class D requirement is met by 2001 Class D should be included.

SuggestedRemedy

Add footnote.

Response *Response Status* **C**

ACCEPT.

Cl **14** *SC* **14.10** *P* **24** *L* **7** # 443

Thaler, Pat Broadcom

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

Should also add a line item to 14.10.3 to indicate support for 10BASE-Te.

SuggestedRemedy

Add the PICS item.

Response *Response Status* **C**

ACCEPT.

Cl **14** *SC* **14.10.4.5.12** *P* **14** *L* **24** # 258

Hajduczenia, Marek ZTE Corporation

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

"14.10.4.5.12" is repeated in line 8 and 24

SuggestedRemedy

Second occurence of "14.10.4.5.12" should read "14.10.4.7.1"

Response *Response Status* **C**

ACCEPT.

Cl **14** *SC* **14.10.4.5.12** *P* **24** *L* **28** # 257

Hajduczenia, Marek ZTE Corporation

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

Changes to PICS in 14.10.4.5.12 (LS4 / LS5) are not marked accordingly.
Also changes in header 14.10 in line 3 on page 24 are not marked accordingly.

SuggestedRemedy

Introduce the marking as in e.g. 14.10.4.5.12 (TS1 / TS2) and in header 14.10 in line 3 on page 24

Response *Response Status* **C**

ACCEPT.

Cl **14** *SC* **14.3.1.2** *P* **18** *L* **22** # 349

Law, David 3Com

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

This subclause states that 'For all measurements, the TD circuit shall be connected through a balun to section 1 and the signal measured across a load connected to section 4 of the model.' and I don't see any changes to exclude this statement from applying to 10BASE-Te however Figure 14-7a doesn't contain any such annotations.

SuggestedRemedy

The simplest fix would seem to be to label the left hand section of Figure 14-7a as 'Section 1' and the right hand section of Figure 14-7a as 'Section 4'.

Response *Response Status* **C**

ACCEPT.

Cl **14** *SC* **14.3.1.2** *P* **19** *L* **2** # 3

Anslow, Pete Nortel Networks

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

This says "Insert Figure 14-7a showing ... and renumber subsequent figures appropriately" The point of using Figure 14-7a is that there is no need to re-number subsequent figures.

SuggestedRemedy

Delete "and renumber subsequent figures appropriately"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to Comment #196

Cl **14** *SC* **14.3.1.2.1** *P* **19** *L* **40** # 255

Hajduczenia, Marek ZTE Corporation

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

Inconstent use of units. Units in 802.3 are always separated from the numeric value i.e. "between 1.54V and 1.96V for all data" should read "between 1.54-SPACE-V and 1.96-SPACE-V for all data"

SuggestedRemedy

Scrub the draft accordingly.

Response *Response Status* **C**

ACCEPT.

Cl **14** *SC* **14.4.1** *P* **22** *L* **43** # 457

Thompson, Geoff GraCaSI

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

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

SuggestedRemedy

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

Response *Response Status* **W**

REJECT.

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

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

There changes to 14 based on resolution of comment #356

Cl **14** *SC* **14.4.1** *P* **22** *L* **48** # 458

Thompson, Geoff GraCaSI

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

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

SuggestedRemedy

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

Response *Response Status* **W**

REJECT.

The text in consistent with the rest of the overview clause.

Cl **14** *SC* **14.4.1** *P* **22** *L* **48** # 351

Law, David 3Com

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

This is not the format used everywhere else for referencing the international (ISO/IEC) and then national (TIA) cabling standards (see page 17, line 13 for an example).

SuggestedRemedy

Change '.. meeting or exceeding the requirements of the Class D channel specified by ISO/IEC 11801:1995 or the Category 5 channel as specified in ANSI/TIA/EIA-568-A-1995.' to read '.. meeting or exceeding the requirements of the Class D channel specified by ISO/IEC 11801:1995. This requirement can also be met by Category 5 cable and components as specified in ANSI/TIA/EIA-568-A-1995.

Response *Response Status* **C**

ACCEPT.

Cl **14** *SC* **14.4.1** *P* **22** *L* **48** # 350

Law, David 3Com

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

I don't think the medium for 10BASE-Te is 'a channel meeting ...', the medium for 10BASE-Te is twisted-pair wire. I believe that it is the performance specifications of the 10BASE-Te simplex link segment that has to meet the Class D channel. (See also similar comment on subclause 14.1.1.2)

SuggestedRemedy

[2] Suggest that 'The medium for 10BASE-Te is a channel meeting or exceeding the requirements of ..' be changed to read 'The medium for 10BASE-Te is twisted-pair wire. The performance specifications of the 10BASE-Te simplex link segment is a channel meeting or exceeding the requirements of ..'.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

[2] Suggest that 'The medium for 10BASE-Te is a channel meeting or exceeding the requirements of ..' be changed to read 'The medium for 10BASE-Te is twisted-pair wire. The requirements of the 10BASE-Te simplex link segment are equivalent to the requirements of ..'.

Cl **14** *SC* **14.5.2** *P* *L* # 460

Thompson, Geoff GraCaSI

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

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

SuggestedRemedy

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

Response *Response Status* **W**

REJECT.

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

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

Cl **14** *SC* **14.8** *P* **23** *L* **50** # 256

Hajduczenia, Marek ZTE Corporation

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

MAU for 10BASE-T in 802.3-2008 does not have any speed designation i.e. point e) does not exist at all. Per draft, MAU should now include designation whether it is 10BASE-T or 10BASE-Te compliant. What about the previously existing MAUs, which do not have such indication - they should be treated as 10BASE-T compliant only?
Suggestion: recommend only indication whether MAU is 10BASE-Te compliant. Lack of any indication will indicate automatically that the given MAU is 10BASE-T compliant. Make an additional note to point e) as provided below.

SuggestedRemedy

change e) to read: "10BASE-Te support (optional). MAU supporting 10BASE-T does not have any labelling for backward compatibility reasons."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #459

Cl **14** *SC* **14.8** *P* **23** *L* **51** # 459

Thompson, Geoff GraCaSI

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

The text: "e) 10BASE-T or 10BASE-Te support"
is likely to produce a label that ends up saying "Supports 10BASE-T or 10BASE-Te" which is not the intent

SuggestedRemedy

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

Response *Response Status* **W**

ACCEPT.

Also see comment #256.

Cl **14** *SC* **14.8** *P* **23** *L* **51** # 339

Law, David 3Com

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

Suggest that '10BASE-T or 10BASE-Te support.' should be changed to read 'Whether 10BASE-T MAU or 10BASE-Te MAU.'.

SuggestedRemedy

See comment.

Response *Response Status* **C**

REJECT.

See resolution of comments # 256 and 459

Cl **22** *SC* *P* *L* # 215

Grow, Robert Intel

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

In general, the clause is edited only for 100 Mb/s operation, yet the MII is defined for both 10 and 100 Mbps operation. Text specific to 100 Mb/s operation has to be identified as that.

SuggestedRemedy

P. 27, L. 25 - change to indicate for 100 Mb/s operation. Fix any others I may not have found.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

P.25, l.12 add (before "The definition of") "LPI signaling on the MII is specified only for 100Mb/s operation."

p.30, l.41 add (at the end of the paragraph) "LPI signaling on the MII is specified only for 100Mb/s operation."

Cl **22** *SC* **2.1.3.2** *P* **26** *L* **12** # 470

Kim, Yong Broadcom

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

PLS_CARRIER.indication on existing PHY is juast based on CRS prior. but "and also from the tramit LPI state machine" text forces implementor of non-802.3az PLS to implement clasue 22.7, where it does not say that 22.7 ought to be implemented for .3az option only.

SuggestedRemedy

Adopt Nomative Annex (or equivlent), or

- clearly state in 22.2.1.3.2 that IF optional LPI implemetned then PLS_CARRIER.indication can be derived from the transmit LPI state machine (also insert the reference Xref/22.7a.2 to be reader-friendly).
- also add optional nature of 22.7a in 22.7a.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

To be consistent with other clauses, text needs to be added to highlight the optional nature of LPI. (see also comment #407)

Change "and also from the transmit LPI state machine" to "and the LPI assert function if the optional LPI signaling is supported (see 22.7a.2)"

Add at the beginning of 22.7a
"Certain PHYs support Energy Efficient
Ethernet (see Clause 78). PHYs that support Energy Efficient Ethernet support Low Power Idle assertion and detection."

Modify wording in above response as per Motion #3 before implementing response

Cl **22** *SC* **22.2.1** *P* **25** *L* **10** # 407

Thaler, Pat Broadcom

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

When is LPI signaling in operation? Is it only when in low power idle or is this intended to apply when LPI operation has been enabled. Given the nature of the chnage to the figure in 22.7a, it looks like the latter is intended and "LPI signaling is in operation" is a misleading way to describe that.

SuggestedRemedy

It would be better to give the ability to operate with low power a name like EEE mode and talk about that mode being enabled or disabled. Leave "LPI signaling" to mean only the signals that are used when actually in the LPI state.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Reword the sentence to make it clearer:

"The mapping changes slightly when low power idle (LPI) signaling is in operation..."

becomes

"The mapping is changed if the optional low power idle (LPI) signaling is supported..."

Modify wording in above response as per Motion #3 before implementing response

Cl **22** *SC* **22.2.1** *P* **25** *L* **10** # 260

Hajduczenia, Marek ZTE Corporation

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

"The definition of low power idle .. " - low power idle is already defined one line above to be equal to LPI, which should be used in this clause thereinafter. Additionally, LPI is in the list of new acronyms. One more reason to use it.
Same on page 22, line 13.

SuggestedRemedy

Change occurences of "low power idle" to "LPI" on (page/line): 22/10, 22/13, 27/25, 27/40 (two occurences) etc. There are total of 357 occurenes of the term "low power idle" in teh draft, most of which can potentially be replaced with the acronym LPI. Scrub the draft accordingly.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Change "low power idle" to LPI in the following locations:

p.25, l.10; p.27, l.43; p.29, l.14; p.30, l.4; p.30, l.38; p.31, l.29; p.31, l.34; p.31, l.42

Change "low power idle mode" to "its low power state" on p.25, l.13

Change "low power idle state" to "low power state" on p.27, l.44; p.28, l.24; p.28, l.29; p.29, l.53; p.30, l.1; p.30, l.5 - also 2 occurrences in fig 22-6a.

Cl **22** *SC* **22.2.1** *P* **25** *L* **9** # 259

Hajduczenia, Marek ZTE Corporation

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

"The mapping changes slightly" - how much is "slightly" ? Avoid such void quantitative adjectives in the standard text since it is meaningless. There are changes, full stop.

SuggestedRemedy

Strike word "slightly" in line 9 on page 25.

Response *Response Status* **C**

ACCEPT.

The word "slightly" is deleted as part of the rewording in comment #407.

Cl **22** *SC* **22.2.1.3.2** *P* **26** *L* **12** # 200

Grow, Robert Intel

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

We don't have state machines in the standard, we have state diagrams, and I believe the LPI operation is split into the LPI assert and detect functions (at least in Clause 78). The text is also not properly marked ('can be' is not underscore). There is no reason to weaken the statement from an "are" to a "can be".

SuggestedRemedy

The values CARRIER_ON and CARRIER_OFF are derived from the MII signal CRS and if implemented the LPI assert function (78.1.3).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The values CARRIER_ON and CARRIER_OFF are derived from the MII signal CRS and the LPI assert function if the optional LPI signaling is supported (see 22.7a.2).

Modify wording in above response as per Motion #3 before implementing response

Cl **22** *SC* **22.2.1.3.2** *P* **26** *L* **12** # 445

Thaler, Pat Broadcom

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

"or" would be better than "and also" because only one of these is used to drive CARRIER_STATUS depending on whether EEE is in use.

SuggestedRemedy

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Comment #470 rewords the sentence.

Cl **22** *SC* **22.2.1.3.2** *P* **26** *L* **12** # 168

Frazier, Howard Broadcom Corporation

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

The text as altered reads "The values CARRIER_ON and CARRIER_OFF can be derived from the MII signal CRS and also from the transmit LPI state machine", which is a far different statement from the original, which said "The values CARRIER_ON and CARRIER_OFF are derived from the MII signal CRS."

The "can be ... and also" construction is so ambiguous as to have no meaning.

SuggestedRemedy

Move the transmit LPI state machine into the 100BASE-X PCS with LPI annex, and then implement the Suggested Remedy in my general comment concerning the structure of the draft amendment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The response to comment #200 removes the ambiguity and makes the optional nature of LPI clear.

The response to comment #165 addresses the use of the state diagram in the RS.

This comment would be unaffected by changes to the structure of document as described.

Cl **22** *SC* **22.2.1.3.3** *P* **26** *L* **17** # 446

Thaler, Pat Broadcom

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

If PLS_CARRIER.indication is driven differently for LPI operation, then this paragraph needs to be qualified to only apply when not in LPI operation.

Also, LPI operation is used several places but never defined - for example, is a device "in LPI operation" only when LPI is being sent or is it when LPI has been enabled even though it may not be being sent at the moment?

SuggestedRemedy

Define "LPI operation" and when a behavior only applies when not in LPI operation, add that limitation.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Reword the opening part of the paragraph:

"For LPI operation, in full duplex mode RX_DV and CRS have no influence on CARRIER_STATUS."

Becomes:

"For EEE capability, CARRIER_STATUS is overriden according to the behavior of the LPI transmit state diagram (see fig 22-21). The signal CRS has no effect on CARRIER_STATUS while in states LPI_ASSERTED and LPI_WAIT."

Cl **22** *SC* **22.2.2** *P* **26** *L* **46** # 408

Thaler, Pat Broadcom

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

What does the editor's instruction mean? How is 22.2.2 to be changed to show LPI signaling? This applies to the other places where this instruction is given with no change to the subclause shown. And where there is a change shown, the editing instruction doesn't need to say "for LPI signaling"

SuggestedRemedy

Make the instructions clear.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Instruction removed in response to comment #4

Look for change instructions and remove any reference in the instructions that not is not useful to the IEEE editorial staff. Do include, in parenthesis, the base text revision, specifically if the editing instruction is on an amendment.

Cl **22** *SC* **22.2.2** *P* **26** *L* **46** # 4

Anslow, Pete Nortel Networks

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

This says:
Change 22.2.2 to show LPI signaling:
22.2.2 MII signal functional specifications
Change 22.2.2.2 for clock definitions:

There is no change to 22.2.2 shown before the change to 22.2.2.2

SuggestedRemedy

either show a change to 22.2.2 or remove the first of the two change instructions

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Remove the first change instruction and the heading for 22.2.2

Cl **22** *SC* **22.2.2.2** *P* **27** *L* **25** # 163

Frazier, Howard Broadcom Corporation

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

The MII is supposed to be media independent, so why are there references to 100BASE-X receive state machine states associated with normative requirements in Clause 22? The PCS specific material should be deleted from this subclause, and the allowance for a stretched clock period should be re-written in more generic terms.

SuggestedRemedy

Re-write the sentence that was added to the end of 22.2.2.2 in generic terms, and then implement the Suggested Remedy in my general comment concerning the structure of the draft amendment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The text does not need to reference PCS specific material. However, restructuring the draft amendment has no effect on the issue.

Delete the added text from "For low power operation." to "nominal clock period."

Change "Following the deassertion of RX_DV at the end of a frame," to "Following the deassertion of RX_DV at the end of a frame or while the PHY is asserting LPI,"

Note also that this issue is orthogonal to the document restructure suggested by the commenter.

Cl **22** *SC* **22.2.2.4** *P* **27** *L* **40** # 409

Thaler, Pat Broadcom

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

The addition of TX_ER here changes the requirements for non-EEE 100BASE-TX PHYs. In the existing 802.3 standard, when TX_ER is asserted while TX_EN, the PHY is required to insert an error somewhere in the frame but that is not required to happen at the time TX_ER is asserted. Therefore, in the current IEEE 802.3 standard TXD<3:0> may effect the PHY during the time that TX_ER is asserted.

The added new behaviors in the next paragraph and in Table 22-1 are written such that they apply to all 100BASE-T PHYs and would make existing 100BASE-T PHYs non-compliant.

802.3az should not make changes that make a compliant 100BASE-T PHY non-compliant. Any changed requirement should only apply to PHYs supporting an EEE option when EEE is enabled.

SuggestedRemedy

Rewrite the changes to this subclause so that they only apply to devices when EEE operation is enabled. That may require insertion of a separate table for EEE PHYs or a column to indicate that a row in the table only applies to EEE operation and is treated as reserved by non-EEE PHYs.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

802.3az does not make changes that make a compliant 100BASE-T PHY non-compliant. The changed requirement only applies to PHYs supporting an EEE option when EEE is enabled. The optional nature is highlighted by the response to comment #195.

Details:

The text states that "while TX_EN and TX_ER are both deasserted, TXD<3:0> shall have no effect on the PHY."

The commenter then highlights conditions where one or other of TX_EN and TX_ER are asserted. Therefore the text is entirely compatible with the behavior required. It should be noted that the current standard requires that TXD<3:0> has no effect on the PHY whenever TX_EN is deasserted. The change makes a single exception for the condition where TX_EN is deasserted, TX_ER is asserted and TXD<3:0> = 0001.

Cl **22** *SC* **22.2.2.4** *P* **27** *L* **42** # 195

Grow, Robert Intel

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

Awkard and possibly misleading text.

SuggestedRemedy

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

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

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

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

Cl **22** *SC* **22.2.2.4** *P* **27** *L* **45** # 164

Frazier, Howard Broadcom Corporation

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

"Other values of TXD<3:0> shall have no effect upon the PHY"? How does the MAC convey transmit data to the PHY?

SuggestedRemedy

Change the sentence to read "Other values of TXD<3:0> while TX_EN is deasserted and TX_ER is asserted shall have no effect upon the PHY" and then implement the Suggested Remedy in my general comment concerning the structure of the draft amendment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The response to comment #195 removes the issue.

Cl **22** *SC* **22.2.2.6a** *P* **28** *L* **19** # 261

Hajduczenia, Marek ZTE Corporation

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

Strange language "the LPI client asserts that it wishes the PHY to transition to the low power idle state"

SuggestedRemedy

Change "the LPI client asserts that it wishes the PHY to transition to the low power idle state" to read "the LPI client requests the PHY to transition to the LPI state". a PHY cannot deny such a request if it is EEE compatible, right? Similarly in line 24.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Make the suggested change for lines 19 and 24.

Cl **22** *SC* **22.2.2.6a** *P* **28** *L* **20** # 262

Hajduczenia, Marek ZTE Corporation

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

Inconsistent spelling "deassert" or "de-assert"

SuggestedRemedy

The existing standard seems to be also insonsistent in the use of this word, though at least try to keep consistency within the given clause i.e. clause 22 usese" de-assert" rather than "deassert"

Response *Response Status* **C**

ACCEPT.

Change instances of deassert to de-assert in Clause 22.

Cl **22** *SC* **22.2.2.6a** *P* **28** *L* **46** # 167

Frazier, Howard Broadcom Corporation

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

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

SuggestedRemedy

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

Response *Response Status* **U**

REJECT.

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

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

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

Cl **22** *SC* **22.2.2.7** *P* **29** *L* **10** # 169

Frazier, Howard Broadcom Corporation

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

The sentence "See 22.2.4.4.2 for a description of the conditions under which a PHY will provide a False Carrier indication" is obviously wrong, since 22.2.4.4.2 describes the 1000BASE-X half duplex ability extended status register bit. It looks like this bug was inserted some time ago since it also appears in 802.3-2005.

SuggestedRemedy

Change the cross reference to be 24.2.4.4.2.

Response *Response Status* **C**

ACCEPT.

Cl **22** *SC* **22.2.2.7** *P* **29** *L* **36** # 352

Law, David 3Com

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

To allow Clause 78 to refer globally to the same encoding on the MII, GMII and XGMII, as well as just being a good idea, I believe that the encoding on the receive path of the MII, GMII and XGMII when the PHY is receiving the Low Power Idle on its RX MDI should have the same description. At the moment we have:

MII Receive low power idle
GMII Assert low power idle
XGMII assert low power idle
79.1.3.2 assert low power idle

I suggest that for consistency we use 'assert low power idle'.

SuggestedRemedy

Change 'Receive low power idle' in Table 22-2 to read 'Assert low power idle'.

Also make this change:

Page 29, line 46
Page 40, line 17
Page 68, line 40
Page 105, line 15
Page 105, line 20
Page 115, line 1
Page 115, line 12
Page 124, line 1

Response *Response Status* **C**

ACCEPT.

Note that this effects clauses 22, 24, 35, 40, 45, 46

Cl **22** *SC* **22.2.2.9a** *P* **29** *L* **51** # 263

Hajduczenia, Marek ZTE Corporation

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

Text is confusing "When the PHY receives signals from the link partner to indicate transition into the low power state it indicates this to the LPI client by asserting RX_ER and setting RXD<3:0> to 0001 while keeping RX_DV deasserted." Consider adding commas or dividing the sentence intwo two logical blocks.

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add a comma as shown:

"When the PHY receives signals from the link partner to indicate transition into the low power state, it indicates this to the LPI client by asserting RX_ER and setting RXD<3:0> to 0001 while keeping RX_DV deasserted."

Cl **22** *SC* **22.2.2.9a** *P* **30** *L* **4** # 412

Thaler, Pat Broadcom

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

This indicates that RX_CLK may be stopped which is not consistant with 22.2.2.2 which says that RX_CLK is continuous and only says that it may be high or low for a period not to exceed twice the nominal clock period.

SuggestedRemedy

Make the subclauses consistant. If RX_CLK is stoppable, that needs to be indicated in 22.2.2.2.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add to the end of the paragraph finishing on p.27, l.29.

"For EEE capability, RX_CLK may be stopped by the PHY during LPI when Clock stop enable is asserted (see 22.2.2.9a and 45.2.3.1.3a)"

Cl **22** *SC* **22.2.2.9a** *P* **30** *L* **4** # 225

Hajduczenia, Marek ZTE Corporation

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

"While the PHY device is indicating low power idle it may halt the RX_CLK at any time more than 9 clock" ism issing a comma (?).

SuggestedRemedy

Change to "While the PHY device is indicating LPI, it may halt the RX_CLK at any time more than 9 clock"

Response *Response Status* **C**

ACCEPT.

Cl **22** *SC* **22.2.2.9a** *P* **30** *L* **5** # 264

Hajduczenia, Marek ZTE Corporation

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

What are these square brackets about? The provided values are neither part of any table nor references

SuggestedRemedy

Fix the use of the square brackets and replace them with parentheses (?).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete square brackets on line 5. Replace "[45.2.3.1.3a]" with "(see 45.2.3.1.3a)"

Cl **22** *SC* **22.2.2.9a** *P* **30** *L* **6** # 21

Barrass, Hugh Cisco

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

Clock Stoppable

Refer also to comment #6, rev 1.5

The clock stoppable bit as currently defined is not useful. It is better to split the control into two directions - PHY-MAC & MAC-PHY.

The MAC needs to assert a bit to allow the PHY to stop the clock in the PHY-MAC direction; The PHY needs to assert a bit to allow the MAC to stop the clock in the MAC-PHY direction

SuggestedRemedy

Change "RX_CLK_stoppable bit" to "Clock stop enable bit"

Also, make the reference an active link.

Response *Response Status* **C**

ACCEPT.

Cl **22** *SC* **22.2.7** *P* **29** *L* **13** # 411

Thaler, Pat Broadcom

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

By adding this as a requirement on any "PHY that supports low power idle operation" you have made these PHYs incompatible with existing Reconcilliation sublayers. Such Reconcilliation sublayers do not understand the value 0001 on RXD<3:0>.

A compliant phy supporting low power idle operation should be able to interoperate with Reconcilliation sublayers and PHYs that do not support it.

SuggestedRemedy

This requirement and any other new requirements or behaviors should only apply when low power idle operation is enabled and low power idle operation should only be enabled when attached to other devices that also support low power idle operation.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The "shall" is not appropriate as it indicates a PHY requirement. Therefore reword as follows:

"For EEE capability, the PHY indicates that it is receiving low power idle by asserting the RX_ER signal and driving the value 0001 onto RXD<3:0> while RX_DV is de-asserted."

Cl **22** *SC* **22.7.3.4a** *P* **33** *L* **37** # 229

Hajduczenia, Marek ZTE Corporation

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

Item L7 contains 'shall' - what for?

SuggestedRemedy

Change "RS shall continue to indicate" to "RS continues to indicate". Shall is not needed in the PICS already. Item feature is a description of the function only.

Response *Response Status* **C**

ACCEPT.

Cl **22** *SC* **22.7a** *P* **30** *L* **38** # 226

Hajduczenia, Marek ZTE Corporation

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

"Low Power Idle" or "low power idle" - pick one and be consistent with it. Also consider one of the previous comments which suggest the use of LPI which was already defined in this draft.

SuggestedRemedy

Per comment

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Comment #260 resolves this.

It will be a proper noun every place where it is not shortened to LPI.

Partial

Cl **22** *SC* **22.7a.1** *P* **31** *L* **30** # 227

Hajduczenia, Marek ZTE Corporation

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

"The link partner is operating with normal idle behavior" - what is a 'normal idle' in this case? It is not defined anywhere and seems like a strange construct. Can it be replaced with something like "The link partner is in normal operating mode"
There are other occurences of this text string below.

SuggestedRemedy

Per comment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "normal idle" to "normal inter-frame" to match the contents of Tables 22-1 & 22-2.

Cl **22** *SC* **22.7a.1** *P* **31** *L* **37** # 228

Hajduczenia, Marek ZTE Corporation

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

"The system wishes to operate with normal idle behavior (default)." - what is 'the system' ? This concept is not known / defined in 802.3

SuggestedRemedy

Either define what this 'system' is or rewrite the sentence to identify what the agent responsible for the decision to enter the LPI mode is. Is this an LPI client? How is this client located relative to MAC?

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the semantics definition to match 78.1.2.1.2 as modified for Draft 2.1 based on response to comment #211 which requests cleanup of anthropomorphisms.

"system" is the LPI client - clarify and replace system with LPI client where appropriate.

Cl **22** *SC* **22.7a.2.1** *P* **31** *L* **51** # 170

Frazier, Howard Broadcom Corporation

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

The sentence "The notation ++ after a counter indicates it is to be incremented" appears to be superfluous.

SuggestedRemedy

Delete the sentence, and then implement the Suggested Remedy in my general comment concerning the structure of the draft amendment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The sentence is superfluous and should be deleted.

Cl **22** *SC* **22.7a.2.2** *P* **32** *L* **6** # 166

Frazier, Howard Broadcom Corporation

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

The statement "Condition that is true until such time as the power supply for the device that contains the RS has reached the operating region" sounds
pretty vague. What about the L.O.? What about power-on transients?
This is an example of why it is a bad idea to have state machines in the
RS/MII clause.

SuggestedRemedy

Move this state machine into the 100BASE-X with LPI PCS annex, and then implement the Suggested Remedy in my general comment concerning the structure of the draft amendment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add the variable "power_on"
"Condition that is true until such time as the power supply for the device that contains the RS has reached the operating region."
Values: FALSE; The device is completely powered (default).
TRUE; The device has not been completely powered.

Change name of "reset" to "rs_reset" with definition:
"Used by management to control the resetting of the RS"
Values: FALSE; Do not reset the PCS.
TRUE; Reset the PCS.

Change the condition "reset" to "rs_reset + power_on"

See also #165 regarding the use of a state machine in the RS.

Note that this comment has equal validity whether the document structure is preserved or changed.

Cl **22** *SC* **22.7a.2.3** *P* **32** *L* **15** # 165

Frazier, Howard Broadcom Corporation

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

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

SuggestedRemedy

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

Response *Response Status* **U**

REJECT.

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

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

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

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

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

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

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

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

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

Cl **22** *SC* **22.7a.2.3** *P* **32** *L* **20** # 17

Barrass, Hugh Cisco

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

Arrow heads & tails are not correctly aligned

SuggestedRemedy

Clean up the arrows in Fig 22-21.

Response *Response Status* **C**

ACCEPT.

Cl **22** *SC* **22.9a** *P* **30** *L* **0** # 370

Ofelt, David Juniper Networks

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

There is no discussion on when the RX_CLK can restart after the deassertion of LPI, and if there is any delay after the deassertion of LPI and the arrival of new receive data.

SuggestedRemedy

Add some verbage about the details of what can happen with the RX_CLK, RXDV, and RXD when the LPI state is deasserted.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add a sentence after "if and only if the RX_CLK_stoppable bit is asserted." on p.30, line 6.

"The PHY may restart RX_CLK at any time while it is asserting LPI, but shall restart RX_CLK so that at least one positive transition occurs before it deasserts LPI." Update PICS accordingly.

The arrival of new receive data is controlled by Tw and is described in Clause 78.

Cl **22** *SC* **7a.2.2** *P* **32** *L* **0** # 367

Ofelt, David Juniper Networks

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

The cross reference for Tw_sys is wrong and it would match the text in clause 78 better if "Transmit Tw_sys" was given as "Tw_sys_tx".

SuggestedRemedy

Replace the crossreference to "78.4.2.3" with "78.2".
Replace "Transmit Tw_sys" with "Tw_sys_tx".

Response *Response Status* **W**

ACCEPT.

Cl **22** *SC* **7a.3** *P* **32** *L* **0** # 368

Ofelt, David Juniper Networks

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

There is a refernece to "Resolved Transmit Tw". I think this is one of the variables in the clause 78 state diagrams. If so, it doesn't exactly match one of the current variables and there is no cross reference.

SuggestedRemedy

Add a cross reference to 78.4.2.3 where the variables are defined and change the "Resolved Transmit Tw" to match one of the variables in that section.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Use the variable name & xref from comment #367.

Cl **22** *SC* **7a.3.1** *P* **32** *L* **0** # 369

Ofelt, David Juniper Networks

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

Cross reference is wrong and "Transmit Tw_sys" should be "Tw_sys_tx"

SuggestedRemedy

Change the cross reference from "78.4.2.3" to "78.2" and change "Transmit Tw_sys" to "Tw_sys_tx" to match the parameter names in that section.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

The variable used in this section should be Tw_sys_rx, with xref 78.5.

Cl **22** *SC* **Figure 22-6a** *P* **28** *L* **45** # 207

Grow, Robert Intel

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

I'm uncomfortable with mixing two sides of the RS in the figure

SuggestedRemedy

Remove the PLS_CARRIER.indication line for consistency with other figures.

Response *Response Status* **C**

REJECT.

The "mixing two sides of the RS" is fundamental to the behavior because the PLS_CARRIER.indication is being derived from the state of the transmit control/data signals.

Cl **24** *SC* **1.1** *P* **34** *L* **13** # 471

Kim, Yong Broadcom

Comment Type **ER** *Comment Status* **A** *232*

"The only 100BASE-X PHY that supports this capability is 100BASE-TX." should have "optionally" word inserted.

SuggestedRemedy

Adopt Nomative Annex (or equivlent), or

change to "The only 100BASE-X PHY that optionally supports this capability is 100BASE-TX."

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Please see response to comment #232 and #230.

Cl **24** *SC* **2.3.2** *P* **41** *L* **2** # 473

Kim, Yong Broadcom

Comment Type **TR** *Comment Status* **A** *473*

signal_status is only used for LPI portion of the statemachine, but the description does not indicate as such (missing, and not reader-friendly at best). This signal was used in normal operation to drive link monitor statemachine (24.3.4.4). It is not clear whether .3az PHY were to implement 24.3.4.4 link monitor statemachine and turn it off (or not!) if option is not used. Also not clear what normal PHY were to implement after all the changes are integrated.

SuggestedRemedy

Adopt Nomative Annex (or equivlent), or

Clarify the relationship between this state variable use in the RX statemachine and link monitor statemachine.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

The signal_status is generated by PMD and is used by optional LPI mode of Receive state machine as well as by Link Monitor state machine and Far-End Fault state machine. It has been shown in Functional block diagram of Figure 24-4.

In order to clarify the role of signal_status in RX, a statement will be added at the end of the paragraph in line 43 of page 39 as follows:

" A continuous indication of signal detection on the channel through signal_status as communicated by the PMD_SIGNAL.indicate primitive is used to control the transitions among different states in idle mode as depicted in Figure 24-11b. "

Cl **24** *SC* **2.4.2** *P* **42** *L* **11** # 472

Kim, Yong Broadcom

Comment Type **T** *Comment Status* **R** *472*

In idle state, for a PHY, if TXD[3:0]=TX_LP_IDLE, the transition to the optional implementation must be taken. Or TX_ER=TRUE path to START ERROR J state transition must be taken, if option is not implemented. It is not [technically] clear, since TX_ER defined in 22.2.1.6 and 22.2.2.5(originally intended to "repeat" data errors) could take on any value (and the text says, not required to implement in RS, shall implement in PHY, and may implement in MAC) including TX_LP_IDLE, coincidentally.

SuggestedRemedy

Adopt Nomative Annex (or equivlent), or

Adding text to 22.2.1.6 to address this concern -- but I see catch 22 -- perhaps the TG could address this better. If we add text to avoid TX_LP_IDLE, then we are changing the legacy PHY.

Response *Response Status* **C**

REJECT.

No change required.

Based on Fig 24-8, if the idle mode option is not implemented, the IDLE state will stay unchanged when it receives TXD[3:0]=TX_LP_IDLE*TX_EN=FALSE*TX_ER=TRUE. Therefore, it will not move to "START ERR J" state at all.

Cl **24** *SC* **24.1.1** *P* **34** *L* **10** # 462

Thompson, Geoff GraCaSI

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

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

SuggestedRemedy

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

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Please refer to comment #230 for the suggested modification

Cl **24** *SC* **24.1.1** *P* **34** *L* **11** # 231

Hajduczenia, Marek ZTE Corporation

Comment Type **T** *Comment Status* **A** *230*

"Energy is conserved by deactivating some or all functional blocks." - blocks in what exactly? In Tx PHY and Rx PHY in the peer? If so, state that clearly.

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #230.

Cl **24** *SC* **24.1.1** *P* **34** *L* **13** # 232

Hajduczenia, Marek ZTE Corporation

Comment Type **T** *Comment Status* **A** *230*

Strange language in "The only 100BASE-X PHY that supports this capability is 100BASE-TX" - it seems easier to say "From all 100BASE-X PHYs, only 100BASE-TX supports this capability".

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to Comment #230

Cl **24** *SC* **24.1.1** *P* **34** *L* **8** # 230

Hajduczenia, Marek ZTE Corporation

Comment Type **T** *Comment Status* **A** *230*

"When a transmitting station of a link with this capability does not need the full bandwidth, the LPI agent can put the local PHY transmitter and the link partner's receiver into low power idle mode to conserve energy". The idea that I got from EEE proceedings is that EEE is about energy conervation and not about 'needing / not needing full bandwidth'. This sentense confuses cause and effect.

SuggestedRemedy

"When a transmitting station of a link with this capability detects conditions, under which the link remains idle for extended period of time, the LPI agent can put the local PHY transmitter and the link partner's receiver into LPI mode to conserve energy". - it is just an attempt to capture the thought. The facts which should be reflected (i) what matters for EEE is that the link is idle for extended period of time, and (ii) LPI agent then puts the Tx PHY and Rx PHY in peer into LPI mo de. The original sentence talks about bandwidth as if the LPI agent was controlling / observing bandwidth useage.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The entire 24.1.1 Scope is rewritten as follows:

"The 100BASE-X may support the capability of Energy Efficient Ethernet as described in Clause 78. When a transmitting station of a link with this capability detects low link utilization, it can request the local PHY transmitter to enter LPI mode and send appropriate symbols over the link. Upon receiving and decoding those symbols, the link partner's receiver can enter LPI mode. The transmit and receive paths can enter and exit low power states independently. Energy is conserved by deactivating the corresponding functional blocks of individual path. Only 100BASE-TX supports this optional capability."

Cl **24** *SC* **24.1.2** *P* **34** *L* **33** # 233

Hajduczenia, Marek ZTE Corporation

Comment Type **T** *Comment Status* **A** *233*

point g) is not entirely clear. What messages are intended to be transmitted to a reader in here?

SuggestedRemedy

Suggest to change point g) to read "Support Energy Efficient Ethernet, with the optional function of low power idle (LPI - see Clause 78), available only for 100BASE-T.". Also, what is intended as optional in this case - support for EEE or LPI? Can EEE be supported without LPI ?

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Rewrite the point g) as follows:
"Optionally support Energy Efficient Ethernet through the function of Low Power Idle (LPI - see Clause 78), available only for 100BASE-TX."

Cl **24** *SC* **24.1.4.1** *P* **34** *L* **53** # 234

Hajduczenia, Marek ZTE Corporation

Comment Type **T** *Comment Status* **A** *234*

What is "MII opcode" ? in the existing standard, I could only find references to "MII nibbles" - is this the same ?

SuggestedRemedy

Clarify what "MII opcode" is ...

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "MII opcode" to
"MII data signals"

Cl **24** *SC* **24.2.2** *P* **35** *L* **27** # 26

Barrass, Hugh Cisco

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

** State diagram conventions **

It is not clear which state diagram conventions are relevant for each section in this amendment. Notes need to be added so that the conventions for each clause are clear.

The conventions may be cleaned up and coordinated in the next revision when all clauses are open.

SuggestedRemedy

Add a note (at the beginning of 24.2.2:

Note: The state diagram conventions described in 24.1.7 apply to all of the state diagrams in this clause.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add Editors notes (at the beginning of 24.2.2 and 24.3.3):

Note: The state diagram conventions described in 24.1.7 apply to all of the state diagrams in this clause.

Cl **24** *SC* **24.2.2** *P* **36** *L* **33** # 235

Hajduczenia, Marek ZTE Corporation

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

One of the arrows should be dashed and it is solid. Check arrow to box "FAR-END FAULT DETECT".
Also, arrow arriving to box "LINK MONITOR" from the bottom (condition link_control) does not seem to have any ending.

SuggestedRemedy

Fix the errors in the figure as described in the comment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

These two questioned lines are from the diagram of original standard.

What is more, the solid line goes to FAR-END FAULT DETECT should be solid since it is part of a line from Transmitter process all the way to TX process which is not an option.

Add arrow head to line going to FAR-END FAULT GENERATE (line 29, page 36) as a service to humanity.

Arrow arriving to box "LINK MONITOR", with label Link_control, comes from autoneg - do as is done in Clause 40.

Cl **24** *SC* **24.2.2.1** *P* **37** *L* **38** # 236

Hajduczenia, Marek ZTE Corporation

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

What is the 'low power state' - is this the same as 'low power idle mode'?

SuggestedRemedy

Clarify and if both terms mean the same, use only one as needed.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Rewrite the bullet e) as follows:

"The /P/ code-group is used to indicate LPI."

Cl **24** *SC* **24.2.2.1.1** *P* **38** *L* **27** # 159

Frazier, Howard Broadcom Corporation

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

The 00000 code group, defined as /P/ for EEE, will still be an invalid code group for a "classic" 100BASE-X PHY. This amendment should not mandate
that devices that have treated 00000 as an invalid code for the last 17
years are suddenly non-compliant.

SuggestedRemedy

Implement the Suggested Remedy in my general comment
concerning the structure of the draft amendment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Modify the intepretation field of 00000 code group as follows:

SLEEP; Low Power Idle code if LPI mode is implemented. Otherwise, Invalid code; refer to Table 22-1 and Table 22-2

Modify wording in above response as per Motion #3 before implementing response

Cl **24** *SC* **24.2.2.5** *P* **39** *L* **11** # 237

Hajduczenia, Marek ZTE Corporation

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

"commands from the Reconciliation Sublayer and MII" - RS is the acronym for Reconciliation Sublayer which is used consistently in the standard. Change to read "commands from the RS and MII"
The same comment for page 39, line 44

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Change 'Reconciliation Sublayer" to "RS" in the following places:

Line 11 of Page 39
Line 44 of Page 39

Cl **24** *SC* **24.2.2.5** *P* **39** *L* **12** # 238

Hajduczenia, Marek ZTE Corporation

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

What is the "low power transmit state" - is this the same as "low power idle transmit state"? If so, do not create new terms but use existing ones.
This term is used later on in the text. Scrub teh draft accordingly.

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The low power transmit state and receive state are adopted in an early meeting motion. It may have been overlooked.

Rewrite the original sentence in line 12 as follows:

"The 100BASE-X PCS accepts LPI commands from the RS and MII (Table 22-1) to put the transmit path in low power idle mode. The PCS returns to the normal mode when it detects the termination of the LPI
command."

Replace "low power transmit state" with " transmit path in low power idle mode" in the following places:
line 48 of page 40
line 46 of page 49
line 48 of page 196
line 41 of page 202
line 38 of page 209

Replace "low power transmit state" with " low power idle mode" in the following places:
line 49 of page 41
line 54 of page 41
line 34 of page 49
line 52 of page 53

Cl **24** *SC* **24.2.2.5** *P* **39** *L* **31** # 239

Hajduczenia, Marek ZTE Corporation

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

"The start of a LPI state is indicated by a series of SLEEP code-groups for fixed amount" should probably read "The start of a LPI state is indicated by a series of SLEEP code-groups !!!transmitted!!! for fixed amount" (remove ! signs).

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

"The start of a LPI state is indicated by a series of SLEEP code-groups transmitted for a fixed amount …"

Cl **24** *SC* **24.2.2.5** *P* **39** *L* **32** # 240

Hajduczenia, Marek ZTE Corporation

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

Editorial issues on page 39
line 32 missing space in "inTable 24-2."
line 33 "to low power idle mode" > "to a low power idle mode"

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Cl **24** *SC* **24.2.2.5** *P* **39** *L* **35** # 241

Hajduczenia, Marek ZTE Corporation

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

"which is consuming less power than the normal state" - from the sentence, it seems that a state is consuming power. Probably equipment / hardware is ... refine the sentence accordingly.
in line 37: "before a Refresh or Wake state must present." should probably read "before a Refresh or Wake state appears". The original sentence reads very strange at the end.

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

For line 35, remove the sentence ",which is consuming less power than the normal state"

For line 37, modify the sentence as follows:
"before a Refresh or Wake state appears"

Cl **24** *SC* **24.2.2.5** *P* **39** *L* **43** # 242

Hajduczenia, Marek ZTE Corporation

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

What is the "low power receive state" - is this the same as "low power idle receive state"? If so, do not create new terms but use existing ones.
This term is used later on in the text. Scrub teh draft accordingly.

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The low power transmit state and receive state are adopted in an early meeting motion. It was used here since then.

Rewrite the original sentence in line 43 as follows:

"Upon successfully receiving SLEEP code-groups, the 100BASE-X PCS puts the receive path in low power idle mode..."

Replace "low power receive state" with " receive path in low power idle mode" in the following places:
line 41 of page 40
line 24 of page 49
line 25 of page 196 (Clause 70.6.10)
line 29 of page 202 (Clause 71.6.12)
line 16 of page 209 (Clause 72.6.11)

Replace "low power receive state" with " low power idle mode" in the following places:
line 25 of page 40
line 32 of page 40
line 37 of page 40
line 14 of page 41
line 20 of page 41
line 29 of page 41
line 35 of page 41
line 41 of page 41
line 15 of page 45
line 21 of page 45
line 41 of page 45
line 09 of page 46
line 15 of page 46
line 16 of page 46
line 35 of page 47
line 12 of page 49
line 29 of page 53

Cl **24** *SC* **24.2.3.1** *P* **40** *L* **5** # 243

Hajduczenia, Marek ZTE Corporation

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

Three new constants are defined and not two ....

SuggestedRemedy

Fix the editorial description. Usually, no number is provided. May change to "Insert new constants in alphabetical order in the list below:"

Response *Response Status* **C**

ACCEPT.

Cl **24** *SC* **24.2.3.2** *P* **40** *L* **21** # 158

Frazier, Howard Broadcom Corporation

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

The editing instruction "Insert new variable in the variables list of 24.2.3.2 in alphabetic order as shown below:" indicates that this set of five new variables for EEE will be inserted at various points into the "classic"
list of fourteen variables. None of these five new variables need to be implemented in a "classic" 100BASE-X PHY, yet how is a designer or a user of a "classic" 100BASE-X PHY supposed to know this?

SuggestedRemedy

Implement the Suggested Remedy in my general comment concerning the structure of the draft amendment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

OBE. See response to comment #410.

Cl **24** *SC* **24.2.3.4** *P* **41** *L* **8** # 157

Frazier, Howard Broadcom Corporation

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

A "classic" 100BASE-X PHY does not need to implement any of these timers, yet how is a designer or a user of a "classic" 100BASE-X PHY supposed to know this? The set of timers has a very broad range of values, from fractions of microseconds to tens of milliseconds, which implies a non-trivial implementation cost. The amendment should make it clear that a "classic" 100BASE-X PHY is in no way required to implement any of these timers.

SuggestedRemedy

Implement the Suggested Remedy in my general comment concerning the structure of the draft amendment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

OBE. See response to comment #410.

Cl **24** *SC* **24.2.4.2** *P* **42** *L* **15** # 152

Frazier, Howard Broadcom Corporation

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

In the transmit state diagram, a bug that I pointed out at the last 802.3 plenary session was addressed by eliminating the transition condition from "IDLE" back to "IDLE" because this transition condition conflicted with the transition from "IDLE" to "TX_SLEEP". The primitive sentCodeGroup.indicate is used to pace the transitions in this diagram so that tx_bits[4:0] gets a value assigned only upon receipt of sentCodeGroup.indicate. Therefore, I would like to see the transition condition from "IDLE" back to "IDLE" restored.

SuggestedRemedy

Add the transition condition

sentCodeGroup.indicate *
TX_EN=FALSE *
(TX_ER=FALSE + (TX_ER=TRUE * TXD[3:0] {is not equal to} TX_LP_IDLE))

from "IDLE" back to "IDLE",

and then implement the Suggested Remedy in my general comment concerning the structure of the draft amendment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add an arc from IDLE back to IDLE. Make the transition condition a variable.

Define the variable:
If LPI is not implemented:
sentCodeGroup.indicate * TX_EN=FALSE

If LPI is implemented
sentCodeGroup.indicate * TX_EN=FALSE *
(TX_ER=FALSE + (TX_ER=TRUE * TXD[3:0] {is not equal to} TX_LP_IDLE))

In transfering this to Framemaker, replace {is not equal to} with the appropriate symbol.

Modify wording in above response as per Motion #3 before implementing response

Cl **24** *SC* **24.2.4.2** *P* **42** *L* **15** # 153

Frazier, Howard Broadcom Corporation

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

The variable tx_quiet is not used by a "classic" 100BASE-X PCS. If a 100 Mbps PHY does not implement EEE (e.g. a 100BASE-FX PHY), then it should not have to set or clear this variable.

SuggestedRemedy

Implement the Suggested Remedy in my general comment concerning the structure of the draft amendment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The tx_quiet variable will be clearly identified as a variable that is required for EEE PHYs and not required for non-EEE PHYs.

Note in dashed section to the right will be modified to read:
This section of the state diagram is mandatory only for EEE

Cl **24** *SC* **24.2.4.4** *P* **43** *L* **17** # 150

Frazier, Howard Broadcom Corporation

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

Why was the transition condition from the state "CARRIER DETECT" to the state "BAD SSD" changed from rx_bits[9:0] {not equal to} /I/J/ to rx_bits[9:0] {not equal to} /I/J ? The trailing slash indicates that /J/ is a code group.

SuggestedRemedy

Change the transition condition back to be rx_bits[9:0] {not equal to} /I/J/

and then implement the Suggested Remedy in my general comment concerning the structure of the draft amendment.

Response *Response Status* **C**

ACCEPT.

Change the transition condition back to be rx_bits[9:0] {not equal to} /I/J/

Don't change the doc structure.

Cl **24** *SC* **24.2.4.4** *P* **43** *L* **20** # 147

Frazier, Howard Broadcom Corporation

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

A 100BASE-X PHY that pre-dates P802.3az will not comply with this receive state diagram, because it will not take the branches from states "IDENTIFY JK" and "BAD SSD" of to part B of the diagram.

This will have the effect of making billions of existing 100BASE-TX PHYs not compliant with IEEE Std 802.3. This is a bad thing.

SuggestedRemedy

See my general comment concerning the structure of the draft amendment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Frame these two branches to part B with dashed line block and make a note saying: "States and state transitions shown within the dashed box are only required for the EEE capability"

Cl **24** *SC* **24.2.4.4** *P* **43** *L* **20** # 149

Frazier, Howard Broadcom Corporation

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

Why was the transition condition from the state "CARRIER DETECT" to the state formerly known as "CONFIRM K" changed from rx_bits[9:0]=/I/J/ to rx_bits_[9:0]=1111111000 ? These should be equivalent.

This sort of change obfuscates the real set of changes that are needed to support EEE, and will cause unecessary confusion.

SuggestedRemedy

Change the transition condition back to

rx_bits[9:0]=/I/J/

and then implement the Suggested Remedy in my general comment concerning the structure of the draft amendment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the transition condition as suggested.

Cl **24** *SC* **24.2.4.4** *P* **43** *L* **25** # 151

Frazier, Howard Broadcom Corporation

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

It appears that a single bit error in a /K/ in the SSD /J/K/ can synthesize the sequence rx_bits[9:0] = /I/P/. In the "classic" 100BASE-X receive state machine, this would be counted as a BAD SSD, a packet would be discarded, and life would go on. In this new 100BASE-X receive state machine, it appears that such a single bit error in a /K/ will send the state machine to START_RX_SLEEP.

SuggestedRemedy

May want to consider a more robust transition condition for going to sleep, and then implement the Suggested Remedy in my general comment concerning the structure of the draft amendment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Introduce a new state WAIT_SLEEP between IDENTIFY JK and branch point “B” which goes to START RX_SLEEP

The receiver moves to WAIT_SLEEP from the state IDENTIFY JK when a bit pattern 1111100000 is received.

It then moves to START RX_SLEEP when receiving two consecutive SLEEP symbols, /P/P/.

Any symbol other than /P/ received following a /P/ symbol will lead to the state of BAD SSD

Cl **24** *SC* **24.2.4.4** *P* **43** *L* **43** # 148

Frazier, Howard Broadcom Corporation

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

This looks like an accidental typo in the receive state diagram, but it demonstrates the kind of inadvertent damage that can be done when significant changes are made to existing specifications.

It appears that there is a mistake in the transition condition from the state "RECEIVE" to the state "DATA". The transition condition in the draft is gotCodeGroup.indicate * rx_bits[9:5] {is not an element of} DATA. I believe that this transition condition should be gotCodeGroup.indicate * rx_bits[9:5] {is an element of} DATA.

SuggestedRemedy

Change the transition condition to be

gotCodeGroup.indicate * rx_bits[9:5] {is an element of} DATA,

and then implement the Suggested Remedy in my general comment concerning the structure of the draft amendment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accept suggested remedy to fix the typo.

Cl **24** *SC* **24.3.1.8** *P* **45** *L* **4** # 244

Hajduczenia, Marek ZTE Corporation

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

in line 4: "PMA. See Clause 24.2.4.4 and Figure 24-11b" should read "PMA - see 24.2.4.4 and Figure 24-11b."
in line 16: "FAIL. See Clause 24.3.4.4 and Figure 24-15" should read "FAIL - see 24.3.4.4 and Figure 24-15."
in line 25: "Clause 24.3.4.4." should read "24.3.4.4.". General rule per editor guidelines for 802.3 is that the word "Clause" is not used - se section 11 in 2009 IEEE Standards Style Manual. Scrub the draft accordingly.
in line 30: "low power state. See Clause 24.2.4.4 and Figure 24-11b" should read "low power state - see 24.2.4.4 and Figure 24-11b."

SuggestedRemedy

Per comment

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Change line 6: "PMA. See Clause 24.2.4.4 and Figure 24-11b" to "PMA (see 24.2.4.4 and Figure 24-11b)."

Change line 16: "FAIL. See Clause 24.3.4.4 and Figure 24-15" to "FAIL (see 24.3.4.4 and Figure 24-15)."

Change line 25: "Clause 24.3.4.4." to "24.3.4.4.".

Change line 30: "low power state. See Clause 24.2.4.4 and Figure 24-11b" to "low power state (see 24.2.4.4 and Figure 24-11b)."

Cl **24** *SC* **24.3.1.9.3** *P* **45** *L* **53** # 245

Hajduczenia, Marek ZTE Corporation

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

Language in "Far-End fault is not generated during the low power idle mode." > "Far-End fault is not generated when in the low power idle mode."

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Cl **24** *SC* **24.3.3.2** *P* **46** *L* **7** # 246

Hajduczenia, Marek ZTE Corporation

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

"When low power idle mode is executed, this" should probably read "In the low power idle mode, this"

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Cl **24** *SC* **24.3.4.4** *P* **47** *L* **3** # 154

Frazier, Howard Broadcom Corporation

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

The link monitor in a "classic" 100BASE-X PHY should not have to test the variable rx_lpi or lpi_link_fail.

SuggestedRemedy

Implement the Suggested Remedy in my general comment concerning the structure of the draft amendment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Rx_lpi and lpi_link_fail are only required for the EEE capability.

Cl **24** *SC* **24.3.4.5** *P* **48** *L* **22** # 155

Frazier, Howard Broadcom Corporation

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

The far-end fault generator in a "classic" 100BASE-X PHY should not have to test the variable rx_lpi.

SuggestedRemedy

Implement the Suggested Remedy in my general comment concerning the structure of the draft amendment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #154

Cl **24** *SC* **24.4.1** *P* **49** *L* **3** # 156

Frazier, Howard Broadcom Corporation

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

These new service primitives are only relevant for a 100BASE-TX PHY which implements EEE. There is no need to include them in the list of service primitives that must be supported by all 100BASE-X PHYs.

SuggestedRemedy

Implement the Suggested Remedy in my general comment concerning the structure of the draft amendment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #154

Cl **24** *SC* **24.4.1** *P* **49** *L* **7** # 6

Anslow, Pete Nortel Networks

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

This says "Insert the following new primitive definitions as shown below at the end of clause 24.4.1.3.3:"

SuggestedRemedy

change "shown below at the end of clause 24.4.1.3.3:" to "shown below after clause 24.4.1.3.3:"

make the equivalent change in other places in the draft where this occurs.

Response *Response Status* **C**

ACCEPT.

Change "at the end of" to "after" in the following places:

Line 50 of page 44
Line 1 of page 45
Line 1 of page 49
Line 7 of page 49
Line 21 of page 52 (Clause 25.3)
Line 38 of page 53 (Clause 25.4.6)
Line 48 of page 44 (Clause 25.4.11.1)
Line 24 of page 56 (Clause 25.4.11.2)

Cl **24** *SC* **24.4.1.4** *P* **49** *L* **12** # 247

Hajduczenia, Marek ZTE Corporation

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

line 12: "state. See Clause 24.2.4.4 and Figure 24-11b." > "state - see 24.2.4.4 and Figure 24-11b."
line 34: "state. See Clause 24.2.4.2 and Figure 24-8" > "state - see 24.2.4.2 and Figure 24-8."

SuggestedRemedy

Per comment

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Change line 12: "state. See Clause 24.2.4.4 and Figure 24-11b." to "state (see 24.2.4.4 and Figure 24-11b)."

Change line 34: "state. See Clause 24.2.4.2 and Figure 24-8" "state (see 24.2.4.2 and Figure 24-8)."

Cl **24** *SC* **24.8.2.2** *P* **50** *L* **21** # 248

Hajduczenia, Marek ZTE Corporation

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

In line 21 and 28, there are references to IEEE Std 802.3-2005, which was invalidated by IEEE Std 802.3-2008. Replace them with references to "IEEE Std 802.3-2008"

SuggestedRemedy

Per comment

Response *Response Status* **W**

ACCEPT.

Cl **24** *SC* **24.8.2.3** *P* **51** *L* **10** # 474

Kim, Yong Broadcom

Comment Type **T** *Comment Status* **A** *LATE*

Shouldn't PICs for PCS (this clause) and PMA (25.5) be aligned? Meaning the standard does not prevent PCS to have .3az option and PMA not, which is fine. But there is no indication that .3az option ought to be implemented in both or neither. Perhaps there is a better place to specify (or recommend) .3az option to be implemented consistently, and have PICS reflect the resulting text.

SuggestedRemedy

Should be T (not TR) but submited after comment submission deadline. If adopting Nomative Annex (or equivlent) approach, there may be a good place to include this comment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add a new bullet (e) on 24.3.2
"(e) EEE capability, which disables the Far-End Fault function and modifies the link down condition with the PMA_RXLPI.request primitive. "

Add a new subclause
"24.3.2.3 EEE capability
EEE capability, when communicated by PMA_RXLPI.request primitive, affects PMA in two ways. It disables the operation of Far-End Fault process to ignore the frequent on and off activity of signal_status. It receives link failure detection as communicated by PMA_LPILINKFAIL.request primitive and changes the Link Monitor state machine to allow an exit from the low power state to the link down state."

Modify 24.8.2.3 as follows
*LP1 support PCS LPI function 24.2.2.5
*LP2 support PMA LPI function 24.3.2.3

Cl **25** *SC* **25** *P* **52** *L* **2** # 27

Barrass, Hugh Cisco

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

** State diagram conventions **

It is not clear which state diagram conventions are relevant for each section in this amendment. Notes need to be added so that the conventions for each clause are clear.

The conventions may be cleaned up and coordinated in the next revision when all clauses are open.

SuggestedRemedy

Insert new subclause:

25.1.1 State diagram conventions
The body of this standard is comprised of state diagrams, including the associated definitions of variables, constants, and functions. Should there be a discrepancy between a state diagram and descriptive text, the state diagram prevails.

The notation used in the state diagrams follows the conventions of 21.5; state diagram timers follow the conventions of 14.2.3.2.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #26
Make it an editors note.

Cl **25** *SC* **25.3** *P* **52** *L* **11** # 249

Hajduczenia, Marek ZTE Corporation

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

Suggest to reword bullet e) to read as follows "100BASE-TX optionally supports Energy Efficient Ethernet, as described in Clause 78, with its Low Power Idle. Two new service primitives PMD_RXQUIET.request(rx_quiet) (see 24.4.1.4) and PMD_TXQUIET.request(tx_quiet) (see 24.4.1.5) are generated to pass the energy saving requests from the PCS."

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Suggest to reword bullet e) to read as follows "100BASE-TX optionally supports Energy Efficient Ethernet, as described in Clause 78, with its Low Power Idle. Two new service primitives PMD_RXQUIET.request(rx_quiet) (see 24.4.1.4) and PMD_TXQUIET.request(tx_quiet) (see 24.4.1.5) are generated by the PCS."

Cl **25** *SC* **25.3** *P* **52** *L* **25** # 161

Frazier, Howard Broadcom Corporation

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

It is not necessary to reproduce Table 25-1 in P802.3az. It appears that it was included in the draft only for the sake of adding three rows to the end of the table for the three new service primitives introduced by EEE. The purpose of the table, however, is to present a mapping of FDDI terms or concepts into 100BASE-TX terminology. Since there is no comparable mapping of the new service primitives into FDDI terms or concepts, there is no need to include them in the table.

SuggestedRemedy

Delete the table, and then implement the Suggested Remedy in my general comment concerning the structure of the draft amendment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove the changes to Table 25-1 and hence remove the table from 802.3az.

Cl **25** *SC* **25.3** *P* **52** *L* **40** # 160

Frazier, Howard Broadcom Corporation

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

This is not a problem introduced by EEE or P802.3az. I have submitted a maintenance request on this topic.

The maximum stream size parameter in Table 25-1 is incorrect, and should have been updated by 802.3as frame format extensions.

SuggestedRemedy

I believe that the correct value for maximum stream size is 4018 code-groups. If the task force persists in reproducing this table in the draft amendment, this change should be made. I think that a better solution is to delete the table (see associated comment) and leave it to maintenance to change the parameter.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove the change to Table 25-1. Move the suggested modification of stream size to maintenance.

Cl **25** *SC* **25.4.11** *P* **53** *L* **45** # 250

Hajduczenia, Marek ZTE Corporation

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

"This clause takes effect only if the option of low power idle" should read "This clause takes effect only if the optional low power idle"

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the sentence:
"This clause takes effect only if the option of low power idle is implemented"
to:
"25.4.11 is required only for the EEE capability"

Cl **25** *SC* **25.4.11.1.1** *P* **54** *L* # 302

Hajduczenia, Marek ZTE Corporation

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

"This variable is from the Transmit process of PCS to control the power saving function of local transmitter" - this variable is part of the Transmit processand it is used by PCS to control the power saving .... ? Is this what is meant?
Similar question for page 56, line 3

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Rewrite the statement as follows:

"This variable is generated by the Transmit process of the PCS to control the power saving function of local transmitter"

Make similar to change to Page 56 line 3.

Cl **25** *SC* **25.4.11.1.1.1** *P* **54** *L* **4** # 162

Frazier, Howard Broadcom Corporation

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

Not allowed to use more than 5 levels of indenture according to IEEE style guide.

SuggestedRemedy

Reduce to 5 levels of indenture.

Response *Response Status* **C**

ACCEPT.

Remove line 34 of page 55 containing "25.4.11.2.1 State Variables".

Change "25.4.11.2.1.1 variables" to "25.4.11.2.1 State variables - variables".

Change "25.4.11.2.1.2 messages" to "25.4.11.2.2 State variables - messages".

Cl **25** *SC* **25.4.11.2** *P* **55** *L* **28** # 329

Hajduczenia, Marek ZTE Corporation

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

Why in some locations terms 'Transmiter', 'Receiver', 'Descrambler' etc are capitalized and in other they are not? Does it have to do with specific subclauses?

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "Descrambler" to "descrambler" in the following places:

Line 29 of Page 55
Line 47 of Page 55
Line 48 of Page 55
Line 17 of Page 56

Change "Receiver" to "receiver" on the following places:

Line 28 of Page 55
Line 39 of Page 55
Line 40 of Page 55
Line 41 of Page 55

No place of "Transmitter" in draft can be found which needs to be changed.

Cl **28B** *SC* **28B.3** *P* **247** *L* **0** # 404

Thaler, Pat Broadcom

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

EEE needs to be added to Priority resolution.

SuggestedRemedy

I suggest that EEE resolution should occur after priority resolution for PHY selection. If both sides support EEE for the selected PHY type, then EEE operation is enabled.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Comment is on 28B.

Add to the end of 28C.12 and 73A.4

"EEE capability negotiation is defined in 78.3"

Cl **28C** *SC* **28C.12** *P* **247** *L* **37** # 110

Cobb, Terry Commscope

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

If auto-negotiation is mandatory why not make extended next page mandatory.

SuggestedRemedy

Change 28C.12 Message code 10 to extended next page and delete 28C.13.

Response *Response Status* **C**

REJECT.

After extended discussion on the topic the task force does not have consensus on making a change.

Straw poll:
Make extended next page mandatory for EEE capability
Yes: 7
No: 4

(The TF discussed making Extended Next Pages mandatory and this was not approved. The following response applies)

The majority of Ethernet PHYs use next page messages and do not support extended next page operation. Therefore 28C.12 is needed for these PHYs.

However, 10GBASE-T PHYs are required to use extended next page operation (and once it is negotiated, they are required to use only extended next pages). Therefore 28C.13 is needed for these PHYs.

Cl **28C** *SC* **28C.12** *P* **247** *L* **39** # 413

Thaler, Pat Broadcom

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

There is no reason to specify both an extended next page message code and an unextended one. The third paragraph of 28C defines a mechanism for packing a Message page and up to two unformatted code fields into a single extended next page so once you have defined an unextended next page message, you have also defined an extended one that carries the same information.

However, time per next page exchange can be quite long - on the order of a quarter of a second per page which is why we defined extended next pages and required their use for 10GBASE-T. Note that support for extended next page also uses faster bursts and shorter time between bursts which shortens time per page as well as the number of pages.

SuggestedRemedy

It would be better to require Extended Next Page support for EEE.
If there is a reason to allow for 16 bit page_size for next page, then only specify a message code for unextended pages which can be carred in extended pages using the packing already specified for 28.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete message code 11 from the table and delete 28C.13 add the following to 28C.12:

"For PHYs that negotiate extended next page the EEE advertisement is sent as part of the 10GBASE-T/1000BASE-T technology message defined in 55.6.1."

Cl **28C** *SC* **28C.12** *P* **247** *L* **40** # 414

Thaler, Pat Broadcom

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

"at least one unformatted next page" A message should be fixed format.

SuggestedRemedy

use "one unformatted next page" - there are currently only 6 EEE auto-neg PHY types and if you are concerned about running out of the 11 bits, you could do separate bit map assignments for BASE-T and backplane PHYs.

Response *Response Status* **C**

ACCEPT.

Cl **28C** *SC* **28C.12** *P* **247** *L* **41** # 415

Thaler, Pat Broadcom

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

This comment also applies to 28C.13. The exact placement of the data in the message needs to be specified. It would be better to do this in a format that is similar to what is done for other next page messages.

Also, for unformatted next page, you don't say which register bit corresponds to which bit in the unformatted next page. (This last part is the reason for the TR.)

SuggestedRemedy

See 40.5.1.2 and 55.6.1 for examples.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This is a change to 45.2.7.13a

Add a column to Table 45-145 for unformatted next page bit number.

Cl **28C** *SC* **28D.7** *P* **248** *L* **10** # 266

Hajduczenia, Marek ZTE Corporation

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

Change "Clause 78 (Energy Efficient Ethernet)" to "Energy Efficient Ethernet (Clause 78)" The same in line 12

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.5.1.1.21** *P* **61** *L* **6** # 463

Thompson, Geoff GraCaSI

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

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

SuggestedRemedy

Revise "BEHAVIOUR DEFINED AS:" text to clarify.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

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

Cl **30** *SC* **30.5.1.1.21** *P* **61** *L* **6** # 461

Thompson, Geoff GraCaSI

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

The syntax of 30.5.1.1.21 aEEESupportList is not the same as that of etiher aMAUType or 30.6.1.1.5 aAutoNegLocalTechnologyAbility

SuggestedRemedy

The syntax of 30.5.1.1.21 aEEESupportList should match that of etiher aMAUType or (more likely) 30.6.1.1.5 aAutoNegLocalTechnologyAbility . that would allow the use of the same object parser for both and provide for easier mapping as to which PHYs are both present and switchable. This would provide for easier implementation and test software generation and checking.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the SYNTAX section to read:

"A SEQUENCE of ENUMERATIONS that match the syntax of aMAUType"

(this will be compatible with future changes for 40/100G)

Cl **30** *SC* **31** *P* *L* # 476
Kim, Yong Broadcom

Comment Type **T** *Comment Status* **R** *LATE*

Perhaps already addressed in .3az (in which case, ignore this comment).
Pause/Flow control use of the MAC Control - should it benefit from LPI/EEE?
LPI timing and Pause timing overlap enough to make explict statement (allowed, not allowed, orthogonal, etc).

SuggestedRemedy

Should be T (not TR) but submited after comment submission deadline.

Consider specifying relationship between .3az and clause 31, if not yet considered.

Response *Response Status* **C**

REJECT.

Nothing has been proposed as part of 802.3az that would require any change to the operation (or the documentation) of Clause 31.

Cl **30** *SC* **5.1.1.21** *P* **60** *L* **52** # 475
Kim, Yong Broadcom

Comment Type **E** *Comment Status* **A** *LATE*

Understand why aMAUTypeList was not touched, and aEEESupportList was added.
But the descriptions of the MAU type are different than aMAUTypeList. Did not see any rationale for the differences. For example,
aMAUTypeList --
100BASE-TX Two-pair... Clause 25, duplex mode unknown.
100BASE-TXFD Two-pair.... Clause 25, Full duplex mode.

aEEESupportList --
100BASE-TX Clause 24, Clause 25 MLT-3

SuggestedRemedy

Please make the description consistent. e.g. use 100BASE-TXHD in aEEESupportList, and use the same description (confusing to the reader).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Comment #461 resolves this.

Cl **35** *SC* **2.1** *P* **65** *L* **31** # 477
Kim, Yong Broadcom

Comment Type **T** *Comment Status* **A** *LATE*

The clause title is "mapping of GMII signals to PLS service primitives...".
The new text "The mapping changes.... shall not be set to ASSERT unless... state to OK." looks like a behavioral specification. Is there a good way to just reference the right statemachine (if none, then perhaps this specification should be moved to a separate clause, as done in 22.7a).

SuggestedRemedy

Should be T (not TR) but submited after comment submission deadline.

Please make it so.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remedied by the response to comment #357.

Cl **35** *SC* **2.2** *P* **66** *L* **45** # 478
Kim, Yong Broadcom

Comment Type **T** *Comment Status* **A** *LATE*

The inserted notes "NOTE-GTX_CLK may be halted during periods of low utilization according to 35.2.2.6a." and "NOTE-RX_CLK may be halted during periods of low utilization according to 35.2.2.9a." is not clear whether this note applies to legacy PHY (pre .3az).

35.2.2.6a and .9a does not reference LPI clause.

SuggestedRemedy

Should be TR but submited after comment submission deadline.

Adopt Nomative Annex (or equivlent), or

Add optional implementation wording to the notes or 35.2.2.6a and .9a or both. Otherwise, legacy PHY must deal w/ no-clock period in their design (or risk of making existing PHY based systems all non-conformant).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Comment is on page 65 and not 66.
Change the notes to read:
"For EEE capability, GTX_CLK may be halted according to 35.2.2.6a."
"For EEE capability, RX_CLK may be halted according to 35.2.2.9a."

Cl **35** *SC* **2.2.4** *P* **66** *L* **15** # 479

Kim, Yong Broadcom

Comment Type **T** *Comment Status* **A** *LATE*

The text "The PHY shall interpret the combination of TX_EN, TX_ER and TXD<7:0> as shown in Table 35-1 as an assertion of low power idle. Transition into and out of the low power idle state is shown in Figure 35-6a." breaks the legacy PHY and [unintentionally] make all systems based on legacy PHY non-conformant.

SuggestedRemedy

Should be TR but submited after comment submission deadline.

Adopt Nomative Annex (or equivlent), or

Add optional implementation wording text or correct via reference.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The use of a "shall" that applies to the PHY is not appropriate, therefore reword:

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

Cl **35** *SC* **2.2.7** *P* **67** *L* **35** # 480

Kim, Yong Broadcom

Comment Type **T** *Comment Status* **A** *LATE*

The text "While RX_DV is de-asserted, the PHY may provide a False Carrier indication or assert low power idle by asserting the RX_ER signal while driving the specific value listed in Table 35-2 onto RXD<7:0>. See 36.2.5.2.3 for a description of the conditions under which a PHY will provide a False Carrier indication. Low power idle transitions are described in 35.2.2.9a." describes two possible behaviors:
1. LPI rx, - 35.2.2.9a
2. False Carrier - 36.2.6.2.3

It's not clear which behaivor has priority, and 35.2.2.9a does NOT indicate whether this only refers to .3az option -- "When the PHY receives signals from the link partner to indicate transition into the low power state it indicates
this to the LPI client by asserting RX_ER and setting RXD<7:0> to 01 while keeping RX_DV deasserted."

SuggestedRemedy

Should be TR but submited after comment submission deadline.

Adopt Nomative Annex (or equivlent), or

Add optional implementation wording text in 35.2.2.7, or in 35.2.2.9a on LPI, and that if the option is not implemented, false carrier takes precedence (whereas if option is implemented, it is the other way around).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The comment regarding priority makes no sense. There is no priority between different indications - if TXD<7:0> = 0x01 the indication is LPI; if TXD<7:0> = 0x0E the indication is false carrier; if TXD<7:0> = 0x0F the indication is carrier extend; if TXD<7:0> = 0x1F the indication is carrier extend error. Since the data bus cannot have multiple different values simultaneously, there is no prioritization specified - either for the existing or for the new indication.

It would be useful to add wording to 35.2.2.7a and 35.2.2.9a to highlight that the implementation is optional (even though no such wording exists for carrier extension that is similarly optional).

The first sentence for 35.2.2.7a and 35.2.2.9a becomes:

"The optional Low Power Idle operation and the LPI client are described in 78.1"

Cl **35** *SC* **35.1.1** *P* **65** *L* **21** # 303

Hajduczenia, Marek ZTE Corporation

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

"The GMII may also support low power idle signaling as defined for Energy Efficient Ethernet in Clause 78 for some PHY types. (see Clause 78)." > "GMII may also support Low Power Idle (LPI) signaling as defined for Energy Efficient Ethernet in Clause 78 for certain PHY types."

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Cl **35** *SC* **35.2.1** *P* **65** *L* **30** # 357

Law, David 3Com

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

At a minimum mention has to be made that the use of LPI requires that Annex 4A MAC. I'm also not to sure I'm crazy about the idea of just including subclause 22.7 be reference and applying it to the GMII rather than doing an equivalent subclause for the GMII, for example just looking at the first subclause of 22.7a I note it references TXD<3:0> which isn't correct for the GMII (See same comment against Clause 46).

SuggestedRemedy

[1] Add the text 'The definition of low power idle signaling assumes the use of the MAC defined in Annex 4A for simplified full duplex operation (with carrier sense deferral). This provides full duplex operation but uses the carrier sense signal to defer transmission when the PHY is in low power idle mode.'.

[2] Add equivalents to subclause 22.7a through 22.7a.3.1 for the XGMII to the changes to Clause 46. Another idea may be to add much of 22.7.a, changed to be non onterface specific, to 78.1.3 to apply to all xMIIs.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add the text as proposed in [1].

Add a new subclause equivalent (and almost identical) to 22.7a through 22.7a.3.1.

Cl **35** *SC* **35.2.1** *P* **65** *L* **30** # 304

Hajduczenia, Marek ZTE Corporation

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

"slightly" - how much is 'slightly'? Remove all such indefinite determiners from the text - they do not add anything to the description and may cause questions about the volume / quantity.

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

"The mapping is changed for EEE capability."

Cl **35** *SC* **35.2.1** *P* **65** *L* **33** # 201

Grow, Robert Intel

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

I can't figure out what the last sentence is trying to specify. It also seems that the edits treat service primitives as logic signals. Service primitives are not logic signals, they are events and therefore can't remain in any state. Though the value sent in a primitive may have state, the primitive is only generated when the value changes state. So, it may not be best to use the term set in earlier sentences either.

SuggestedRemedy

If I understand the intent right, the following would be more accurate, though I don't believe there is a way to put timing requirements in the service primitives, (only in the layers that cause generation of the primitive) so the following isn't correct either (this needs thought and work):

An LPI_IDLE.request primitive with value ASSERT shall not be generated unless the attached link is operational (i.e. link_status = OK, according to the underlying PCS/PMA). The PHY shall not cause an LP_IDLE.request primitive with value ASSERT to be generated for at least one second following a link_status change to OK.

A similar problem exists in 46.1.7.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accept the suggested remedy for this clause. Make a similar change for 46.1.7.

Also add a reference to 78.1.2.1.2.

Cl **35** *SC* **35.2.2.4** *P* **66** *L* **9** # 307

Hajduczenia, Marek ZTE Corporation

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

What does this mean "generate an assertion of low power idle" ? Is a signal generated by the PHY? Same in line 16 on the same page.

SuggestedRemedy

Clarify the meaning / change the description

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

To match the sense of the existing sentence, change the inserted text to:

"Low Power Idle"

Cl **35** *SC* **35.2.2.6** *P* **67** *L* **1** # 305

Hajduczenia, Marek ZTE Corporation

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

"When the LPI client wishes ... " - indicates that the LPI client has a free will. "When the LPI client requests ... " sounds betters. Please scrub the draft, there are many locations wehere this term occurs.

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Cl **35** *SC* **35.2.2.6a** *P* **66** *L* **48** # 308

Hajduczenia, Marek ZTE Corporation

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

"and setting TXD<7:0> to 01." is this 01 a hex representation, binary representation or sometheing completely different ? Please clarify

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change to 0x01

Cl **35** *SC* **35.2.2.6a** *P* **66** *L* **49** # 309

Hajduczenia, Marek ZTE Corporation

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

"The LPI client maintains the same state for these signals for the entire time that it wishes the PHY to remain in the low power idle state." - this is a very complicated way of saying "The LPI clients keeps the signals' state as long as the PHY is requested to remain in the low power idle state." Feel free to modify this further if needed.

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Make the same changes on line 47 & p.67, l.1 as for comment #261 (from the same commenter).

Cl **35** *SC* **35.2.2.6a** *P* **66** *L* **54** # 22

Barrass, Hugh Cisco

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

Clock Stoppable

Refer also to comment #6, rev 1.5

The clock stoppable bit as currently defined is not useful. It is better to split the control into two directions - PHY-MAC & MAC-PHY.

The MAC needs to assert a bit to allow the PHY to stop the clock in the PHY-MAC direction; The PHY needs to assert a bit to allow the MAC to stop the clock in the MAC-PHY direction

SuggestedRemedy

Change "Clock stoppable bit" to "Clock stop capable bit"

Also, change the reference to 45.2.3.2.2a and make it an active link.

Response *Response Status* **C**

ACCEPT.

Cl **35** *SC* **35.2.2.7** *P* **67** *L* **35** # 172

Frazier, Howard Broadcom Corporation

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

The words inserted into the first sentence of the second paragraph of this subclause are unecessary. The subsequent paragraph describes the GMII RX signaling for LPI.

SuggestedRemedy

Delete the words "or assert low power idle" on line 35, and then implement the Suggested Remedy in my general comment concerning the structure of the draft amendment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete the inserted words exactly as suggested.

Cl **35** *SC* **35.2.2.7** *P* **67** *L* **40** # 330

Hajduczenia, Marek ZTE Corporation

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

"de-assert' or 'deassert' ? In various different locations, different spellings are used. Please confirm with 802.3 staff editors which version is the correct one and should be used. Srub the draft.

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Within clause 35 of 802.3az, change all instances to de-assert.

Partial

Cl **35** *SC* **35.2.2.7** *P* **67** *L* **41** # 306

Hajduczenia, Marek ZTE Corporation

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

"while driving the value <01> onto RXD<7:0>." how big is <01> ? If it is two bits long, how do to drive it into an 8-bit wide variable? If it is a hex representation, I think the correct way is to designate is as 0x01 to avoid confusion. What does it mean to 'drive' a value into something?

SuggestedRemedy

Please clarify the issues

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change to 0x01

Cl **35** *SC* **35.2.2.9a** *P* **68** *L* **43** # 310

Hajduczenia, Marek ZTE Corporation

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

Rewrite the first paragraph of this section i.e. 35.2.2.9a since the language is very complex. Proposed version "When the PHY receives signals from the link partner indicating its transition into the low power state, it signals this fact to the LPI client by asserting RX_ER and setting RXD<7:0> to 0x01 while keeping RX_DV deasserted. The PHY maintains these signals in this state while it remains in the Low Power Idle state. When the PHY receives signals from the link partner indicating its transition out of the low power idle state, it signals this fact to the LPI client by deasserting RX_ER and returning to a normal inter-frame state."
Also, what is this 'normal inter-frame state' ?

SuggestedRemedy

Consider the proposal of the change plus answer the question

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change to:

"When the PHY receives signals from the link partner indicating LPI, it signals this to the LPI client by asserting RX_ER and setting RXD<7:0> to 0x01 while keeping RX_DV deasserted. The PHY maintains these signals in this state while it remains in the Low Power Idle state. When the PHY receives signals from the link partner indicating its transition out of the low power idle state, it signals this to the LPI client by deasserting RX_ER and returning to normal inter-frame encoding."

"normal inter-frame" is defined in Table 35-2.

Cl **35** *SC* **35.2.2.9a** *P* **68** *L* **51** # 23

Barrass, Hugh Cisco

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

Clock Stoppable

Refer also to comment #6, rev 1.5

The clock stoppable bit as currently defined is not useful. It is better to split the control into two directions - PHY-MAC & MAC-PHY.

The MAC needs to assert a bit to allow the PHY to stop the clock in the PHY-MAC direction; The PHY needs to assert a bit to allow the MAC to stop the clock in the MAC-PHY direction

SuggestedRemedy

Change "Clock stoppable bit" to "Clock stop enable bit"

Also, make the reference an active link.

Response *Response Status* **C**

ACCEPT.

Cl **35** *SC* **35.2.2.9a** *P* **69** *L* **10** # 171

Frazier, Howard Broadcom Corporation

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

What does the numeric value "0001" in the middle of Figure 35-9a indicate?
Is it supposed to be the value of the RXD<7:0> bundle? If so, it should be shown as a two digit hexadecimal number.

SuggestedRemedy

Change the value to 0x01 or simply 01, and then implement the Suggested Remedy in my general comment concerning the structure of the draft amendment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change to 0x01.

Cl **35** *SC* **35.2.2.9a** *P* **69** *L* **4** # 353

Law, David 3Com

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

While there is a minimum of 9 RX_CLK clock cycles requires on the entry to low power idle mode there is no specification of the minimum number of RX_CLK clock cycles required to exit low power idle mode although from the figure it could be implied that there is only one required.

SuggestedRemedy

Add a specification of the minimum number of RX_CLK clock cycles required on exit from low power idle.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Similar to comment #370

Add a sentence after "if and only if the
Clock stoppable bit is asserted." on p.68, l.51.
"The PHY may restart RX_CLK at any time while it is asserting LPI, but shall restart RX_CLK so that at least one positive transition occurs before it deasserts LPI."

Cl **35** *SC* **35.5.3.3a** *P* **70** *L* **15** # 38

Barrass, Hugh Cisco

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

Need separate PICS items for Rx & Tx direction LPI.

SuggestedRemedy

Change L1:

Assertion of LPI in Tx direction : as defined in Table 35-1

Insert new item:

Assertion of LPI in Rx direction : as defined in Table 35-2

Response *Response Status* **C**

ACCEPT.

Cl **35** *SC* **5** *P* **70** *L* **5** # 482

Kim, Yong Broadcom

Comment Type **T** *Comment Status* **A** *LATE*

[similar comment as 100M/s] It would be friendly to make LPI option status in PICS of Clase 35 (RS), Clause 36 (PCS), etc, to be consistent so that it is all or none, while not preventing systems (I don't know any good reason to though) to implement sub-layer by-sublayer option.

SuggestedRemedy

Should be T but submited after comment submission deadline.

No suggestions -- if deemed useful, please address it.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The intent of the comment is not immediately apparent. Comments #38 & 36 adjust the PICS for clauses 35 and 36 to make them more consistent and convenient.

The general approach of 802.3 clause structures make "system wide" requirements or PICS entries difficult.

Cl **35** *SC* **Table 35-2** *P* **26** *L* # 481

Kim, Yong Broadcom

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

There no accompying specification text associated w/ "Assert low power idle" other than in clause 35.2.2.7 "While RX_DV is de-asserted, the PHY may indicate that it is receiving low power idle by asserting the RX_ER signal while driving the value <01> onto RXD<7:0>." which is unclear - does it assert or not? is it optional behavior, or optional based on .3az implementation status?

SuggestedRemedy

Should be ER but submited after comment submission deadline.

Adopt Nomative Annex (or equivlent), or

Please clarify.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Comment #310 rewords the paragraph.

The words "Assert low power idle" may be found in Table 35-2 for a very clear and normative definition.

Cl **36** *SC* **2.5.1.3** *P* **72** *L* **3** # 483

Kim, Yong Broadcom

Comment Type **T** *Comment Status* **A** *LATE*

This note, along with RX statemachine and Sync statmachine, changes the legacy PHY, and makes legacy implementation not even referenceable once the new texts are all accepted.

'Add a note in 36.2.5.1.3 below the definition for "sync_status"
NOTE: If the optional low power idle function is implemented, then this variable is affected by the LPI receive state machine.'

sync_status in legacy is used in Synchronization Statemachine. In .3az, sync_status is used in receive statemachine. .3az Sync SS uses code_sync_status, with equivalent description as sync_status. After the .3az changes integrated it would read:

"sync_status
A parameter set by the PCS Synchronization process to reflect the status of the link as viewed by the receiver.
Values: FAIL; The receiver is not synchronized to code-group boundaries.
OK; The receiver is synchronized to code-group boundaries.
NOTE: If the optional low power idle function is implemented, then this variable is affected by the LPI receive state machine.

code_sync_status
Variable used to by the synchronization state machine to indicate that receiver is synchronized to code-group boundaries.
Values: FAIL; The receiver is not synchronized to code-group boundaries.
OK; The receiver is synchronized to code-group boundaries."

We now have legacy PHY with no sync statemachine, since the variable sync_status does not exist in the RX SS, and where does code_sync_status come from?

SuggestedRemedy

Should be TR but submited after comment submission deadline.

Adopt Nomative Annex (or equivlent), or

Please clarify such that legacy PHY behaves as before, and .3az enhancement is compatible.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The comment appears to express some confusion over PHY behavior and specific variable names. The variable names are never part of the compliance requirement, only the externally visible behavior is normatively required.

In order to reduce confusion, change the note on p.72, l.3:

"NOTE: For the EEE capability this variable is affected by the LPI receive state machine. Without the EEE capability this variable is identical to code_sync_status controlled by the synchronization state machine."

Cl **36** *SC* **36.2.4.12a** *P* **71** *L* **51** # 28

Barrass, Hugh Cisco

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

** State diagram conventions **

It is not clear which state diagram conventions are relevant for each section in this amendment. Notes need to be added so that the conventions for each clause are clear.

The conventions may be cleaned up and coordinated in the next revision when all clauses are open.

SuggestedRemedy

Add a note:

Note: The state diagram conventions described in 36.1.7 apply to all of the state diagrams in this clause.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #26
Make it an editors note.

Cl **36** *SC* **36.2.4.12a** *P* **71** *L* **51** # 332

Hajduczenia, Marek ZTE Corporation

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

"Low Power Idle" or "Low power idle" or "low power idle" or any other version ?

SuggestedRemedy

Decide how to capitalize this term. Use LPI if possible, once it is decided.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

P.71, l.51, add (LPI) after Low Power Idle.

Change to LPI - P.71, l.51; p.72, l.3; p.72, l.18; p.72, l.30; p.72, l.34; p.80, l.1; p.80, l.16; p.82, l.27;

Cl **36** *SC* **36.2.4.12a** *P* **71** *L* **52** # 311

Hajduczenia, Marek ZTE Corporation

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

'indicating "assert low power idle.' - missing "" at the end. Additionally, wouldn;t it be possible to say that GMII is singalling the request to asset the LPI?

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

"assert low power idle" - exactly as in Table 35-1.

Cl **36** *SC* **36.2.4.7** *P* **71** *L* **12** # 331

Hajduczenia, Marek ZTE Corporation

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

in line 12 and 13, /LI1/ is divided between lines, please avoid it.

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Cl **36** *SC* **36.2.5.1.2** *P* **72** *L* **11** # 419

Thaler, Pat Broadcom

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

Also applies to 36.2.5.1.3 and 36.2.5.1.5. A great many variables and counters have been added to support EEE when this support applies to only one of the PHY types that use this PCS.

It should be made clear here which PHY types EEE support applies to, i.e. 1000BASE-KX.

Also it should be made easy for the reader to determine which constant, variables and counters are required only for EEE support.

SuggestedRemedy

Insert into this Clause a statement of the PHYs for which EEE support applies.

Put the constant, variables and counters for EEE support into a separate subclause or subclauses (this is what I would prefer). Or you could mark each one to indicate that it is required only for EEE.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #410

EEE capability counters/constants/variables will be listed separately.

Cl **36** *SC* **36.2.5.1.2** *P* **72** *L* **18** # 333

Hajduczenia, Marek ZTE Corporation

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

There are numerous logical conditions in this section. Could it be possible to move them into separate equations, so they are more readable ?

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the formatting of assert_lpidle, detect_idle and detect_lpidle to improve readability.

Cl **36** *SC* **36.2.5.1.3** *P* **72** *L* **19** # 312

Hajduczenia, Marek ZTE Corporation

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

"(xmit=DATA * TX_OSET.indicate * TX_EN=FALSE * TX_ER=TRUE * (TXD<7:0> =01))" the 01 is hexadecimal or not? Otherwise, which bits are compared?

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change to 0x01

Cl **36** *SC* **36.2.5.1.3** *P* **72** *L* **27** # 421

Thaler, Pat Broadcom

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

The text here isn't clear.

Also, the alternate terms should only be used when EEE is enabled.

SuggestedRemedy

Either make it clear what the equation for the alias is. I.e.
Alias for detect idle.
When EEE is disabled: (xmit....
When EEE is enabled: (xmit....

Or do the full equation using the variable for EEE enabled to condition use of the additional terms.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The equation will be reformatted according to comment #333.

The TF did not deem it necessary to specify a "mode" for EEE because the standard precludes sending LPI unless it is supported by both link partners. This matches the treatment of other options within this clause (such as half-duplex, full-duplex and others).

Cl **36** *SC* **36.2.5.1.5** *P* **72** *L* **49** # 267

Hajduczenia, Marek ZTE Corporation

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

"This timer is started when the PMD's receiver" > "This timer is started when the PMD receiver"

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Cl **36** *SC* **36.2.5.1.5** *P* **73** *L* **35** # 313

Hajduczenia, Marek ZTE Corporation

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

"When TRUE this indicates" - probably "When equal to TRUE, it indicates" ... similar in line 40

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the format of the two messages to match current messages in the clause - "Values: TRUE. FALSE."

Cl **36** *SC* **36.2.5.1.5** *P* **73** *L* **9** # 221

Gustlin, Mark Cisco

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

The term broken seems strange in this statement:

The rx_wf_timer allows the receiver an additional period in
which to synchronize or return to the quiescent state before the link is declared broken.

Should it be declared down or some other term?

SuggestedRemedy

As above.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

There are three instances:
Clause 36, page 73
Clause 48, page 129
Clause 49, page 145

Change to

"...quiescent state before a link failure is indicated"

Cl **36** *SC* **36.2.5.2.1** *P* **73** *L* **50** # 420

Thaler, Pat Broadcom

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

There is text in the figures that says that the items in the dotted boxes are new but nothing says that they are optional. It isn't even clear whether the dotted boxes are intended to stay once this is integrated into 802.3 or are just to mark the new areas in the draft.

SuggestedRemedy

New behaviors for EEE support must only be required when the EEE option is applicable to the PHY type and supported by the PHY. Put explict text in that says that the states in the dotted boxes and transitions to and from them are required only for devices that support EEE.

Also, transitions to EEE states are only valid when EEE support is enabled. A PHY might support but be connected to a link partner that does not and in that case it should not exhibit any EEE behaviors. One clear way to do this would be to add an EEE enabled variable and condition any transitions to EEE states on this variable.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The change instruction identifies that the new states and transitions are in boxes. The boxes will therefore disappear at the next revision.

In most cases, the states and transitions required for optional behavior are not explicitly identified (e.g. CARRIER_EXTEND). It is left to the skill of the implementer to optimize away redundant structures.

Add the following note:

Note: transitions B and C are only required for the EEE capability.

Cl **36** *SC* **36.2.5.2.1** *P* **75** *L* # 381

Kasturia, Sanjay Teranetics

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

Submitted on behalf of Oren Sela
In figure 36-6 - PCS transmit code-group state diagram, in state IDLE_I2B the current text is:
if tx_oset=/LI/
then (tx_code-group ? /D16.2/)
else (tx_code-group ? /D26.4/)
This looks like an error

SuggestedRemedy

Text should be changed to:
if tx_oset=/LI/
then (tx_code-group ? /D26.4/)
else (tx_code-group ? /D16.2/)

Response *Response Status* **C**

ACCEPT.

Cl **36** *SC* **36.2.5.2.2** *P* *L* # 19

Barrass, Hugh Cisco

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

Arrow heads & tails not well aligned.

SuggestedRemedy

Clean up arrows in Fig 36-7a

Response *Response Status* **C**

ACCEPT.

Cl **36** *SC* **36.2.5.2.6** *P* **79** *L* **5** # 37

Barrass, Hugh Cisco

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

Changes to the base document are not underlined

SuggestedRemedy

Underline changes - lines 5, 29

Response *Response Status* **C**

ACCEPT.

Cl **36** *SC* **36.2.5.2.6** *P* **79** *L* **5** # 422

Thaler, Pat Broadcom

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

This state machine has no change marks but it has been changed, at least in the variable name sync_status to code_sync_status.

It would be preferable to have different state diagrams for the new functionality minimize the risk of making changes in the required behavior for existing devices, but if this is not done, then all state machine changes must be marked.

SuggestedRemedy

Mark all state machine changes so that they can be reviewed to ensure backwards compatibilty with a reasonable amount of effort.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #37

Cl **36** *SC* **36.2.5.2.6** *P* **80** *L* **1** # 423

Thaler, Pat Broadcom

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

New behavior should only apply when EEE operation is enabled, not when it is supported but disabled.

This also applies to 36.2.5.2.8.

SuggestedRemedy

Response *Response Status* **C**

REJECT.

The TF did not deem it necessary to specify a "mode" for EEE because the standard precludes sending LPI unless it is supported by both link partners. This matches the treatment of other options within this clause (such as half-duplex, full-duplex and others).

Cl **36** *SC* **36.2.5.2.6** *P* **80** *L* **2** # 314

Hajduczenia, Marek ZTE Corporation

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

"is given by 36-9b ..." - probably Figure 36-9b. Also remove the repetition of the figure caption after the 36-9b from line 3.

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Cl **36** *SC* **36.2.5.2.6** *P* **80** *L* **2** # 18

Barrass, Hugh Cisco

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

Reference is to Figure 36-9b

SuggestedRemedy

Change 36-9b to Figure 36-9b

Response *Response Status* **C**

ACCEPT.

Cl **36** *SC* **36.2.5.2.8** *P* **80** *L* **23** # 276

Hajduczenia, Marek ZTE Corporation

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

Do not use "<=" in figures as an assignment operator. There is a specific symbol for that - see page 11 in your own draft ("Assignment operator")

SuggestedRemedy

Per comment

Response *Response Status* **W**

ACCEPT.

Cl **36** *SC* **36.2.5.2.8** *P* **81** *L* **24** # 101

Brown, Matt AppliedMicro (AMCC)

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

In Figure 36-9b, transitions from RX_WAKE and RX_WTF to RX_QUIET will restart quiet timer so realistic failure scenarios can cause undetected failure. One scenario is link partner driver failing or interconnect failure enough to attenuate but not kill the signal. Another is the Tx taps have changed.

Instead, the return transition should not restart quiet timer.

SuggestedRemedy

Create new state RX_QUIET_INIT between RX_SLEEP and RX_QUIET.
RX_SLEEP to RX_QUIET_INIT when "signal_detect=FAIL".
RX_QUIET_INIT to RX_QUIET WHEN "UCT"
In RX_QUIET delete "Start rx_tq_timer".
In RX_QUIET_INIT add "Start rx_tq_timer".

The above will permit the dead loop to continue until the quiet timer (3-4 ms) is done then a fault will be detected.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Start rx_tq_timer only in RX_SLEEP state so that cycles of signal detect that don't achieve alignment don't restart the timer.

Also, the definition of rx_tq_timer currently says that it is started in RX_QUIET but doesn't mention that it is also started in RX_SLEEP. Correct the definition to match the resolution of this comment.

Add an arc from RX_SLEEP to RX_LINK_FAIL with condition rx_tq_timer_done

Cl **36** *SC* **36.2.5.2.9** *P* **82** *L* **26** # 268

Hajduczenia, Marek ZTE Corporation

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

"If the optional Low Power Idle function is implemented the PCS indicates to the management system that LPI is currently active in the receive and transmit directions using the status variable shown in Table 36-3c."
should read
"If the optional Low Power Idle function is implemented##,## the PCS indicates to the management system that LPI is currently active in the receive and transmit directions using the status variable##s## shown in Table 36-3c."

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add the comma and "s" as highlighted.

Also change the text to replace:
"If the optional Low Power Idle function is implemented…"
with:
"For EEE capability …"
with appropriate adjustments for grammar

Cl **36** *SC* **36.7.4.9** *P* **83** *L* **24** # 36

Barrass, Hugh Cisco

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

Need more specific PICs items for state machines

SuggestedRemedy

Change PICS to the following items:

LP-01 - Transmit ordered set state machine : Support additions to Figure 36-5 for LPI operation : 36.2.5.2.1
LP-02 - receive state machine: Support additions to Figure 36-7a / 36-7b for LPI operation : 36.2.5.2.2
LP-03 - LPI transmit state machine : Meets the requirements of Figure 36-9a : 36.2.5.2.8
LP-04 - LPI receive state machine : Meets the requirements of Figure 36-9b : 36.2.5.2.8
LP-05 - LPI transmit timing : Meets the requirements of Table 36-3a : 36.2.5.2.8
LP-06 - LPI receive timing : Meets the requirements of Table 36-3b : 36.2.5.2.8

Response *Response Status* **C**

ACCEPT.

Cl **40** *SC* **00** *P* **84** *L* **1** # 388

Thaler, Pat Broadcom

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

Behavior changes for EEE behavior should only be exhibited when connected to an LP that also supports EEE.

SuggestedRemedy

Through out the Clause, statements such as "When the PHY supports Energy Efficient Ethernet," or "When Energy Efficient Ethernet is <not> implemented" should be replaced with "When Energy Efficient Ethernet is <not> enabled"

In the case of the state machines, this might also be done with an EEE_enable variable that conditions going into LPI state and any other EEE behaviors.

Response *Response Status* **C**

REJECT.

Refer to comment #423.

Cl **40** *SC* **12.6** *P* **110** *L* **6** # 50

Beckwith, Jonathan UNH-IOL

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

"Unfilter jitter in low power mode" should be "Unfiltered"

SuggestedRemedy

Change "unfilter" to "unfiltered"

Response *Response Status* **C**

ACCEPT.

Cl **40** *SC* **40.1.3** *P* **84** *L* **16** # 117

D'Ambrosia, John Force10 Networks

Comment Type **ER** *Comment Status* **A** *Low Power Idle mode*

This could be confusing, as terminology in Clause 78 is Low Power Idle mode
A 1000BASE-T PHY may optionally enter a low power mode...

This was also found in Clause 55.

SuggestedRemedy

change sentence to
A 1000BASE-T PHY may optionally enter a low power idle mode...

do global replace on low power mode to low power idle mode

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

To be consistent with the capitalization in Clause 78, the term "Low Power Idle mode" will replace the term "low power mode" when referring to Energy Efficient Ethernet.

Cl **40** *SC* **40.1.3** *P* **84** *L* **16** # 424

Thaler, Pat Broadcom

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

This behavior should only be permitted when EEE mode is enabled preferably conditional on having negotiated EEE through AN.

SuggestedRemedy

Begin the paragraph: "When EEE mode has been enabled, a 1000BASE-T PHY may ....

Response *Response Status* **C**

REJECT.

Refer to comment #423.

Cl **40** *SC* **40.1.3.1** *P* **86** *L* **10** # 315

Hajduczenia, Marek ZTE Corporation

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

Editorial comments for section 40.1.3.1
"When the PHY supports Energy Efficient Ethernet, the idle mode encoding conveys information to the remote PHY indicating whether the local PHY is requesting it to enter into the low power mode or not. Such requests are a direct translation of the assertion of low power idle at the GMII. In addition, the idle mode encoding conveys information to the remote PHY indicating whether the local PHY has completed the update of its receiver state or not, as indicated by the PMA PHY Control function"
Also some questions:
(1) what is 'idle mode encoding' ? is this like 'low power idle assertion' ?
(2) capitalization of terms like 'idle mode', 'low power idle' etc. needs to be scrutinized.
(2)

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Refer to IEEE 802.3-2008, 40.1.3.1 (fourth paragraph) for the definition of "idle mode encoding".

"Between frames, a special subset of code-groups using only the symbols {2, 0, -2} is transmitted. This is called idle mode. Idle mode encoding takes into account the information of whether the local PHY is operating reliably or not (see 40.4.2.4) and allows this information to be conveyed to the remote station. During normal operation, idle mode is followed by a data mode that begins with a Start-of-Stream delimiter."

Usage of the term, including capitalization, is consistent with the base document. However, in the process of reviewing this comment, a different issue with terminology was noted and will be corrected.

Change text:
"Such requests are a direct translation of the assertion of low power idle at the GMII."

To:
"Such requests are a direct translation of "assert low power idle" at the GMII."

Cl **40** *SC* **40.1.4** *P* **85** *L* **50** # 120

D'Ambrosia, John Force10 Networks

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

The second note to Fig 40-3 reads:
NOTE-Signals and functions shown with dashed lines are optional.

are these dashed lines associated with low power idle mode?
are these lines mandatory if the optional mode is supported?

SuggestedRemedy

Change note to read

NOTE- If optional Low Power Idle mode is supported, signals and functions shown with dashed lines are mandatory.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

All signals and functions shown with dashed lines are associated with Energy Efficient Ethernet.

Change second note in Figures 40-3 and 40-14 and the note in Figure 40-5 to read:
"Signals and functions shown with dashed lines are only required for the EEE capability."

Change the note in Figure 40-4 to read:
"Service interface primitives shown with dashed lines are only required for the EEE capability."

Cl **40** *SC* **40.1.4** *P* **89** *L* **3** # 269

Hajduczenia, Marek ZTE Corporation

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

"an optional low power mode." > "and optional low power mode. - missing 'd' at the end of line 3

SuggestedRemedy

Per comment

Response *Response Status* **C**

REJECT.

[Editor's note: It is assumed the page being referenced is 87 and not 89.]

The text is grammatically and technically correct as written.

Cl **40** *SC* **40.12.6.1** *P* **111** *L* **9** # 106

Chalupsky, David Intel Corp.

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

typo: "Etherrnet"

SuggestedRemedy

change Etherrnet to Ethernet

Response *Response Status* **C**

ACCEPT.

Cl **40** *SC* **40.2.11.1** *P* **89** *L* **5** # 316

Hajduczenia, Marek ZTE Corporation

Comment Type **T** *Comment Status* **A** *Low Power Idle mode*

"This value is asserted with then PHY is operating in low power mode." > "This value is asserted when the PHY is operating in the low power mode."
Questions
(1) is 'low power mode' the same as 'low power idle mode' ?
(2) capitalization of vital terms needs to be consistent across the draft

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Refer to #117.

Cl **40** *SC* **40.2.12.1** *P* **89** *L* **30** # 271

Hajduczenia, Marek ZTE Corporation

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

"is in progress hence 1000BTtransmit (refer to 40.3.3.1) will also be FALSE" - it is not common to use "refer to" in 802.3. Use "see" instead
Alsi in like 29, missing separator between 'Note' and '"Assert low power idle"' terms

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

It should be pointed out that there are many examples of the use of "refer to" in IEEE 802.3-2008 but the editor acknowledges that "see" is more frequently used. Change all occurences of "refer to" to "see" (the editor counts four such occurences in Clause 40).

With regard to the second point, to emphasize that this is not a "NOTE" per 18.1 of the 2009 IEEE Standards Style Manual, change text to read:
"Note that "assert low power idle" at the."

Cl **40** *SC* **40.2.2** *P* **87** *L* **13** # 270

Hajduczenia, Marek ZTE Corporation

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

In general case, editorial instructions should avoid specyfing the exact number of added variables, since these things change along the draft development. In this line, it is stated that 3 new items are added, while the list below contains 6 items marked as added. Which is it?
Such a problem exists in many places in the draft, and while not critical, it is confusing the reader to suspect that the mark-up is wrong ...

SuggestedRemedy

Please scrub the draft and remove references to the number of added variables or correct the number of variables / entrie added in each editorial instruction

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change editorial instruction to read "Insert new items in the list of service primitives as shown below:"

Also see response to comment #410

Also correct editorial instruction in 40.12.4.1.

Editor to review editorial instructions throughout the draft and update as necessary.

Cl **40** *SC* **40.3.1.3.4** *P* **93** *L* **22** # 387

Thaler, Pat Broadcom

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

Changes for EEE should only be added in a way that makes it clear what non-EEE devices are required to support. Equations that apply to non-EEE devices should not be changed.

SuggestedRemedy

Put in a separate set of equations that apply when EEE mode is enabled to devices that support EEE.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

A separate set of equations should not be necessary. When the optional Low Power Idle mode is not implemented, or requested by the LPI client (e.g. "assert low power idle" is not present at the GMII), the behavior of the PHY, including the equations of 40.3.1.3.4, is intended to revert to the original behavior.

The variable loc_lpi_req is FALSE when "assert low port idle" is not present at the GMII per Figure 40-9. When the optional low power idle mode is not implemented, loc_lpi_req required to assume the value of FALSE per 40.3.1.3.4.

The equation for Sdn[3] reverts to its original form when loc_lpi_req = FALSE.

The equation of Sdn[2] adds a term "and (tx_mode != SEND-Z)" which is a redundant term for a non-EEE 1000BASE-T implementation and has no impact on externally observable behavior.

If loc_lpi_req = FALSE, then loc_update_done must be FALSE per Figure 40-15 (see also 40.4.5.1) and the equation for Sdn[1] reverts to its original form.

The equation for cext_err adds the term "and (TXDn[7:0] != 0x01)" which does modify the externally observed behavior of a 1000BASE-T PHY. However, this change impacts how the PHY responds to the presence of a reserved code (for non-EEE implementations) at the GMII. This discrepancy may have little practical impact, but will be removed by:

Replacing the term "and (TXDn[7:0] != 0x01)" with "and (loc_lpi_req = FALSE)" which realizes the same Low Power Idle mode behavior but also causes the equation to revert to its original form when Low Power Idle mode is not engaged or implemented.

Modify wording in above response as per Motion #3 before implementing response

Cl **40** *SC* **40.3.4** *P* **95** *L* **16** # 29

Barrass, Hugh Cisco

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

** State diagram conventions **

It is not clear which state diagram conventions are relevant for each section in this amendment. Notes need to be added so that the conventions for each clause are clear.

The conventions may be cleaned up and coordinated in the next revision when all clauses are open.

SuggestedRemedy

Add a note:

Note: The state diagram conventions described in 40.1.6 apply to all of the state diagrams in this clause.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #26
Make it an editors note.

Cl **40** *SC* **40.3.4** *P* **96** *L* **11** # 272

Hajduczenia, Marek ZTE Corporation

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

Condition "(Rxn) ? IDLE) * (rem_lpi_req = TRUE + lpi_mode = ON)" is located a little bit too much to the left and it does not seem to apply to the transit between IDLE and LP_IDLE states

SuggestedRemedy

Move it to the right, please

Response *Response Status* **C**

ACCEPT.

Cl **40** *SC* **40.4.2.4** *P* **100** *L* **3** # 274

Hajduczenia, Marek ZTE Corporation

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

"signal at the MDI as defined in 40.6.1.3.5." > "signal at the MDI, as defined in 40.6.1.3.5." - missing comma

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Cl **40** *SC* **40.4.2.4** *P* **98** *L* **7** # 318

Hajduczenia, Marek ZTE Corporation

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

"When the PHY supports Energy Efficient Ethernet, PHY Control will transition to a low power mode in response to concurrent requests for low power operation from the local PHY (loc_lpi_req = TRUE) and remote PHY (rem_lpi_req = TRUE)." - how do you guarantee that the remote and local PHYs transit to the lower power idle mode at the same moment of time? There is something like transmission delay in P2P links which will make it impossible. Could you clarify this concept in the draft?

SuggestedRemedy

Per comment

Response *Response Status* **C**

REJECT.

No change being made to the draft.

When the system requests operation in Low Power Idle mode, "assert low power idle" is continuously encoded at the GMII. Per the PCS Local LPI Request state diagram (Figure 40-9), loc_lpi_req = TRUE is continuously encoded in the transmitted symbols when "assert low power idle" is present on the GMII. This implies that rem_lpi_req = TRUE will be continuously decoded from the received symbols by the link partner. Since this is not a "one time" transmission, but rather a continuous encoding of state, the synchronization issue implied by the commentor does not exist.

If rem_lpi_req = TRUE is not decoded from the received symbols while "assert low power idle" is present at the GMII (or vice versa), then the intended behavior is to not have the PHY transition to Low Power Idle mode.

The draft adequately describes the intended behavior and no further clarification is required.

Cl **40** *SC* **40.4.5.1** *P* **99** *L* **10** # 317

Hajduczenia, Marek ZTE Corporation

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

"Note that when the PHY supports Energy Efficient Ethernet, when signal_detect is FALSE, scr_status is set to NOT_OK" - this sentence does not read right. There are two "when" conditions? Perhaps one should be changed to an "if" condition. Are the conditions mutual?

SuggestedRemedy

Please rewrite this sentence so that it is clear what it means. Avoid using two 'when' statements unless used together with 'and/or' e.g. '.. when ... and when ...' or alike.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change text to read:
"Note that when the PHY supports
Energy Efficient Ethernet and signal_detect is FALSE, scr_status is set to NOT_OK."

Modify wording in above response as per Motion #3 before implementing response

Cl **40** *SC* **40.4.5.1** *P* **99** *L* **49** # 273

Hajduczenia, Marek ZTE Corporation

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

"or not the remote PHY is has completed the" - either 'is' or 'has'

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change text to read:
".the remote PHY has completed."

Cl **40** *SC* **40.4.5.2** *P* **100** *L* **20** # 275

Hajduczenia, Marek ZTE Corporation

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

"This timer defines the maximum time the PHY will dwell in the POST_UPDATE state before"
"This timer defines the maximum time the PHY will remain quiet before initiating transmission to"
etc. in the same section.
It would be more natural to use
"...PHY dwells.. / ...PHY remains..." etc. Avoid using Future Simple since it does not relay the idea that such an operation of the underlyign function/element is certain

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Modify timer definitions in 40.4.5.2 to avoid the use of the future simple tense.

Cl **40** *SC* **40.4.6.1** *P* **103** *L* **912** # 464

Traeber, Mario Infineon Technologies

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

There is a corner case inside the state diagram of Figure 40-15b in the outbound transitions from UPDATE. The main reason for this corner case is the asynchronous behavior of the state-machine but the synchronous transfer (symbol-period) of the inband control signals like loc_lpi_req, loc_update_done, loc_rcvr_status. This implies that signals may be received in parallel, e.g. rem_update_done=true and rem_lpi_req=false when in POST_UPDATE state. This, however, is assumed by the current version of the state machine not to occur.

Here's the description of the corner case:
The Slave transitions into POST_UPDATE due to timeout of lpi_update_timer. The Master is assumed to stay in UPDATE and it's loc_lpi_req stays true the whole time. When the Slave enters POST_UPDATE is will send it's loc_update_done to the MASTER. Assume that loc_lpi_req gets deasserted at the Slave shortly (<8ns) after entering into POST_UPDATE. This will cause a signaling of loc_lpi_req on the line to the MASTER. Now, by nature of the inband signaling both loc_update done=true and loc_lpi_req=false of the Slave are synchronized to the same symbol period and transferred synchronously to the Master. As such the Master receives both signals simultaneously. By current implementation the Master will take it's way back to IDLE because rem_lpi_req=false, although rem_update_done=true. This causes a problem to the Master since the Slave will do it's normal wake cycle via WAKE_SILENT, QUIET, WAKE and TRAINING. However, when the Slave enters QUIET it will stop signaling to the Master. As such the Master will break the link.

A better intoduction into this corner case is handled in the presentation traeber_01_0909.pdf

SuggestedRemedy

Change the outbound state transitions in UPDATE state as follows:

UPDATE->POST_UPDATE:
(rem_update_done=TRUE + lpi_update_timer_done) * (loc_lpi_req=TRUE)

UPDATE->IDLE:
loc_lpi_req=FALSE + (rem_lpi_req=FALSE * rem_update_done=FALSE)

This will cause the link-partners to follow via the POST_UPDATE when when at least one side of the link entered this state before.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement changes per traeber_03_0909.pdf slide 6.

Cl **40** *SC* **6.1.2.7** *P* **106** *L* **48** # 55

Beckwith, Jonathan UNH-IOL

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

In order to determine when a device enters the WAKE state, a trigger signal must be defined. Otherwise, the "65% of nominal idle levels within 700ns" requirement cannot be measured.

SuggestedRemedy

Adopt the TX_TCLK gating approach proposed in healey_01_0409.pdf.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

One critique of healey_01_0409.pdf was that clock gating may easily be delayed to display conformance to the timing requirements even when the underlying implementation does not satisfy the requirements.

Define the requirements in terms of something that may be directly measured and is most relevant to the implementation of the energy detect function at the receiver. The transmitter activation time is a component of transmitter wake time shrinkage and, like wake time shrinkage, cannot be measured without GMII access or a comparable timing reference

Change "40.6.1.2.7 Transmitter operation during WAKE" to read:

When the PHY supports the optional EEE capability, it is required to transmit Idle symbols while in the WAKE state (see the PHY Control state diagram, Figure 40–15b). This signal may be transmitted during reactivation of the PHY analog front-end and is not guaranteed or intended to be compliant.

The transmit levels of the Idle symbols transmitted during the WAKE state shall exceed 65% of the transmit levels of compliant Idle symbols for a period of at least 500 ns.

The PHY shall achieve compliant operation upon entry to the WAKE_TRAINING state (see the PHY Control state diagram, Figure 40–15b).

Cl **40C** *SC* **0** *P* *L* # 465

Traeber, Mario Infineon Technologies

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

Since clause 40 Next-Pages became mandatory. Within clause 40 (Annex40C) the ordering of the Next-Pages have been defined. Within clause 40 (Annex40C) the mandatory clause 40 relevant Next-Pages must be sent autonomously. In the current Draft 2.0 additional Next-Pages have been defined to advertize the EEE features. However, it is not yet defined in which order they must be sent in addition to the existing PHY Next-Pages. Especially legacy PHYs like 100base-TX did not require any Next-Pages up to now which will change. Existing tests will fail (see also UNH ANEG Test-Suite).

More details in traeber_02_0909.pdf

SuggestedRemedy

(1) Define a sequence ordering of the exchanged Next-Pages which is mandatory
(2) Define that these pages are sent autonomously before the SW Next-Pages

Change the Standard Draft:
(A) Include EEE MP and EEE UP into Figure 40C-2
(B) Include EEE MP and EEE UP into Figure 40C-3
(C) Add and Annex 25A which describes the clause 25 Next-Page ordering/autonomous for EEE pages similar to Annex 40C
(D) The concept shall be applied similarly to Extended Next-Pages, e.g. 10GbT

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **45** *SC* **25.2.7.13a** *P* **117** *L* **5** # 375
Parnaby, Gavin Solarflare Communica

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

The definition of the extended next page here belongs in 55.6.

These bits will fit in the reserved bits in the Extended Next Page in 55-10 (no new extended next page is required).

Also: Do we need to advertise backplane PHY EEE capability in these bits?

SuggestedRemedy

Delete the text here, move to a table in 55.6.

Use the existing reserved bits in the existing extended next page.

[alternatively, we can use a new extended next page, but this will increase startup time (by~1/4 second?)]

Response *Response Status* **C**

REJECT.

After extended discussion on the topic, there is no consensus to change the draft.

In favor of included the EEE capability in 10GBASE-T page
Yes: 10
No: 4

(comment #416 may result in splitting the register to separate BASE-T & BASE-K)

Definition of bits in extended next page can be added in 55.6 (Table 55-11).

Add a column for extended next page bit numbers in table 45-145 - note that comment #415 is adding the unformatted next page bit numbers.

Change the text of 45.2.7.13a:

This register defines the EEE advertisement that is sent in the unformatted next page following a EEE technology message code as defined in 28C.12 or in 73A.4. For PHYs that negotiate extended next page the EEE advertisement is sent as part of the 10GBASE-T/1000BASE-T technology message defined in 55.6.1. The assignment of bits in the EEE advertisement register is
shown in Table 45-145.

Cl **45** *SC* **44.2.7.13a** *P* **117** *L* **15** # 373
Parnaby, Gavin Solarflare Communica

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

In Table 45-145, the descriptions say 'EEE is supported...'. This text should be changed to say 'Advertise that the PHY is EEE capable...'. The descriptions of these bits should also be changed similarly.

SuggestedRemedy

As comment

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3** *P* **112** *L* **11** # 39
Barrass, Hugh Cisco

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

Table reference is wrong - the table numbers have been changed by 802.3av. Also the table heading is wrong.

SuggestedRemedy

Change the instruction and the table heading to match:

"Change Table 45-83 (as renumbered by 802.3av) to add EEE capability register:"

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3** *P* **112** *L* **16** # 359
Lynskey, Eric Teknovus

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

Table number does not match editing instructions.

SuggestedRemedy

Change from Table 45-1 to Table 45-82. Also change Table 45-2 to Table 45-83.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #39

Cl **45** *SC* **45.2.3** *P* **112** *L* **16** # 183

Ganga, Ilango Intel

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

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

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

SuggestedRemedy

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

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

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

Cl **45** *SC* **45.2.3.1** *P* **113** *L* **26** # 193

Grimwood, Michael Broadcom

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

Implement clock stoppable changes that were agreed upon at July Plenary.

SuggestedRemedy

Define bit 3.0.10 to enable the PHY to stop the receive clock. Appropriately change Table 45-2 and 45.2.3.1.3a with the new definition.

Allocate an existing reserved status bit and appriately define it to indicate whether the PHY is capable of handling a stopped transmit clock. Change the appropriate Table entry for this bit and add a new section describing this bit. In this new section explicitly define the behavior of the PHY if it does not support LPI or is not able to handle the MAC/LPI Client stopping the xMII clock with the following sentence:

"If the PHY does not support low power idle signaling or is not able to handle a stopped transmit xMII clock, then it shall clear this bit to 0."

Related to the two newly-defined bits, corresponding changes are needed in the following places in the draft: 22.2.2.9a, Table 40-3, 35.2.2.6a, 35.2.2.9a, 46.3.1.5a, and 46.3.2.4a.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comments #48, 49

Cl **45** *SC* **45.2.3.1** *P* **113** *L* **26** # 48

Barrass, Hugh Cisco

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

Clock Stoppable

Refer also to comment #6, rev 1.5

The clock stoppable bit as currently defined is not useful. It is better to split the control into two directions - PHY-MAC & MAC-PHY.

The MAC needs to assert a bit to allow the PHY to stop the clock in the PHY-MAC direction; The PHY needs to assert a bit to allow the MAC to stop the clock in the MAC-PHY direction

SuggestedRemedy

Change register bit 3.0.10 to:

Clock stop enable : 1 = PHY may stop the clock during LPI, 0 = clock not stoppable.

Change the text of 45.2.3.1.3a:

If bit 3.0.10 is set to 1 then the PHY may stop the receive xMII clock while it is signaling low power idle otherwise it shall keep the clock active. If the PHY does not support low power idle signaling or is not able to stop the receive clock then this bit has no effect (see 22.2.2.9a, 35.2.2.9a, 46.3.2.4a).

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.1** *P* **113** *L* **3** # 40

Barrass, Hugh Cisco

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

Table reference is wrong - the table numbers have been changed by 802.3av. Also the table heading is wrong.

SuggestedRemedy

Change the instruction and the table heading to match:

"Change Table 45-84 (as renumbered by 802.3av) for LPI clock control:"

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.1** *P* **113** *L* **8** # 360

Lynskey, Eric Teknovus

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

Clause 45 needs to be updated to reflect the changes introduced by 802.3av and possibly other Task Forces. Table 45-83, which is incorrectly marked as Table 45-2, does not have the updated speed selection in bits 3.05:2. There may be other updates that have not been included.

SuggestedRemedy

Get the latest version of Clause 45 and use that as the baseline for all changes.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.2** *P* **114** *L* **10** # 41

Barrass, Hugh Cisco

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

Table reference is wrong - the table numbers have been changed by 802.3av.

SuggestedRemedy

Change the instruction and the table heading to match:

"Change Table 45-85 (as renumbered by 802.3av) for LPI status:"

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.2** *P* **114** *L* **34** # 49

Barrass, Hugh Cisco

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

Clock Stoppable

Refer also to comment #6, rev 1.5

The clock stoppable bit as currently defined is not useful. It is better to split the control into two directions - PHY-MAC & MAC-PHY.

The MAC needs to assert a bit to allow the PHY to stop the clock in the PHY-MAC direction; The PHY needs to assert a bit to allow the MAC to stop the clock in the MAC-PHY direction

SuggestedRemedy

Change register bit 3.1.6 (currently reserved) to:

Clock stop capable : 1 = MAC may stop clock during LPI, 0 = clock not stoppable.

Insert 45.2.3.2.2a after 45.2.3.2.2:

If bit 3.1.6 is set to 1 then the MAC may stop the transmit xMII clock while it is signaling low power idle otherwise it shall keep the clock active. If the MAC does not support low power idle signaling or is not able to stop the receive clock then this bit has no effect (see 22.2.2.6a, 35.2.2.6a, 46.3.1.5a).

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.7** *P* **116** *L* **33** # 42

Barrass, Hugh Cisco

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

Table reference is wrong - the table numbers have been changed by 802.3av.

SuggestedRemedy

Change the instruction and the table heading to match:

"Change Table 45-141 (as renumbered by 802.3av) for EEE AN registers:"

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.7.13a** *P* **117** *L* **3** # 416

Thaler, Pat Broadcom

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

There is no reason to send EEE capabilities for backplane PHYs when using Clause 28 auto-neg or for BASE-T PHYs when using Clause 73 auto-neg. They two classes of PHYs use different auto-negotiation.

Also, Clause 73 next pages are always equivalent to Clause 28 extended next pages. Therefore "For PHYs that negotiate extended next page support doesn't apply to them" so you need to add text to cover Clause 73 auto neg.

Since backplane phys have 32 U bits in a message there is no reason to restrict it to 11 bits. And with higher speeds coming out there may be enough new Clause 73 auto-neg PHYs to need more bits. If any additional BASE-T PHYs are defined they are also likely to require extended next pages as 10GBASE-T did and have 32 bits available.

SuggestedRemedy

Define the mapping at least for 16 bits for extended next pages and Clause 73.

Consider specifying just sending the relevant bits for the auto-neg type allowing the bit usage to overlap for the two auto-neg types.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The additional column is defined for bit mapping. BASE-T capabilities are only sent in Clause 28 or 55 defined frames; BASE-K capabilities are only sent in Clause 73 defined frames.

Define the mapping for all 16 bits. Do not use overlap.

Cl **45** *SC* **45.2.7.13a** *P* **117** *L* **8** # 43

Barrass, Hugh Cisco

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

Table reference is wrong - the table numbers have been changed by 802.3av.

SuggestedRemedy

Change the table reference and the table heading to Table-157a

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.7.14a** *P* **118** *L* **16** # 374

Parnaby, Gavin Solarflare Communica

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

Add the link partner advertisement table.

SuggestedRemedy

Copy Table 45-145, but use the title 'Link Partner EEE Capability Register', change all bits to RO, change description to 'Link Partner has EEE capability for ...'.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.5.3.7** *P* **119** *L* **11** # 418

Thaler, Pat Broadcom

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

These additions to the PICS make every existing PCS, even PCS types don't have the option to support EEE, and Clause 45 AN implementation non-compliant. There is no reason to make these registers mandatory for devices that don't support EEE.

45.2 already documents the behavior when registers that the device doesn't support are accessed and that requirement is enough to provide backwards compatibility for management that doesn't know whether a device supports EEE.

Also the PCS items need to be conditional on PCS.

SuggestedRemedy

Add these registers in the same way that requirements for 10GBASE-T and other new optional capabilities were added. Define an option (see 45.5.3.6 and 45.5.3.2 for examples). You could use EEE for the option name.

In the status column for each of these, make them mandatory conditional on EEE support. If the option is EEE, you would replace "M" with PCS*EEE:M

For the AN items, also define an option and replace "AN:M" with "AN*<option>:M". You probably can't use the same option name both places. For 10GBASE-T, they didn't. "AE" looks consistent with what they did in AN.

Response *Response Status* **C**

ACCEPT.

Cl **46** *SC* **46.1.7** *P* **120** *L* **17** # 358

Law, David 3Com

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

At a minimum mention has to be made that the use of LPI requires that Annex 4A MAC. I'm also not to sure I'm crazy about the idea of just including subclause 22.7 be reference and applying it to the GMII rather than doing an equivalent subclause for the GMII, for example just looking at the first subclause of 22.7a I note it references TXD<3:0> which isn't correct for the XGMII (See same comment against Clause 35).

SuggestedRemedy

[1] Add the text 'The definition of low power idle signaling assumes the use of the MAC defined in Annex 4A for simplified full duplex operation (with carrier sense deferral). This provides full duplex operation but uses the carrier sense signal to defer transmission when the PHY is in low power idle mode.'.

[2] Add equivalents to subclause 22.7a through 22.7a.3.1 for the XGMII to the changes to Clause 46. Another idea may be to add much of 22.7.a, changed to be non onterface specific, to 78.1.3 to apply to all xMIIs.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add the text as proposed in [1].

Add a new subclause equivalent (and almost identical) to 22.7a through 22.7a.3.1.

Cl **46** *SC* **46.3** *P* **120** *L* **42** # 389

Thaler, Pat Broadcom

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

No behavior changes should be exhibited between an EEE supporting device and a non-EEE supporting device. This note implies a new requirement for all Reconcilliation sublayers to support a clock that may be halted.

SuggestedRemedy

Qualify the new sentence so that it only applies when EEE support is enabled.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Follow style of response to comment #478.

Cl **46** *SC* **46.3.1.2** *P* **121** *L* **13** # 354

Law, David 3Com

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

To allow Clause 78 to refer globally to the same encoding on the MII, GMII and XGMII, as well as just being a good idea, I believe that the encoding on the transmit path of the MII, GMII and XGMII when the RS is transmiting Low Power Idle on the xMII should have the same description. At the moment we have:

MII Assert low power idle
GMII Assert low power idle
XGMII LP_IDLE - assert low power idle
79.1.3.2 assert low power idle

I suggest that for consistency we use 'assert low power idle'.

SuggestedRemedy

Change 'LP_IDLE - assert low power idle' to read 'Assert low power idle'.

Also change 'transmit low power idle' to read 'assert low power idle' in the following locations:

Page 27, line 50
Page 66, line 43
Page 105, line 13
Page 105, line 18
Page 114, line 47
Page 115, line 7
Page 121, line 39

Response *Response Status* **C**

ACCEPT.

Cl **46** *SC* **46.3.1.2** *P* **121** *L* **14** # 355

Law, David 3Com

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

Is this really 'Normal inter-frame'.

SuggestedRemedy

Suggest that 'Normal inter-frame' be changed to read 'Low power inter-frame'.

Response *Response Status* **C**

REJECT.

There is no "low power" behavior defined for PLS_DATA.request, therefore the mapping should be "normal inter-frame" for both IDLE and LPIDLE.

Cl **46** *SC* **46.3.1.2** *P* **121** *L* **36** # 390

Thaler, Pat Broadcom

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

This requirement is stated such that it applies to all PHYs - even those with PMDs that don't support low power idle. EEE requirements should ony apply to those PHYs where it is applicable and supported.

SuggestedRemedy

Make it clear in the table that the new code should only be sent when EEE is supported and enabled and that reception of the code is only required in that case. Also make the new sentence only applicable when EEE is supported and enabled.

Ensure that through out the clause that new requirements are not placed on non-EEE devices and that EEE supporting devices are only to exhibit new behavior to peers or across the XGMII when EEE mode is enabled with EEE supporting partners.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the sentence:

"A PHY with EEE capability shall interpret the combination of TXC and TXD as shown in Table 46-3 as an assertion of low power idle."

Cl **46** *SC* **46.3.1.5a** *P* **121** *L* **49** # 24

Barrass, Hugh Cisco

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

Clock Stoppable

Refer also to comment #6, rev 1.5

The clock stoppable bit as currently defined is not useful. It is better to split the control into two directions - PHY-MAC & MAC-PHY.

The MAC needs to assert a bit to allow the PHY to stop the clock in the PHY-MAC direction; The PHY needs to assert a bit to allow the MAC to stop the clock in the MAC-PHY direction

SuggestedRemedy

Change "clock stoppable bit" to "Clock stop capable bit"

Also, change the reference to 45.2.3.2.2a.

Response *Response Status* **C**

ACCEPT.

Cl **46** *SC* **46.3.2.2** *P* **123** *L* **10** # 344
Law, David 3Com

Comment Type **E** *Comment Status* **A**
Typo.

SuggestedRemedy
'assert low ...' should read 'Assert low ...'.

Response *Response Status* **C**
ACCEPT.

Cl **46** *SC* **46.3.2.4a** *P* **124** *L* **1** # 341
Law, David 3Com

Comment Type **E** *Comment Status* **A**
Typo.

SuggestedRemedy
'Insert 45.3.2.4a for receive low power idle transition:' should read 'Insert 46.3.2.4a for receive low power idle transition:'.

Response *Response Status* **C**
ACCEPT.

Cl **46** *SC* **46.3.2.4a** *P* **124** *L* **13** # 25
Barrass, Hugh Cisco

Comment Type **T** *Comment Status* **A**
Clock Stoppable

Refer also to comment #6, rev 1.5

The clock stoppable bit as currently defined is not useful. It is better to split the control into two directions - PHY-MAC & MAC-PHY.

The MAC needs to assert a bit to allow the PHY to stop the clock in the PHY-MAC direction; The PHY needs to assert a bit to allow the MAC to stop the clock in the MAC-PHY direction

SuggestedRemedy
Change "clock stoppable bit" to "Clock stop enable bit"

Response *Response Status* **C**
ACCEPT.

Cl **46** *SC* **46.5.3.3a** *P* **125** *L* **23** # 35
Barrass, Hugh Cisco

Comment Type **T** *Comment Status* **A**
Need separate PICS items for Rx & Tx direction LPI.

SuggestedRemedy
Change L1:

Assertion of LPI in Tx direction : as defined in Table 46-3

Insert new item:

Assertion of LPI in Rx direction : as defined in Table 46-4

Response *Response Status* **C**
ACCEPT.

Cl **46** *SC* **Table 46-3** *P* **123** *L* **10** # 382
Szczepanek, Andre HSZ Consulting

Comment Type **T** *Comment Status* **R**
This is a generic comment on the encoding of LPI as a new XGMII character and applies to 10GBASE-X and 10GBASE-R PCS's

I see no value in creating a new XGMII character for LPI when there already is a viable alternative in the existing standard - Sequence ordered sets !, without requiring wholesale redesign and verification of existing implementations. The 10GBASE-X implementation of LPI is particularly complicated and difficult to validate.

LPI could easily be signalled by defining a new Sequence ordered set for LPI. Sequence ordered sets already support clock compensation.

SuggestedRemedy
Use an existing signaling mechanaism (Sequence ordered sets) to signal LPI. This will considerably simplify the impact of EEE on the existing clauses and implementations whilst maintaining functionality.

Response *Response Status* **C**
REJECT.

The TF has discussed and rejected this proposal previously. Using a new XGMII character is consistent with the treatment of MII & GMII. Using sequence ordered sets (instead of a new control character) would ease the complexity of some new designs, but would add to the complexity of others.

Cl **48** *SC* **48.2.3** *P* **126** *L* **17** # 342

Law, David 3Com

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

The encoding on the receive path of the XGMII when the PHY is receiving the Low Power Idle on its RX MDI is Table 46-4 as 'assert low power idle', not 'receive Low Power Idle' (see also my comment on subclause 22.2.2.7).

SuggestedRemedy

Change 'receive Low Power Idle' to read 'assert low power idle'.

Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.4** *P* **127** *L* # 125

Estes, Dave UNH - IOL

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

Table 48-3

When the XGMII RXD is 06 the PCS will also receive /D20.5/.

SuggestedRemedy

For an XGMII RXD of 06, Change the PCS code group description to "K28.0 or K28.3 or K28.5 or D20.5a".

Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.4** *P* **127** *L* # 124

Estes, Dave UNH - IOL

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

Table 48-2

When the XGMII TXD is 06 the PCS will also transmit /D20.5/.

SuggestedRemedy

For an XGMII TXD of 06, Change the PCS code group description to "K28.0 or K28.3 or K28.5 or D20.5a".

Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.4** *P* **127** *L* **12** # 391

Thaler, Pat Broadcom

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

Since D20.5 is a member of the PCS code group in a way similar to the other codes, it should appear on the line in the table rather than as a not.

SuggestedRemedy

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #124, 125

Cl **48** *SC* **48.2.4** *P* **127** *L* **12** # 44

Barrass, Hugh Cisco

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

Code group column is not underlined in new row of Table 48-2.

SuggestedRemedy

Underline all columns of row "Low Power Idle"

Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.4** *P* **127** *L* **38** # 45

Barrass, Hugh Cisco

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

Code group column is not underlined in new row of Table 48-3.

SuggestedRemedy

Underline all columns of row "Low Power Idle"

Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.4.2** *P* **128** *L* **24** # 392

Thaler, Pat Broadcom

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

This has been added as a requirement on all PCS sublayers even those that are part of PHY types where EEE support doesn't apply.

This and any other new requirements and behaviors for EEE support should only apply when EEE is supported and enabled on the PCS.

SuggestedRemedy

After "with the following exceptions that apply when optional EEE operation is enabled:" or similar language.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "with the following exceptions" to "with the following exceptions for PHYs with EEE capability"

Cl **48** *SC* **48.2.4.2** *P* **128** *L* **25** # 399

Thaler, Pat Broadcom

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

"row": Clause 48 doesn't have rows, it has lanes. .

SuggestedRemedy

Use lane.

Response *Response Status* **C**

ACCEPT.

Six instances to replace in this clause.

Cl **48** *SC* **48.2.4.2** *P* **128** *L* **3** # 46

Barrass, Hugh Cisco

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

The additional text in the title is not underlined.

SuggestedRemedy

Underline - "and Low Power Idle (||LPIDLE||)"

Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.4.2** *P* **128** *L* **42** # 1

Anslow, Pete Nortel Networks

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

"ordered set ||LPIDLE|| is a special of ||I||" doesn't make sense

SuggestedRemedy

change to "ordered set ||LPIDLE|| is a special case of ||I||"

Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.4.2** *P* **128** *L* **43** # 400

Thaler, Pat Broadcom

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

"in one row" makes it sound like they all go in the same row/lane.

SuggestedRemedy

"inserting /D20.5/ in one code-group of each column with a random uniform distribution across the lanes during"

Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.4.2** *P* **128** *L* **44** # 126

Estes, Dave UNH - IOL

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

The draft states that "Clock compensation may be performed during Low Power Idle according to the rules described in 48.2.4.2.3" however the rules in 48.2.4.2.3 only allows for the deletion/insertion of ||R|| or Idle.

SuggestedRemedy

Update 48.2.4.2.3 to include the capability to perform clock compensation on 4 Low Power Idle characters or a column containing 3 /R/ and 1 /D20.5/.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Follow suggested remedy and include the words "For EEE capability"

Cl **48** *SC* **48.2.4.2** *P* **128** *L* **47** # 393

Thaler, Pat Broadcom

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

This should appear under the same subclause heading as the rest of the variable changes and heading for 42.2.6.1.3 the next two subclauses have the wrong numbering.

SuggestedRemedy

Use the subclause numbers from the editor notes.

Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.4.2.3** *P* **129** *L* **10** # 127

Estes, Dave UNH - IOL

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

Change "An boolean variable" to "A Boolean variable".

SuggestedRemedy

Change "An boolean variable" to "A Boolean variable".

Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.4.2.3** *P* **129** *L* **3** # 394

Thaler, Pat Broadcom

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

The variables, counters and messages have been added with no indication that they only need to be supported devices that support EEE.

SuggestedRemedy

Either group all the variables, counters and messages requrired for EEE operation only in a separate subclause or indicate in the description of each one that it only applies when EEE is supported.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the note on p.128, l.49 can be changed in a similar manner to comment #483 response:

""NOTE: For EEE capability this variable is affected by the LPI receive state diagram. Without EEE capability this variable is identical to deskew_align_status controled by the deskew state diagram.

See response to comment #410. EEE capability variables/timers will be kept separately.

Cl **48** *SC* **48.2.4.2.5** *P* **129** *L* **24** # 128

Estes, Dave UNH - IOL

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

Most of the new definitions are for timers not counters.

SuggestedRemedy

Create a subclause for timers.

Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.6.2** *P* **130** *L* **24** # 395

Thaler, Pat Broadcom

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

Titles of the state diagrams in the note differ from the titles on the diagram.

SuggestedRemedy

Change the titles in the note to those on the diagrams.

Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.6.2** *P* **130** *L* **24** # 398

Thaler, Pat Broadcom

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

There is nothing in the state machines that conditions producing LP idle signaling on EEE being enabled. For backwards compatability, LP idle should only be used when EEE is enabled.

SuggestedRemedy

Add an eee_enable or lpi_enable variable and condition new behavior on it being TRUE.

Response *Response Status* **C**

REJECT.

The definition of the RS only allows LPI signaling when both link partners have indicated LPI capability. Therefore the PCS does not need any such restriction. This approach is similar to that used for other options such as carrier extension.

Cl **48** *SC* **48.2.6.2** *P* **130** *L* **24** # 30

Barrass, Hugh Cisco

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

** State diagram conventions **

It is not clear which state diagram conventions are relevant for each section in this amendment. Notes need to be added so that the conventions for each clause are clear.

The conventions may be cleaned up and coordinated in the next revision when all clauses are open.

SuggestedRemedy

Add a note:

Note: The state diagram conventions described in 48.2.6 apply to all of the state diagrams in this clause.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #26
Make it an editors note.

Cl **48** *SC* **48.2.6.2** *P* **131** *L* **26** # 397

Thaler, Pat Broadcom

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

Altering state machine behavior with a note isn't a good idea. It should be done in the state machine or the supporting text for the state machine. Also, "one row" implies that the D20.5 always goes in the same lane which is not the intent.

SuggestedRemedy

One approach would be to modify the definitions for the constants ||R|| and ||K|| to state that if TX=||LPIDLE||, one code-group of the column is replaced by /D20.5/ as defined in 48.2.4.2. Or create two new constants to represent the LP Idle versions of ||R|| and ||K|| and in the state boxes use an if TX=||LPIDLE|| to send the correct constant.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Modify the definitions of ||R|| and ||K|| to state that for EEE capability one lane (randomly selected) is replaced by /D20.5/ during ||LPIDLE|| as defined in 48.2.4.2.

Cl **48** *SC* **48.2.6.2** *P* **131** *L* **3** # 396

Thaler, Pat Broadcom

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

||LPIDLE|| needs to be added to the list of Constants.

SuggestedRemedy

Add ||LPIDLE||

Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.6.2** *P* **132** *L* **1** # 401

Thaler, Pat Broadcom

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

Figure 48-8 should appear before Figure 48-9

SuggestedRemedy

Correct the ordering of the figures.

Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.6.2** *P* **132** *L* **5** # 47

Barrass, Hugh Cisco

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

Additional information is needed for the note.

SuggestedRemedy

Add the sentence to the note:

"If Low Power Idle is not supported then the transition to the optional state is never true."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

"The transition to the optional state is only possible with EEE capability."

Cl **48** *SC* **48.2.6.2.2** *P* **132** *L* **41** # 402

Thaler, Pat Broadcom

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

"is not implemented" should be "is not enabled"

New behavior should only occur when the option is enabled

SuggestedRemedy

Make the change above. Also check for other occurances of "implemented" or "supported" and change to "enabled" where they describe executing a new behavior.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Originally submitted with Page 41, line 132

Edit the two inserted sentences to read:
For the EEE capability the relationship between align_status and deskew_align_status is given by Figure 48-9b, the LPI receive
state diagram, otherwise align_status is identical to deskew_align_status.

Cl **48** *SC* **48.2.6.2.5** *P* **134** *L* **3** # 447

Thaler, Pat Broadcom

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

This text makes it sound like the figures replace or show modifications to the transmit and receive state machines.

Also the text should make a normative statement. For an example see the first sentence of 48.2.6.2.2.

Page 135 line 49 should also make a normative statement.

SuggestedRemedy

State that A PCS which supports EEE shall implement the LPI transmit and processes as shown in figures 48-9a and 48-9b and that these processes shall run when EEE is enabled. You can go on to explain that the transmit LPI state diagram controls tx_quiet which overrides disables the transmitter when true and that the receive one produces align_status and tells the receive state machine when a receive LPI has ended. Make the reference to the LPI timer tables normative too.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #455.

"A PCS which supports the EEE capability shall implement the LPI transmit and receive processes as shown in figures 48-9a and 48-9b. The transmit LPI state diagram controls tx_quiet which disables the transmitter when true. The receive LPI state diagram controls align_status during LPI and synchronizes the receive state machine with the end of the LPI."

Change the statement on p.135, l.49:

"The LPI functions shall use timer values for these state machines as shown in Table 48-9 for transmit and Table 48-10 for
receive."

Cl **48** *SC* **48.2.6.2.5** *P* **134** *L* **4** # 122

D'Ambrosia, John Force10 Networks

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

There are PIC statements for conformance to the LPI transmit and receive state diagrams, but there is no corresponding SHALL statement in text

SuggestedRemedy

add appropriate SHALL statements.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Comment #455 adds shall statements

Cl **48** *SC* **48.2.6.2.5** *P* **134** *L* **8** # 20

Barrass, Hugh Cisco

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

Many arrows in fig 48-9a & 48-9b are not properly aligned.

SuggestedRemedy

Align the arrow heads & tails in fig 48-9a & 48-9b.

Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.6.2.5** *P* **135** *L* # 129

Estes, Dave UNH - IOL

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

Figure 48-9b

RX_SLEEP: The rx_tq_timer that is started in this state is defined in 48.2.4.2.5 to be started when the RX_QUIET state is entered not the RX_SLEEP state. Also, the ||LPIDLE|| exit condition from this state that goes back to this state and will cause the timer to be restarted upon each re-entry.

RX_WAKE: The signal_detect=FAIL exit condition does not seem appropiate because it allows the device to receive data or other non-Idle and non-LPIDLE characters while in the RX_WAKE state while signal_detect=OK, only LPIDLE should be received.

SuggestedRemedy

RX_SLEEP: If a timer is intended to be utilized in this state then a rx_ts_timer should be defined.

RX_WAKE: Remove the signal_detect=FAIL exit condition.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The state machine is modified by comment #448.

Update the description in 48.2.4.2.5 to match the modified state machine.

Cl **48** *SC* **48.2.6.2.5** *P* **135** *L* **17** # 100

Brown, Matt AppliedMicro (AMCC)

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

In Figure 48-9b, transitions out of RX_SLEEP are ambiguous.

SuggestedRemedy

Change criteria for RX_SLEEP-RX_SLEEP to "||LPIDLE||*!rx_tq_timer_done".Change criteria for RX_SLEEP-RX_ACTIVE to "||IDLE||*!rx_tq_timer_done".
criteria for RX_SLEEP-RX_ACTIVE to "(signal_detect=FAIL)*!rx_tq_timer_done".

Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.6.2.5** *P* **135** *L* **19** # 448

Thaler, Pat Broadcom

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

There appears to be a small bug in the state machine. If while in LPI, the link becomes degraded such that the receiver can not acquire deskew_align_status=OK, but the signal is still able to trigger signal_detect=OK though perhaps sluggishly or intermittantly, then Link Failure will not be detected.

Also note that at these speeds, signal detect is difficult and it is possible that noise on a none terminated line may cause signal detection. It is so difficult at these speeds to set a threshold that doesn't unsquelch for noise and does for signal that we made it optional in Clause 71 and rely mainly on gaining alignment as a measure of link quality.

Each time LPI is sent on the link, signal detect (which might be due to noise) will cause a transition from quiet to wake. If alignment cannot be acheived by the time the incoming signal returns to quiet, the state returns to quiet and the rx_tq_timer is restarted. This can go on indefiniately without detecting the failure because none of the timers time out.

This may delay failure detection or prevent it which hurts fast fail-over capabilities in end nodes and bridges. Also, if the machine doesn't get to RX_LINK_FAIL to assert align_status = FAIL, auto-neg to begin to restore the link can not start.

SuggestedRemedy

Start rx_tq_timer only in RX_SLEEP state so that cycles of signal detect that don't achieve alignment don't restart the timer.

Also, the definition of rx_tq_timer currently says that it is started in RX_QUIET but doesn't mention that it is also started in RX_SLEEP. Correct the definition to match the resolution of this comment.

Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.6.2.5** *P* **135** *L* **22** # 98

Brown, Matt AppliedMicro (AMCC)

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

Transitions from RX_WAKE and RX_WTF to RX_QUIET will restart quiet timer so realistic failure scenarios can cause undetected failure. One scenario is link partner driver failing or interconnect failure enough to attenuate but not kill the signal.

Instead, the return transition should not restart quiet timer.

SuggestedRemedy

Create new state RX_QUIET_INIT between RX_SLEEP and RX_QUIET.
RX_SLEEP to RX_QUIET_INIT when "signal_detect=FAIL".
RX_QUIET_INIT to RX_QUIET WHEN "UCT"
In RX_QUIET delete "Start rx_tq_timer".
In RX_QUIET_INIT add "Start rx_tq_timer".

The above will permit the dead loop to continue until the quiet timer (3-4 ms) is done then a fault will be detected.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #448

Cl **48** *SC* **48.2.6.2.5** *P* **135** *L* **3** # 82

Brown, Matt AppliedMicro (AMCC)

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

In Figure 48-9b, comparing boolean variable to boolean value is redundant and out of style for this Clause.

SuggestedRemedy

Change "reset=TRUE" to "reset".

Response *Response Status* **C**

ACCEPT.

Cl **48** *SC* **48.2.6.2.5** *P* **136** *L* **3** # 449

Thaler, Pat Broadcom

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

The transmitter timers should also specify the acceptable range - either by min and max columns as for the receivers or by stating a tolerance.

SuggestedRemedy

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add tolerance of 1%.

Cl **48** *SC* **48.7.4.5** *P* **137** *L* **24** # 34

Barrass, Hugh Cisco

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

Need more specific PICs items for state machines

SuggestedRemedy

Replace item LP-01 with:

LP-01 - receive state machine: Support additions to Figure 48-9 for LPI operation : 48.2.6.2
LP-02 - LPI transmit state machine : Meets the requirements of Figure 48-9a : 48.2.6.2.5
LP-03 - LPI receive state machine : Meets the requirements of Figure 48-9b : 48.2.6.2.5
LP-04 - LPI transmit timing : Meets the requirements of Table 48-9 : 48.2.6.2.5
LP-05 - LPI receive timing : Meets the requirements of Table 48-10 : 48.2.6.2.5

Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* *P* *L* # 222

Gustlin, Mark Cisco

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

This statement is confusing:

If the optional Low Power Idle function is implemented the transmit and receive functions are modified as shown in Figures 49-16 and 49-17.

The transmit and recieve functions are specified by 49-14 and 49-15, clarify this statement.

SuggestedRemedy

As above

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Comment #455 covers this

Cl **49** *SC* **49.1.5** *P* **138** *L* **26** # 219

Gustlin, Mark Cisco

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

This clause is not consistent with what it calls the low power option. Here is is Energy Efficient Ethernet, elsewhere it is called Low power idle. I think it would be good to be consistent, stick with one or the other when calling out the optional functions.

SuggestedRemedy

As above.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "Energy Efficient Ethernet function" to "EEE capability" to be consistent with other subclauses.

Cl **49** *SC* **49.1.6** *P* **138** *L* **37** # 31

Barrass, Hugh Cisco

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

** State diagram conventions **

It is not clear which state diagram conventions are relevant for each section in this amendment. Notes need to be added so that the conventions for each clause are clear.

The conventions may be cleaned up and coordinated in the next revision when all clauses are open.

SuggestedRemedy

Add a note:

Note: The state diagram conventions described in 49.2.13.1 apply to all of the state diagrams in this clause.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #26
Make it an editors note.

Cl **49** *SC* **49.2.13.2.2** *P* **144** *L* **19** # 453

Thaler, Pat Broadcom

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

Make it clear that only devices implementing EEE need to implement the additional variables and counters either by putting them in a separate section or by adding a notation of that to each item.

SuggestedRemedy

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Similarly to comment #394

Change the note on p.144, l.13 can be changed in a similar manner to comment #483 response:
"NOTE: If the EEE capability is implemented, then this variable is affected by the LPI receive state diagram. If the EEE capability is not implemented then this variable is identical to rx_block_lock controled by the lock state diagram."

See response to comment #410 that calls for EEE related counters/variables/timers to be distinctly identified as opposed to being merged into the existing list of counter/variables/timers

Cl **49** *SC* **49.2.13.2.2** *P* **144** *L* **43** # 92

Brown, Matt AppliedMicro (AMCC)

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

Make it clear what to do with scrambler reset if FEC is not in use.

SuggestedRemedy

Add sentence to end of paragraph.
"The PHY shall set scrambler_reset_enable = FALSE if FEC is not in use."

Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.13.2.2** *P* **144** *L* **49** # 133

Estes, Dave UNH - IOL

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

wake_error_counter should be in the counter subclause not the variable subclause.

SuggestedRemedy

Move wake_error_counter to the counter subclause.

Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.13.2.3** *P* **141** *L* **32** # 131

Estes, Dave UNH - IOL

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

R_BLOCK_TYPE

Bullet a) of Type C currently states "A block type field of 0x1e and eight valid control characters none of which is /E/ and all eight of which are not /LI/ (note that the eight /LI/ characters are only excluded if the optional Low Power Idle function is supported)". The wording "none of which is /E/ and all eight of which are not /LI/" is confusing and can be mis-interpreted (does all eight of which are not /LI/ mean that none are /LI/ or less than 8 are /LI/?). The note "note that the eight /LI/ characters are only excluded if the optional Low Power Idle function is supported" is not necessary because page 138 lines 53/54 states that if the Low Power Idle function is not supperted then Low Power Idle characters will be treated as an error if received.

SuggestedRemedy

Change bullet a) of Type C from "A block type field of 0x1e and eight valid control characters none of which is /E/ and all eight of which are not /LI/ (note that the eight /LI/ characters are only excluded if the optional Low Power Idle function is supported)" to "A block type field of 0x1e and eight valid control characters other than /E/ and where less than eight of the characters are /LI/".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Also see response to #139

Make the change suggested, but change:

"and where less than eight of the characters are /LI/"

"and, if the EEE capability is supported, less than eight of the characters are /LI/" (see comment #452)

Cl **49** *SC* **49.2.13.2.3** *P* **141** *L* **38** # 452

Thaler, Pat Broadcom

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

Something beginning "note that" isn't normative and bit errors could create an LI on a non-LPI link. We shouldn't place new requirements on a currently conformant device.

SuggestedRemedy

replace from "and" with "and, when EEE is enabled, all eight of which are not /LI/"

Also For "LI:" supported should be enabled.

This comment also applies to T_BLOCK_TYPE

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete the note & make LPI support statement normative as suggested - see comments #131, 132 for details.

See response to comment #402 for supported vs enabled.

Cl **49** *SC* **49.2.13.2.3** *P* **142** *L* **52** # 132

Estes, Dave UNH - IOL

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

T_BLOCK_TYPE

Bullet a) of Type C currently states "eight valid control characters /O/, /S/, /T/, /E/ and all eight of which are not /LI/ (note that the eight /LI/ characters are only excluded if the optional Low Power Idle function is supported)". The wording "all eight of which are not /LI/" is confusing and can be mis-interpreted (does all eight of which are not /LI/ mean that none are /LI/ or less than 8 are /LI/?).

Type LI is defined as eight /LI/ characters or four /LI/ followed by four /I/ characters, however this is inconsistent with R_BLOCK_TYPE which classifies four /LI/ followed by four /I/ characters as type C.

SuggestedRemedy

Change Bullet a) of Type C from "eight valid control characters /O/, /S/, /T/, /E/ and all eight of which are not /LI/ (note that the eight /LI/ characters are only excluded if the optional Low Power Idle function is supported)" to "eight valid control characters /O/, /S/, /T/, /E/ and where less than eight of the characters are /LI/".

Change the definition of type LI from "If the optional Low Power Idle function is supported then this vector contains eight /LP/ characters, or contains four /LI/ followed by four /I/ characters" to "If the optional Low Power Idle function is supported then this vector contains eight /LP/ characters"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Also see response for comment #140

Make the change suggested, but change:

"and where less than eight of the characters are /LI/"

"and, if the EEE capability is supported, less than eight of the characters are /LI/" (see comment #452)

Cl **49** *SC* **49.2.13.2.5** *P* **145** *L* # 220

Gustlin, Mark Cisco

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

This statment is confusing:

"Change Figure 49-14 for LPI transmit state diagram and 49-15 for LPI receive state diagram"

Does it refer to the transmit state diagram (49-14) and recieve (49-15), or the LPI transmit state diagram (49-16) and the LPI receive state diagram (49-17)?

SuggestedRemedy

Clarify the statement accordingly.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Comment #455 clarifies.

Cl **49** *SC* **49.2.13.3** *P* **146** *L* **18** # 545

Brown, Matt AppliedMicro (AMCC)

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

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

SuggestedRemedy

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

Proposed Response *Response Status* **W**

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

Some of the issues raised may have been resolved by the response to comments #99 and #456

Cl **49** *SC* **49.2.13.3** *P* **147** *L* # 134

Estes, Dave UNH - IOL

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

Figure 49-15

RX_D: There is not an exit condition defined if R_TYPE_NEXT=LI.

RX_E: There is not an exit condition defined if R_TYPE_NEXT=LI.

SuggestedRemedy

RX_D: Modify the exit conditions from RX_D and RX_E states to the RX_T state to "R_TYPE(rx_coded)=T * R_TYPE_NEXT=(S+C+LI)"

Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.13.3** *P* **147** *L* **2** # 454

Thaler, Pat Broadcom

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

This state diagram also needs a note saying the state in the dotted box is optional.

SuggestedRemedy

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Also add the following note:

Note: transition E is only required for EEE capability.

Cl **49** *SC* **49.2.13.3.1** *P* **148** *L* **3** # 224

Gustlin, Mark Cisco

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

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

SuggestedRemedy

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Comment #455 may satisfy this.

Cl **49** *SC* **49.2.13.3.1** *P* **148** *L* **3** # 455

Thaler, Pat Broadcom

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

This text makes it sound like the figures replace or show modifications to the transmit and receive state machines.

Also the text should make a normative statement. For an example see the first sentence of 48.2.6.2.2.

Page 150 line 4 should also make a normative statement.

SuggestedRemedy

State that A PCS which supports EEE shall implement the LPI transmit and processes as shown in figures 49-16 and 49-17 and that these processes shall run when EEE is enabled. You can go on to explain that the transmit LPI state diagram controls tx_quiet which disables the transmitter when true and that the receive one produces block_lock and tells the receive state machine when a receive LPI has ended. Make the reference to the LPI timer tables normative too.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This comment was originally submitted on Clause 48:

49.2.13.3.1 - p.148, l.1

"A PCS which supports the EEE capability shall implement the LPI transmit and receive processes as shown in figures 49-16 and 49-17. The transmit LPI state diagram controls tx_quiet which disables the transmitter when true. The receive LPI state diagram controls block_lock during LPI and synchronizes the receive state machine with the end of the LPI."

Change the statement on p.150, l.4:

"The LPI functions shall use timer values for these state machines as shown in Table 49-2 for transmit and Table 49-3 for receive."

Cl **49** *SC* **49.2.13.3.1** *P* **149** *L* **18** # 546

Brown, Matt AppliedMicro (AMCC)

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

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

SuggestedRemedy

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

Proposed Response *Response Status* **W**

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

Some of the issues raised may have been resolved by the response to comments #99 and #456

Cl **49** *SC* **49.2.13.3.1** *P* **149** *L* **19** # 547

Brown, Matt AppliedMicro (AMCC)

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

Transition criteria from RX_SLEEP to RX_ACTIVE not consistent with rest of SM.

SuggestedRemedy

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

Proposed Response *Response Status* **W**

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

Some of the issues raised may have been resolved by the response to comments #99 and #456

Cl **49** *SC* **49.2.13.3.1** *P* **149** *L* **22** # 425

Thaler, Pat Broadcom

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

There appears to be a small bug in the state machine. If while in LPI, the link becomes degraded such that the receiver can not acquire rx_block_lock, but the signal is still able to trigger energy_detect=OK though perhaps sluggishly or intermittantly, then Link Failure will not be detected.

Also note that at these speeds, signal detect is difficult and it is possible that noise on a none terminated line may cause signal detection. It is so difficult at these speeds to set a threshold that doesn't unsquelch for noise and does for signal that we made it optional in Clause 72 and rely mainly on gaining alignment as a measure of link quality.

Each time LPI is sent on the link, energy_detect (which might be due to noise) will cause a transition from quiet to wake. If block lock cannot be acheived by the time the incoming signal returns to quiet, the state returns to quiet and the rx_tq_timer is restarted. This can go on indefiniately without detecting the failure because none of the timers time out.

This may delay failure detection or prevent it which hurts fast fail-over capabilities in end nodes and bridges. Also, if the machine doesn't get to RX_LINK_FAIL to assert block_lock = FAIL, triggering auto-neg to begin to restore the link can not start.

SuggestedRemedy

Start rx_tq_timer only in RX_SLEEP state so that cycles of signal detect that don't achieve alignment don't restart the timer.

Also, the definition of rx_tq_timer currently says that it is started in RX_QUIET but doesn't mention that it is also started in RX_SLEEP. Correct the definition to match the resolution of this comment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #99

Cl **49** *SC* **49.2.13.3.1** *P* **149** *L* **25** # 99

Brown, Matt AppliedMicro (AMCC)

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

Transitions from RX_WAKE and RX_WTF to RX_QUIET will restart quiet timer so realistic failure scenarios can cause undetected failure. One scenario is link partner driver failing or interconnect failure enough to attenuate but not kill the signal. Another is the Tx taps have changed.

Instead, the return transition should not restart quiet timer.

SuggestedRemedy

Create new state RX_QUIET_INIT between RX_SLEEP and RX_QUIET.
RX_SLEEP to RX_QUIET_INIT when "!signal_ok".
RX_QUIET_INIT to RX_QUIET WHEN "UCT"
In RX_QUIET delete "Start rx_tq_timer".
In RX_QUIET_INIT add "Start rx_tq_timer".

The above will permit the dead loop to continue until the quiet timer (3-4 ms) is done then a fault will be detected.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

State diagram changes as per brown_01_0909.pdf will resolve the issue.

Cl **49** *SC* **49.2.13.3.1** *P* **150** *L* **9** # 426

Thaler, Pat Broadcom

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

The transmitter timers should also specify the acceptable range - either by min and max columns as for the receivers or by stating a tolerance.

SuggestedRemedy

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Put a tolerance of 1%

Cl **49** *SC* **49.2.4.4** *P* **138** *L* **52** # 343

Law, David 3Com

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

The encoding on the receive path of the XGMII when the PHY is receiving the Low Power Idle on its RX MDI is Table 46-4 as 'assert low power idle', not 'receive Low Power Idle' (see also my comment on subclause 22.2.2.7).

SuggestedRemedy

Change 'receive Low Power Idle' to read 'assert low power idle'.

Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.4.4** *P* **138** *L* **54** # 450

Thaler, Pat Broadcom

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

Supported should be enabled since these signals should not be transmitted when the LP (or where there is an XGMII where the Reconcilliation sublayer) does not support EEE.

SuggestedRemedy

Change supported to enabled.

Response *Response Status* **C**

REJECT.

See comment #402

Cl **49** *SC* **49.2.4.4** *P* **139** *L* **25** # 59

Bennett, Michael LBNL

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

Note: entered on behalf of Jonathan Ebbers, jpebbers@us.ibm.com
802-769-5034 (T/L 446-5034)

Signal scrambler_reset is not listed in the Service primitive from PCS for Energy efficient ethernet support (optional) as displayed in Section 74.5.5. Also this signal does not appear also in Figure 74-1

SuggestedRemedy

remove signal scrambler_reset from Figure 49.4

Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.4.7** *P* **139** *L* **52** # 217

Gustlin, Mark Cisco

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

In the following statement, the (0x07) can be confusing, since we don't know if it refers to the XGMII or 10GBASE-R code, and the XGMII code for Idle is also 0x07.

To communicate Low Power Idle, low power idle control character /LI/ (0x07) is sent continuously in place
of /I/.

SuggestedRemedy

Change to:

To communicate Low Power Idle, low power idle control character /LI/ is sent continuously in place of /I/.

Response *Response Status* **C**

ACCEPT.

Cl **49** *SC* **49.2.4.7** *P* **140** *L* # 130

Estes, Dave UNH - IOL

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

Table 49-1

The encoding from XGMII control codes of 0x06 to 10GBASE-R control codes of 0x07 is inconsistent with the Clause 55 encoding from XGMII control codes of 0x06 to 10GBASE-R control codes of 0x06.

Regarding the 8B/10B cell containing "K28.0 or K28.3 or K28.5 with D20.5 in one row", D20.5 is only included when K28.0 or K28.5 is transmitted.

SuggestedRemedy

Change the encoding from XGMII control codes of 0x06 to 10GBASE-R control codes of 0x06. Also reflect this change on page 139 line 52 and page 141 line 43 (type LI).

Change the cell "K28.0 or K28.3 of K28.5 with D20.5 in one row" to "K28.0 with D20.5 in one row, or K28.3, or K28.5 with D20.5 in one row"

Response *Response Status* **C**

ACCEPT.

Also see response to comment #466

Cl **49** *SC* **49.2.6** *P* **141** *L* **1** # 223

Gustlin, Mark Cisco

Comment Type **TR** *Comment Status* **A** *scrambler-reset*

It seems to me that resetting the scrambler to all 0s each time the link comes out of LPI is dangerous and will allow malicious users to send killer packets. The original scrambler for 10GE was chose as a very long polynomial to prevent attacks.
Walker's presentation shows a Mean Time to Jamming of 29 years, but that is without resetting the scrambler.
http://grouper.ieee.org/groups/802/3/10G_study/public/jan00/walker_1_0100.pdf

When you reset the scrambler often, that means someone could construct a packet to reverse the scrambler, and if this packet is sent immediately after LPI for instance, it could reverse the scrambler and bring down the link.

SuggestedRemedy

Either find another way to sync up the FEC after LPI or do an analysis that shows the possibility of jamming the scrambling even though it is being reset is not significant.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See response to Comment #456

Cl **49** *SC* **49.2.6** *P* **141** *L* **1** # 456

Thaler, Pat Broadcom

Comment Type **TR** *Comment Status* **A** *scrambler-reset*

This says that holding the scrambler reset aids in block synchronization. Apparently this only applies to FEC block sychronization. The 64B/66B block lock state machine will not obtain lock with the scrambler off because it relies on the scrambler running to ensure that the only spot in a block where a persistant transtion occurs is at the sync header. If the scrambler is held reset for 1 us, then the clock state machine can have an incorrect lock until it is released.

There is no statement made of when scrambler reset should/may/shall be enabled. The simplest approach is to require scrambler_reset_enable to be true when the PHY has FEC and false otherwise.

If use of scramble reset is optional outside FEC or not mandatory for FEC, then it would have to be negotiated.

SuggestedRemedy

Add the requirements for when scrambler_reset_enable shall be true when FEC is operating and false otherwise. Also, change the description to say that it aids in FEC block synchronization.

Also, once signal detect indicates okay because of FEC lock and unscrambled data is arriving, the R PCS may think it has block lock because it can lock on any transition in the unscrambled data but it won't be producing useable receive data since it may have a bad lock and even if it happened to lock on the sync header, its descrambler is running even though the incoming 64B/66B blocks are not scrambled. Explain how that is to be handled.

If there is an intent for scrambler reset to be used outside FEC, then the mechanism for block lock will need to be specified/explained and enabling of scrambler reset will need to be added to clause 45 and auto-neg. Also, how the receiver knows when to enable its descrambler will need to be explained unless the assumption is that it is okay to get bad blocks out of the 64B/66B from the time that lock occurs until the input data is scrambled.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replacing scrambler_reset with scrambler_bypass and modify text as per:
brown_01_0909.pdf.

Cl **49** *SC* **49.2.9** *P* **141** *L* **15** # 451
Thaler, Pat Broadcom

Comment Type **T** *Comment Status* **R**
implemented SB enabled

SuggestedRemedy

Response *Response Status* **C**
REJECT.

See comment #402

Cl **49** *SC* **49.2.9** *P* **141** *L* **16** # 218
Gustlin, Mark Cisco

Comment Type **T** *Comment Status* **A**
I belive the reference should be to 49-17, not 49-15?

SuggestedRemedy
Change the reference to 49-17.

Response *Response Status* **C**
ACCEPT.

Cl **49** *SC* **49.3.6.6** *P* **152** *L* **32** # 33
Barrass, Hugh Cisco

Comment Type **T** *Comment Status* **A**
Need more specific PICs items for state machines

SuggestedRemedy
Delete item LP-04 & replace with the following lines:

LP-04 - transmit state machine: Support additions to Figure 49-14 for LPI operation : 49.2.13.3
LP-05 - receive state machine: Support additions to Figure 49-15 for LPI operation : 49.2.13.3
LP-06 - LPI transmit state machine : Meets the requirements of Figure 49-16 : 49.2.13.3.1
LP-07 - LPI receive state machine : Meets the requirements of Figure 49-17 : 49.2.13.3.1
LP-08 - LPI transmit timing : Meets the requirements of Table 49-2 : 49.2.13.3.1
LP-09 - LPI receive timing : Meets the requirements of Table 49-3 : 49.2.13.3.1

Response *Response Status* **C**
ACCEPT.

Cl **51** *SC* **51.4.2** *P* **154** *L* **1** # 435
Thaler, Pat Broadcom

Comment Type **TR** *Comment Status* **A**
These are primitives on the service interface and should have primitive definitions in the style of 51.2

SuggestedRemedy
Add primitive definitions

Response *Response Status* **C**
ACCEPT.

Cl **51** *SC* **51.8a.1** *P* **154** *L* **27** # 123
D'Ambrosia, John Force10 Networks

Comment Type **TR** *Comment Status* **A**
PICS call out "additional interface variables to support LPI, but no SHALL statement in corresponding text.

SuggestedRemedy
add appropriate SHALL statement

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

Change "includes" to "shall include" on line 22.

Cl **55** *SC* **55.1.3.1** *P* **158** *L* **4** # 135
Estes, Dave UNH - IOL

Comment Type **E** *Comment Status* **A**
The sentence "When the PHY supports EEE the PCS also supports a low power mode" is unnecessary because the PCS is part of the PHY and therefore must support EEE if the PHY does.

SuggestedRemedy
Remove the sentence "When the PHY supports EEE the PCS also supports a low power mode".

Response *Response Status* **C**
ACCEPT.

Cl **55** *SC* **55.1.3.2** *P* **158** *L* **11** # 136

Estes, Dave UNH - IOL

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

The sentence "When the PHY supports EEE the PMA also supports a low power transmit mode and a low power receive mode" is unnecessary because the PMA is part of the PHY and therefore must support EEE if the PHY does.

SuggestedRemedy

Remove the sentence "When the PHY supports EEE the PMA also supports a low power transmit mode and a low power receive mode".

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.1.3.2** *P* **158** *L* **38** # 340

Law, David 3Com

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

As XGMII means 10 Gigabit Media Independent Interface 'XGMII interface' expands to '10 Gigabit Media Independent Interface Interface'.

SuggestedRemedy

Change 'XGMII interface' to read 'XGMII'.

Also:
Page 159, line 25
Page 168, line 53
Page 232, line 11
Page 232, line 19
Page 232, line 20

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.1.3.3** *P* **158** *L* **21** # 71

Brown, Matt AppliedMicro (AMCC)

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

Not clear whether each end or each direction can go into low power mode independently.

SuggestedRemedy

Change "Each side" to "Each direction".

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.1.3.3** *P* **158** *L* **26** # 102

Brown, Matt AppliedMicro (AMCC)

Comment Type **TR** *Comment Status* **A** *LP_IDLE_4+4*

Text specifies that lower power mode begins when one block of all LI characters is received. However, state machine permits transition when block of 4 /LI/ plus 4 /I/ characters is received.

SuggestedRemedy

Disallow transition to lower power mode upon receipt of 4 /LI/ plus 4 /I/.
Method suggested in comment against state machine.

Response *Response Status* **C**

ACCEPT.

See comment #95

Cl **55** *SC* **55.1.3.3** *P* **158** *L* **42** # 72

Brown, Matt AppliedMicro (AMCC)

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

Signal is framed LDPC not characters.

SuggestedRemedy

Change "composed of IDLE characters" "composed of LDPC frames containing only IDLE characters".

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.1.3.3** *P* **158** *L* **47** # 83

Brown, Matt AppliedMicro (AMCC)

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

The link partner is a transmitter.

SuggestedRemedy

Change "This indicates that the link partner is about to enter the low power receive mode." to "This indicates that the link partner is about to enter the low power transmit mode."

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.1.3.3** *P* **159** *L* **8** # 73

Brown, Matt AppliedMicro (AMCC)

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

Sentence structure.

SuggestedRemedy

Change:
"The PCS 64/65B Transmit state diagram includes additional states for EEE as specified in Figure 55-15 and Figure 55-15a."
To:
"The PCS 64/65B Transmit state diagram as specified in Figure 55-15 and Figure 55-15a includes additional states for EEE."

AND

Change:
"The PCS 64/65B Receive state diagram includes additional states for EEE as specified in Figure 55-16 and Figure 55-16a."
To:
"The PCS 64/65B Receive state diagramas specified in Figure 55-16 and Figure 55-16a includes additional states for EEE."

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.2.2.10** *P* **161** *L* **35** # 437

Thaler, Pat Broadcom

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

Indications are primitives that go up the stack, requests go down the stack.
PCS_RX_LPI_STATUS goes down the stack so it is a request, not an indication

SuggestedRemedy

Change to .request

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.2.2** *P* **163** *L* **23** # 466

Zimmerman, George Solarflare

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

Both clause 55 and clause 49 share a common block encoder (64/65B and 64/66B), yet the changes for Low Power Idle (/LI/) are different. These should use the same control code to maintain commonality, simplicity, and avoid confusion.

SuggestedRemedy

SuggestedRemedy: Change the control code for /LI/ in Clause 55 to 0x07 & make associated changes to R_Block_Type LI and T_Block_Type LI.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Based on email on the .az reflector the value will be changed to 0x06 in clause 49. Clause 55 will remain unchanged and will keep 0x06.

Cl **55** *SC* **55.3.2.2.21** *P* **159** *L* **8** # 74

Brown, Matt AppliedMicro (AMCC)

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

Change 64/65B to 64B/65B. Two instances in paragraph.

SuggestedRemedy

Change 64/65B to 64B/65B. Two instances in paragraph.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.2.2.21** *P* **164** *L* **35** # 67

Brown, Matt AppliedMicro (AMCC)

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

/I/ is character label, use IDLE.

SuggestedRemedy

Change "/I/ 64B/65B" to "IDLE 64B/65B" in two places in paragraph.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.2.2.9a** *P* **163** *L* **40** # 194

Grimwood, Michael Broadcom

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

The specification is not explicit with respect to how /LI/ characters are treated when low-power idle is not supported.

This leads to ambiguity in Section 55.3.5.2.4 (pp 170-171) with respect to whether R_BLOCK_TYPE and T_BLOCK_TYPE are of type C or E when low power idle is not supported and one or more /LI/ characters are present.

SuggestedRemedy

Add the following sentence to the end of the paragraph:
If low power idle is not supported, then /LI/ is not a valid control character.

Response *Response Status* **C**

ACCEPT.

Modify wording in above response as per Motion #3 before implementing response

Cl **55** *SC* **55.3.2.2.9a** *P* **165** *L* **33** # 75

Brown, Matt AppliedMicro (AMCC)

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

Definition incorrectly describes the criteria by which /LI/ characters indicate when to enter low power mode. This is described in 55.1.3.3 as indicated later in the paragraph.

SuggestedRemedy

In first sentence of paragraph, remove: "When preceded by control characters /I/, " and capitalize first letter of "low".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accept suggested remedy and change 'is requesting a transition to' to 'is requesting operation in' to make it clear that the MAC uses /LI/ to maintain an LP_IDLE state.

Cl **55** *SC* **55.3.2.3** *P* **165** *L* **39** # 76

Brown, Matt AppliedMicro (AMCC)

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

Change "an single pair" to "a single pair".

SuggestedRemedy

Change "an single pair" to "a single pair".

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.4a** *P* **165** *L* **36** # 68

Brown, Matt AppliedMicro (AMCC)

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

No LDPC frames during Quiet-Refresh. Refer to length in terms of LDPC frame periods.

SuggestedRemedy

Change "LDPC frames" to "LDPC frame periods" in two places in paragraph.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.4a.1** *P* **166** *L* **24** # 137

Estes, Dave UNH - IOL

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

Type, change maximise to maximize.

SuggestedRemedy

Change maximise to maximize.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.4a.1** *P* **167** *L* # 138

Estes, Dave UNH - IOL

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

Table 55-1b

The value cell for tx_active_pair=PAIR_C incorrectly references v instead of u.

SuggestedRemedy

Change "lpi_offset + 3 x lpi_qr_time <= u < 4 x lpi_qr_time OR 0 <= v < lpi_offset" to "lpi_offset + 3 x lpi_qr_time <= u < 4 x lpi_qr_time OR 0 <= u < lpi_offset"

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.4a.1** *P* **167** *L* **29** # 78

Brown, Matt AppliedMicro (AMCC)

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

Tables 55-1c defines time bounds with complex equations containing fixed value variables. For easy reference and clarity replace variable names with fixed values.

SuggestedRemedy

Replace column 3 for table 55-1b as follows:
Row 1: 124 <= mod(v,128) <= 127
Row 2: mod(v,128) = 124
Row 3: 0 <= v <= 127
Row 4: 128 <= v <= 255
Row 5: 256 <= v <= 383
Row 6: 384 <= v <= 511

Response *Response Status* **C**

REJECT.

Cl **55** *SC* **55.3.4a.1** *P* **167** *L* **6** # 77

Brown, Matt AppliedMicro (AMCC)

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

Tables 55-1b defines time bounds with complex equations containing fixed value variables. For easy reference and clarity replace variable names with fixed values.

SuggestedRemedy

Replace column 3 for table 55-1b as follows:
Row 1: 60 <= mod(u,128) <= 63
Row 2: mod(u,128) = 60
Row 3: 192 <= u <= 319
Row 4: 320 <= u <= 447
Row 5: 448 <= u <= 551 or 0 <= u <= 63
Row 6: 64 <= u <= 191

Response *Response Status* **C**

REJECT.

Cl **55** *SC* **55.3.4a.3** *P* **168** *L* **32** # 69

Brown, Matt AppliedMicro (AMCC)

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

Change "when the sleep is detected" to "when the sleep signal is detected".

SuggestedRemedy

Change "when the sleep is detected" to "when the sleep signal is detected".

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.4a.3** *P* **169** *L* **5** # 380

Parnaby, Gavin Solarflare Communica

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

tx_lpi_active is not used consistently.

State diagram 55-15a relies on tx_lpi_active becoming equal to false after the wake signal. REFRESH_A/.../REFRESH_D/QUIET are set when tx_lpi_active is true; refreshes are not transmitted after the alert, so for this logic to work tx_lpi_active must be set false as soon as the alert state is entered.

In draft 2.0 tx_lpi_active is set to false in SEND_ALERT, which matches the refresh logic, but not 55-15a.

The tx_lpi_active variable cannot be used by both state machines.

[if the remedy in comment #10 is used then I think it removes this issue]

SuggestedRemedy

Either

i) follow comment #10 and pass XGMII codewords

or if comment #10 is not adopted

ii)
Add a second control variable tx_lpi_qr_active. tx_lpi_qr_active is set true when the PHY is sending quiet/refresh signaling. tx_lpi_active is set to true whn the PHY is sending sleep, quiet/refresh, alert and wake signaling.
Change the lpi_tx_mode description so that the REFRESH_X and QUIET values use tx_lpi_qr_active instead of the existing tx_lpi_active.
Change the lpi_tx_mode description to say
'The variable is set to NORMAL when tx_lpi_qr_active is false, indicating the PCS will encode code-groups as specified by the state diagrams 55-15, 55-15a, 55-16b.'
Change 55-16b so that tx_lpi-active is set to true within SEND_SLEEP. Change the tx_lpi_active within SEND_INITIAL_QUIET and SEND_QR to tx_lpi_qr_active. Change the tx_lpi_active<=FALSE within SEND_ALERT to tx_lpi_qr_active<=FALSE.
Change the text in 55.3.4a and 55.3.4a.3 to reflect these changes

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement the definitions on pages 10-14 and the state diagrams on pages 15, 16 and 20 of parnaby_01_0909_v2.pdf.

In addition, redefine:
tx_lpi_active as TRUE from when the PHY starts sending SLEEP until the PHY finishes WAKE

Cl **55** *SC* **55.3.4a.3** *P* **169** *L* **7** # 70

Brown, Matt AppliedMicro (AMCC)

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

Equations for REFRESH_A/B/C/D is hard to read and somewhat ambiguous.

SuggestedRemedy

Put brackets around "rx_active_pair==PAIR_A/B/C/D".
State that result of equation must be true.
Put equation on new line

Example:

The variable is set to REFRESH_A when
(tx_lpi_active * (tx_active_pair==PAIR_A) * tx_refresh_active)
is TRUE.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.5.2.3** *P* **170** *L* **16** # 84

Brown, Matt AppliedMicro (AMCC)

Comment Type **T** *Comment Status* **A** *block_definitions*

LPI wake sends LI or LF (local fault) blocks.
LF blocks are not defined. Another comment requests specification of LF block.

SuggestedRemedy

Change "IDLE control characters" to "IDLE or LF blocks".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Line 16 on page 170 is part of the lpi_wake_timer definition

Change the lpi_wake_timer definition to read:
"This timer defines the time the local transmitter transmits the wake signal."

Cl **55** *SC* **55.3.5.2.3** *P* **170** *L* **19** # 85

Brown, Matt AppliedMicro (AMCC)

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

Number of LDPC frames is defined by fixed variable specified on another page. To make this definition clear put the value here.

SuggestedRemedy

Change "equal to lpi_wake_time LDPC frames" to "equal to 9 LDPC frame periods".

Response *Response Status* **C**

REJECT.

No need to repeat the same number multiple places in the draft for maintainability.

Cl **55** *SC* **55.3.5.2.3** *P* **170** *L* **24** # 86

Brown, Matt AppliedMicro (AMCC)

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

Number of LDPC frames is defined by fixed variable specified on another page. To make this definition clear put the value here.

SuggestedRemedy

Change "equal to lpi_wake_time LDPC frames" to "equal to 9 LDPC frame periods".

Response *Response Status* **C**

REJECT.

See response to comment #85

Cl **55** *SC* **55.3.5.2.3** *P* **170** *L* **26** # 87

Brown, Matt AppliedMicro (AMCC)

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

lpi_tx_wake_timer is not used in Clause 55.

SuggestedRemedy

Remove definition of lpi_tx_wait_timer, lines 25 to 31.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.5.2.4** *P* **170** *L* **36** # 139

Estes, Dave UNH - IOL

Comment Type **T** *Comment Status* **A** *block_definitions*

R_BLOCK_TYPE

Bullet a) of Type C currently states "A block_type field of 0x1E and eight valid control characters, none of which are /E/ and, if the low power idle function is supported, all of which are not /LI/ ". The wording "all of which are not /LI/" is confusing and can be mis-interpreted (does all of which are not /LI/ mean that none are /LI/ or less than 8 are /LI/?).

The I type should be it's own type and not a subset of C type, so this will need to be reflected in the C type definition.

SuggestedRemedy

Change bullet a) of Type C to "A block_type field of 0x1E and eight valid control characters other than /E/ and, if the low power idle function is supported, less than eight of the characters are /LI/ and less than eight of the characters are /I/".

Change the definition for type I to remove the references to this type being a sublcause of type C.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

It is not desirable to separate C/I; if this is done then we break the state machine for existing 10GBASE-T PHYs, for which C includes I. Fixing this would complicate the existing state machine substantially.

The wording will be changed to
"A block_type field of 0x1E and eight valid control characters, none of which are /E/ and, if the low power idle function is supported, none of which are /LI/ "

Cl **55** *SC* **55.3.5.2.4** *P* **170** *L* **37** # 191

Grimwood, Michael Broadcom

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

In R_BLOCK_TYPE, there are 7 types enumerated, not 5.

SuggestedRemedy

Change "five types" to "seven types".

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.5.2.4** *P* **171** *L* **12** # 140

Estes, Dave UNH - IOL

Comment Type **T** *Comment Status* **A** *block_definitions*

T_BLOCK_TYPE

Bullet a) of Type C currently states "eight valid control characters other than /O/, /S/, /T/, and /E/, and, if the low power idle function is supported, which are not eight /LI/ characters and which are not four /LI/ control characters followed by four /I/ control characters". This is not consistent with the R_BLOCK_TYPE definition which does not allow for LI blocks to contain less than eight /LI/ characters.

The I type should be it's own type and not a subset of C type, so this will need to be reflected in the C type definition.

Type LI is defined as eight /LI/ characters or four /LI/ followed by four /I/ characters, however this is inconsistent with R_BLOCK_TYPE which classifies four /LI/ followed by four /I/ characters as type C.

SuggestedRemedy

Change bullet a) of Type C to "eight valid control characters other than /O/, /S/, /T/, and /E/, and, if the low power idle function is supported, ess than eight of the characters are /LI/ and less than eight of the characters are /I/"

Change the definition for type I to remove the references to this type being a sublcause of type C.

Change the defintion of type LI so that it requires eight LI characters.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accepted in part.
See response to comment #139. We don't want to separate C/I; if we do this we break the state machine for existing 10GBASE-T PHYs, for which C includes I.

I should remain part of C.

Cl **55** *SC* **55.3.5.2.4** *P* **171** *L* **13** # 192

Grimwood, Michael Broadcom

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

In T_BLOCK_TYPE, there are 7 types enumerated, not 5.

SuggestedRemedy

Change "five types" to "seven types".

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.5.2.4** *P* **171** *L* **30** # 93

Brown, Matt AppliedMicro (AMCC)

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

LI is specified as including case with either 8 /LI/ or 4x/LI/+4x/I/.
As the state machine in Figure 55-15 is currently defined this allows and requires transition to low power mode if either is detected. Transition to low power mode upon detection of 4x/LI/+4x/I/ should not be permitted. Provision is required to allow for this special case during low power mode in Figure 55-15a.

SuggestedRemedy

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

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

In Figure 55-15...

Change the criteria for transition for the following transition to include LII:
TX_C to TX_E
TX_INIT to TX_E
TX_D to TX_E
TX_E to TX_E
TX_T to TX_E

In Figure 55-15a...

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

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

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

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

In Figure 55-15…

Change the criteria for transition for the following transition to include LII:
TX_C to TX_E
TX_INIT to TX_E
TX_D to TX_E
TX_E to TX_E
TX_T to TX_E

In Figure 55-15a…

Change the criteria for transition from TX_L to TX_L (loop) to "T_TYPE(tx_raw)=(LI+LII)".

Modify above response as per Motion #3 before implementing

Cl **55** *SC* **55.3.5.2.5** *P* **171** *L* **47** # 141

Estes, Dave UNH - IOL

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

ldpc_frame_done is not defined

SuggestedRemedy

Define ldpc_frame_done

Response *Response Status* **C**

ACCEPT.

Change the text to say

'It is incremented after the last symbol of each LDPC frame'

Also change MDI interface to MDI.

Note ldpc_frame_done is used in Figure 55-16b. Ldpc_frame_done becomes true on the final symbol of each ldpc frame and is reset to false on the next symbol. The definition will be added to the variable definitions in 55.3.5.2.2

Cl **55** *SC* **55.3.5.2.5** *P* **171** *L* **51** # 88

Brown, Matt AppliedMicro (AMCC)

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

Change "tx_ldpc_frame_cnt" to "rx_ldpc_frame_cnt".

SuggestedRemedy

Change "tx_ldpc_frame_cnt" to "rx_ldpc_frame_cnt".

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.5.4** *P* **172** *L* **2** # 32

Barrass, Hugh Cisco

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

** State diagram conventions **

It is not clear which state diagram conventions are relevant for each section in this amendment. Notes need to be added so that the conventions for each clause are clear.

The conventions may be cleaned up and coordinated in the next revision when all clauses are open.

SuggestedRemedy

Add a note:

Note: The state diagram conventions described in 55.1.6 apply to all of the state diagrams in this clause.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #26
Make it an editors note.

Cl **55** *SC* **55.3.5.4** *P* **173** *L* # 142

Estes, Dave UNH - IOL

Comment Type **T** *Comment Status* **A** *Terminate_state_transitions*

Figure 55-15

In Clause 49 it is valid to transmit LI while exiting the TX_T state, however this is not shown as a valid transition in Clause 55.

SuggestedRemedy

Add an exit condition from TX_T to TX_L if T_TYPE(tx_raw)=LI, and remove type LI in the transition to the TX_E state.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.5.4** *P* **173** *L* **8** # 94

Brown, Matt AppliedMicro (AMCC)

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

LI is specified as including case with either 8 /LI/ or 4x/LI/+4x/I/.
As the state machine in Figure 55-15 is currently defined this allows and requires transition to low power mode if either is detected. Transition to low power mode upon detection of 4x/LI/+4x/I/ should not be permitted. Provision is required to allow for this special case during low power mode in Figure 55-15a.

This comment is a duplicate of one against 55.3.5.2.4.

SuggestedRemedy

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

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

In Figure 55-15...

Change the criteria for transition for the following transition to include LII:
TX_C to TX_E
TX_INIT to TX_E
TX_D to TX_E
TX_E to TX_E
TX_T to TX_E

In Figure 55-15a...

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

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #93

Modify above response as per Motion #3 before implementing

Cl **55** *SC* **55.3.5.4** *P* **174** *L* # 376

Parnaby, Gavin Solarflare Communica

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

Typo: loc_lpi_req should be tx_lpi_req in TX_WN in Figure 55-15a

SuggestedRemedy

replace loc_lpi_req with tx_lpi_req

Response *Response Status* **C**

ACCEPT.

See response to Comment #89

Cl **55** *SC* **55.3.5.4** *P* **174** *L* # 378

Parnaby, Gavin Solarflare Communica

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

In Figure 55-15a, the transition from WX_WN to TX_WE should use tx_lpi_active=true. Currently it uses tx_lpi_active=false. [i.e. transition from normal to error if a non-IDLE character is detected before the PHY has completed wake].

SuggestedRemedy

Change the transition from TX_WN to TX_WE to

tx_lpi_active=TRUE *
T_TYPE(tx_raw)=((C.!I)+D+E+LI+S+T)

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.5.4** *P* **174** *L* **12** # 95

Brown, Matt AppliedMicro (AMCC)

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

LI is specified as including case with either 8 /LI/ or 4x/LI/+4x/I/.
As the state machine in Figure 55-15 is currently defined this allows and requires transition to low power mode if either is detected. Transition to low power mode upon detection of 4x/LI/+4x/I/ should not be permitted. Provision is required to allow for this special case during low power mode in Figure 55-15a.

This comment is a duplicate of one against 55.3.5.2.4.

SuggestedRemedy

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

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

In Figure 55-15...

Change the criteria for transition for the following transition to include LII:
TX_C to TX_E
TX_INIT to TX_E
TX_D to TX_E
TX_E to TX_E
TX_T to TX_E

In Figure 55-15a...

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

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #93

Modify above response as per Motion #3 before implementing

Cl **55** *SC* **55.3.5.4** *P* **174** *L* **24** # 79

Brown, Matt AppliedMicro (AMCC)

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

In Figure 55-15a, in several cases several boolean variable are redundantly equated with boolean values which is out of style with the rest of Clause 55 and adding extra clutter to a crowded SM.

SuggestedRemedy

Replace all instances of:
<variable_name>=true with <variable_name>
<variable_name>=false with !<variable_name>

Example:
Change "tx_lpi_active=false" to "!tx_lpi_active".

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.5.4** *P* **174** *L* **24** # 89

Brown, Matt AppliedMicro (AMCC)

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

loc_lpi_req, referred to in state TX_WN is not defined in Clause 55. This is probably supposed to refer to tx_lpi_req.

SuggestedRemedy

Change "loc_lpi_req" to "tx_lpi_req".

Response *Response Status* **C**

ACCEPT.

Also see identical comment #376

Cl **55** *SC* **55.3.5.4** *P* **174** *L* **36** # 90

Brown, Matt AppliedMicro (AMCC)

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

In Figure 55-15, transition from TX_E due to LI goes to connected labelled "LI".

SuggestedRemedy

Re-label connector to "L".

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.5.4** *P* **175** *L* # 143

Estes, Dave UNH - IOL

Comment Type **T** *Comment Status* **A** *Terminate_state_transitions*

Figure 55-16

In Clause 49 it is valid to recieve LI while exiting the TX_T state, however this is not shown as a valid transition in Clause 55.

SuggestedRemedy

Add an exit condition from RX_T to RX_L if R_TYPE(rx_coded)=LI, and add type LI in the transition from state RX_D to RX_T in R_TYPE_NEXT(rx_coded)=(S or C or LI).

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.5.4** *P* **175** *L* **40** # 96

Brown, Matt AppliedMicro (AMCC)

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

In Figure 55-16, there is no exit transition from RX_T due to LI.

SuggestedRemedy

Add transition from RX_T to RX_L with criteria "LI"; use connector labelled "L".

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.5.4** *P* **176** *L* **24** # 80

Brown, Matt AppliedMicro (AMCC)

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

In Figure 55-16a, in several cases several boolean variable are redundantly equated with boolean values which is out of style with the rest of Clause 55 and adding extra clutter to a crowded SM.

SuggestedRemedy

Replace all instances of:
<variable_name>=true with <variable_name>
<variable_name>=false with !<variable_name>

Example:
Change "rx_lpi_active=false" to "!rx_lpi_active".

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.5.4** *P* **176** *L* **8** # 91

Brown, Matt AppliedMicro (AMCC)

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

RX LPI state machine adds extra variables and criteria that are not required and redundant. Instead incorporate the LPI variables into the Rx 64B/65B state machine.

SuggestedRemedy

In Figure 55-16a...
Change criteria for RX_L-RX_L to "!pma_lpi_active".
Add to RX_L "rx_lpi_active = true".
Change criteria for RX_L-RX_W to "pma_alert_indicate".
Add to RX_W "rx_lpi_active=false".

Delete Figure 55-27a on page 182.

On page 181, lines 10-12, delete sentence "PHY's with the EEE ... Figure 55-27a".

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.5.4** *P* **177** *L* # 144

Estes, Dave UNH - IOL

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

Figure 55-16b

Type, change lpdc_frame_done to ldpc_frame_done.

SuggestedRemedy

Change lpdc_frame_done to ldpc_frame_done.

Response *Response Status* **C**

ACCEPT.

[note two locations]

Cl **55** *SC* **55.3.5.4** *P* **177** *L* # 372

Parnaby, Gavin Solarflare Communica

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

case of false is not consistent throughout this diagram (and possibly other diagrams)

SuggestedRemedy

Make the case consistent

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #79 and #81

Cl **55** *SC* **55.3.5.4** *P* **177** *L* **12** # 379

Parnaby, Gavin Solarflare Communica

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

The assignments to tx_coded in this state diagram are not made correctly. Also for rx_raw in 55-16a.

New constants should be defined within 55.3.5.2.1 for 1) a 65 bit block of LP_IDLE characters to be sent to the LDPC encoder, 2) a 65 bit block of IDLE characters to be sent to the LDPC encoder, 3) a 72 bit block of LP_IDLE characters to be sent to the XGMII interface and 4) a 72 bit block of IDLE characters to be sent to the XGMII interface [also use existing LBLOCK_T instead of /LF/ within SEND_ERROR]

SuggestedRemedy

Add the following definitions to 55.3.5.2.1
LPI_BLOCK_T<64:0>
65 bit vector to be sent to the LDPC encoder containing /LP/ in all the eight character locations
I_BLOCK_T<64:0>
65 bit vector to be sent to the LDPC encoder containing /LP/ in all the eight character locations
LPI_BLOCK_R<71:0>
72 bit vector to be sent to the XGMII interface containing /LP/ in all the eight character locations
I_BLOCK_R<71:0>
72 bit vector to be sent to the XGMII interface containing /LP/ in all the eight character locations

Use these definitions in place of IDLE/LP_IDLE in Figures 55-16b, 55-16a.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
(corrected copy/paste error in the suggested remedy)

Add the following definitions to 55.3.5.2.1
LP_BLOCK_T<64:0>
65 bit vector to be sent to the LDPC encoder containing /LI/ in all the eight character locations
I_BLOCK_T<64:0>
65 bit vector to be sent to the LDPC encoder containing /I/ in all the eight character locations
LP_BLOCK_R<71:0>
72 bit vector to be sent to the XGMII containing /LI/ in all the eight character locations
I_BLOCK_R<71:0>
72 bit vector to be sent to the XGMII containing /I/ in all the eight character locations

Cl **55** *SC* **55.3.5.4** *P* **177** *L* **24** # 81

Brown, Matt AppliedMicro (AMCC)

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

In Figure 55-16b, in several cases several boolean variable are redundantly equated with boolean values which is out of style with the rest of Clause 55 and adding extra clutter to a crowded SM.

SuggestedRemedy

Replace all instances of:
<variable_name>=true with <variable_name>
<variable_name>=false with !<variable_name>

Example:
Change "tx_refresh_active=false" to "!tx_refresh_active".

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.5.4** *P* **177** *L* **38** # 377

Parnaby, Gavin Solarflare Communica

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

The current EEE Tx state machine enforces 9 LDPC frames of wake (IDLE characters) following alert. During these frames the state machine replaces XGMII data with IDLE characters. The value of tx_coded that goes into the scrambler is ambiguous in some cases (see comment #12).

It would be preferable (and simpler) for the tx state machine to pass XGMII data through transparently. Higher layer system requirements mandate that the wake sequence is at least 9 frames of IDLE.

SuggestedRemedy

Figure 55-16b; EEE transmit state diagram
Transition from SEND_ALERT to TX_NORMAL when tx_lpi_alert_timer_done=true. Delete the SEND_WAKE and SEND_ERROR states and transitions to & from those states.
Figure 55-15a; delete TX_WN and TX_WE and the transitions to and from those states.
Add a transition from TX_L to TX_C when T_TYPE(tx_raw)=I and a transition from TX_L to TX_E when T_TYPE(tx_raw)=(S+E+D+T)

Similarly, it might also be desirable to change the SEND_SLEEP state to pass through XGMII codewords, instead of forcing tx_coded<=LP_IDLE.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **55** *SC* **55.5.3.5** *P* **182** *L* **29** # 97

Brown, Matt AppliedMicro (AMCC)

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

On the slave PHY, it is possible that the Rx is in lower power mode while the Tx is in Normal mode. The frequency drift limitation must also apply to the Tx in this scenario..

SuggestedRemedy

Restate...
"When the transmitter is in the lower power mode or when the receiver is in lower power mode on a SLAVE PHY the transmitter clock short term rate of frequency variation shall be less than 0.1 ppm/second."

Response *Response Status* **C**

ACCEPT.

Cl **69** *SC* **69.1.1** *P* **192** *L* **1** # 186

Ganga, Ilango Intel

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

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

SuggestedRemedy

As per comment

Response *Response Status* **W**

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

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

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Cl **69** *SC* **69.1.2** *P* **192** *L* **41** # 118

D'Ambrosia, John Force10 Networks

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

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

SuggestedRemedy

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

Response *Response Status* **W**

REJECT.

P802.3az does not state anywhere that EEE supports 40G.

Cl **70** *SC* **6.5** *P* **195** *L* **38** # 56

Beckwith, Jonathan UNH-IOL

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

Need to specify a lower voltage threshhold for the activation time. Deactivation measurement explicitly states 30mV.

SuggestedRemedy

Specify a 30mV threshhold as the beginning of the activation time measurement.

Response *Response Status* **C**

REJECT.

No justification provided nor is a lower value specified. The 30mV threshhold is the transmitter disable voltage used to indicate it is electrically quiet.

Cl **70** *SC* **7.1** *P* **197** *L* **18** # 51

Beckwith, Jonathan UNH-IOL

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

The text "Differential peak-to-peak output voltage (min.) with TX enabled (Vtw)" is confusing.

SuggestedRemedy

Change to "Transmitter activation/deactivation measurement upper threshhold"

Response *Response Status* **C**

REJECT.
This is actually the lower threshold when the transmitter is enabled.

Cl **70** *SC* **70.1** *P* **194** *L* **28** # 427

Thaler, Pat Broadcom

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

"more commonly known as" isn't correct. It is the name in this standard for the feature. This text appears in 3 other clauses. The comment applies to all of them.

SuggestedRemedy

Change the first sentence with "A _____ PHY with the optional Energy Efficient Ethernet (EEE) capability may enter ..." and remove 2nd sentence

Response *Response Status* **C**

ACCEPT.

Cl **70** *SC* **70.1** *P* **194** *L* **33** # 428

Thaler, Pat Broadcom

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

This also applies to the text added to 71.1

"receiver clocks (e.g. timing recovery, adaptive filter coefficients)"

adaptive filter coefficients and possibly other items that might be refreshed are not "receiver clocks"

SuggestedRemedy

"receiver clocks" should be "receiver state" as it is in two other clauses.

Response *Response Status* **C**

ACCEPT.

Cl **70** *SC* **70.2** *P* **195** *L* **3** # 62

Bennett, Michael LBNL

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

There is a space missing between 'in' and 36.2.5.1.6

SuggestedRemedy

insert the space

Response *Response Status* **C**

ACCEPT.

Cl **70** *SC* **70.6.10** *P* **195** *L* **47** # 361

Marris, Arthur Cadence

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

Incorrect underlining

SuggestedRemedy

Delete the underlining from the subclause title and following text.

Also remove underlining on page 196.

Response *Response Status* **C**

ACCEPT.

Cl **70** *SC* **70.6.4** *P* **195** *L* **11** # 429

Thaler, Pat Broadcom

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

Delete "optional but" the next sentence covers when EEE isn't supported.

SuggestedRemedy

Response *Response Status* **C**

ACCEPT.

Cl **70** *SC* **70.6.5** *P* **195** *L* **24** # 187

Ganga, Ilango Intel

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

The PMD transmit disable function was previously controlled only by the PMD_transmit_variable, however when energy efficient Ethernet is supported the PMD transmit disable function is also controlled by the PMD_TXQUIET.request primitive (both TX disable variable and the tx_quiet signal). This information should be added to item d.

Also move the timing requirement to a separate item e.

SuggestedRemedy

If Energy Efficient Ethernet is supported, the PMD_transmit_disable function is controlled by the PMD_transmit_disable variable and the tx_quiet signal. When PMD_transmit_disable variable is set to ONE or tx_quiet signal is set to TRUE the transmit disable function shall turn off the transmitter such that the differential peak-to-peak output voltage is less than 30mV. When the PMD_transmit_disable variable is set to ZERO or the tx_quiet signal is set to FALSE the PMD_transmit_disable function shall turn on the transmitter such that the differential peak-to-peak output voltage is greater than 800mV (see Table 70-4).

e. When the PMD transmit disable function is controlled by the tx_quiet signal the Transmiter shall be turned off within 500ns from the tx_quiet signal set to TRUE and the transmitter shall be turned on within 500ns from the tx_quiet signal set to FALSE (see Table 70-4).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

For the EEE capability, the PMD_transmit_disable function is controlled by the PMD_transmit_disable variable and the tx_quiet signal. When PMD_transmit_disable variable is set to ONE or tx_quiet signal is set to TRUE the transmit disable function shall turn off the transmitter such that the differential peak-to-peak output voltage is less than 30mV. When the PMD_transmit_disable variable is set to ZERO or the tx_quiet signal is set to FALSE the PMD_transmit_disable function shall turn on the transmitter such that the differential peak-to-peak output voltage is greater than 800mV (see Table 70-4).

E. When the PMD transmit disable function is controlled by the tx_quiet signal the Transmiter shall be turned off within 500ns from the tx_quiet signal set to TRUE and the transmitter shall be turned on within 500ns from the tx_quiet signal set to FALSE (see Table 70-4).

Cl **70** *SC* **70.6.5** *P* **195** *L* **27** # 181

Ganga, Ilango Intel

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

Show only changes from base text by underline or strikethrough in this subclause and elsewhere in Clauses 70, 71, 72.

For example in 70.6.5 first paragraph, "optional" is already in the base text and hence should not be underlined.

SuggestedRemedy

As per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Editor will fix specific instance identified and others that are found.

Cl **70** *SC* **70.7.1** *P* **197** *L* **18** # 430

Thaler, Pat Broadcom

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

Also applies to 70.7.2

Need to provide an indication that the new characteristics are only required when EEE is supported.

SuggestedRemedy

It may be easiest to refer to the new characteristics by putting them in a separate table or tables creating a subclause Additional transmitter and receiver characteristics for EEE.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Follow guidelines in the response to comment #410 to clearly identify the new characteristics are for EEE capability.

Cl **70** *SC* **70.7.2** *P* **198** *L* **15** # 7

Anslow, Pete Nortel Networks

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

nano seconds is "ns" not "nS"
Also applies to Table 71-6

SuggestedRemedy

Change "nS" to "ns" in Table 70-6 (two places)
Change "nS" to "ns" in Table 71-6 (two places)

Response *Response Status* **C**

ACCEPT.

Cl **71** *SC* **6.6** *P* **201** *L* **34** # 57

Beckwith, Jonathan UNH-IOL

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

Need to specify a lower voltage threshhold for the activation time. Deactivation measurement explicitly states 30mV.

SuggestedRemedy

Specify a 30mV threshhold as the beginning of the activation time measurement.

Response *Response Status* **C**

REJECT.

No justification provided nor is a lower value specified. The 30mV threshhold is the transmitter disable voltage used to indicate it is electrically quiet.

Cl **71** *SC* **7.1** *P* **203** *L* **16** # 52

Beckwith, Jonathan UNH-IOL

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

The text "Differential peak-to-peak output voltage (min.) with TX enabled (Vtw)" is confusing.

SuggestedRemedy

Change to "Transmitter activation/deactivation measurement upper threshhold"

Response *Response Status* **C**

REJECT.
This is actually the lower threshold when the transmitter is enabled.

Cl **71** *SC* **71.6.12** *P* **201** *L* **40** # 362

Marris, Arthur Cadence

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

Incorrect underlining

SuggestedRemedy

Remove underlining from subclause title and following text.

Also on following page 202.

Response *Response Status* **C**

ACCEPT.

Cl **71** *SC* **71.7.1** *P* **203** *L* **16** # 431

Thaler, Pat Broadcom

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

Also applies to 71.7.2

Need to provide an indication that the new characteristics are only required when EEE is supported.

SuggestedRemedy

It may be easiest to refer to the new characteristics by putting them in a separate table or tables creating a subclause Additional transmitter and receiver characteristics for EEE.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #430

Cl **71** *SC* **71.7.1** *P* **203** *L* **19** # 188

Ganga, Ilango Intel

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

Differential peak to peak output voltage min and max have been already defined in 71.7.1.4 (see items 1 & 2). The TX is driven when Transmit function is enabled. Why is mininum defined again in Table 71-4? If the objective is to unambiguously specify the value when TX is enabled then update the table to have two separate line items to specify both min (800mV) and max values (1200mV) and specify any relevant changes w.r.t EEE in 71.7.4.1 (define VTQ and VTW in 71.7.1.4) and provide a reference to these values in other sections or tables that reference this subclause.

The new changes need to be underlined.
Underline (VTQ) on line 19

The terms VTQ, VTW, TTD, TTA are specified in the table but the terms have not been defined elsewhere in the text, so define the terms in the corresponding/referenced subclauses (for example define in 71.7.1.4).

This comment also applies to subclauses and tables Clauses 70 and 72. Make appropriate changes to Clauses 70 and 72.

SuggestedRemedy

As per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement the following editorial instructions on 70, 71 & 72:

1.) Delete the 4 underlined additions in tables 70-4, 71-4, and 72-6.

2a) Replace 70.6.5, d) with the following:
For EEE capability, the PMD_transmit_disable function shall turn off the transmitter after tx_quiet is asserted within the time and voltage level specified in 70.7.1.5. The PMD_transmit_disable function shall turn on the transmitter after tx_quiet is deasserted within a time and voltage level specified in 70.7.1.5.

2b) Replace 71.6.6, d) with the following:
For EEE capability, the PMD_transmit_disable function shall turn off all transmitter lanes after tx_quiet is asserted within a time and voltage level specified in specified in 71.7.1.4. The PMD_transmit_disable function shall turn on all transmitter lanes after tx_quiet is deasserted within a time and voltage level specified in 71.7.1.4.

2c) Replace 72.6.5, d) with the following:
For EEE capability, the PMD_transmit_disable function shall turn off the transmitter after tx_quiet is asserted within a time and voltage level specified in 72.7.1.4. The PMD_transmit_disable function shall turn on the transmitter after tx_quiet is deasseted within the time and voltage level specified in 72.7.1.4.

3a) Add the following to the end of 70.7.1.5
For EEE capability, the transmitter's differential peak-to-peak output voltage shall be less than 30mV within 500ns of tx_quiet being asserted. Furthermore, the transmitters differential peak-to-peak output voltage shall be greater than 800mV within 500ns of tx_quiet being deasserted.

3b) Add the following to the end of 71.7.1.4
For EEE capability, the transmitter lane's differential peak-to-peak output voltage shall be less than 30mV within 500ns of tx_quiet being asserted. Furthermore, the transmitter lane's differential peak-to-peak output voltage shall be greater than 800mV within 500ns of tx_quiet being deasserted.

3c) Add the following to the end of 72.7.1.4
For EEE capability, the transmitter's differential peak-to-peak output voltage shall be less than 30mV within 500ns of tx_quiet being asserted. Furthermore, the transmitter's differential peak-to-peak output voltage shall be greater than 90% of the trained peak-to-peak value within 500ns of tx_quiet being deasserted.

Cl **72** *SC* **6.11.1.3** *P* **209** *L* **21** # 54

Beckwith, Jonathan UNH-IOL

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

I believe "...unused venation blocks..." is a typo.

SuggestedRemedy

Change "venation" to "function"

Response *Response Status* **C**

ACCEPT.

Cl **72** *SC* **6.5** *P* **208** *L* **9** # 58

Beckwith, Jonathan UNH-IOL

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

Need to specify a lower voltage threshhold for the activation time. Deactivation measurement explicitly states 30mV.

SuggestedRemedy

Specify a 30mV threshhold as the beginning of the activation time measurement.

Response *Response Status* **C**

REJECT.

No justification provided nor is a lower value sepcified. The 30mV threshhold is the transmitter disable voltage used to indicate it is electrically quiet.

Cl **72** *SC* **7.1** *P* **210** *L* **12** # 53

Beckwith, Jonathan UNH-IOL

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

The text "Differential peak-to-peak output voltage (min.) relative to active state with TX enabled (Vtw)" is confusing

SuggestedRemedy

Change to "Transmitter activation/deactivation measurement upper threshhold"

Response *Response Status* **C**

REJECT.
This is actually the lower threshold when the transmitter is enabled.

Cl **72** *SC* **72.6.11** *P* **208** *L* **46** # 363

Marris, Arthur Cadence

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

Unnecessary under-lining

SuggestedRemedy

remove the unnecessary under-lining in 72.6.11 on pages 208 and 209

Response *Response Status* **C**

ACCEPT.

Cl **72** *SC* **72.6.4** *P* **207** *L* **26** # 189

Ganga, Ilango Intel

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

Clause 72 supports digital signal detect mechanisms. Analog signal detect (or energy detect) was not part of this clause as it was felt that robust analog signal detect functions are difficult to define/implement in the backplane environment. (see thaler_01_0505.pdf, minutes_01_0505.pdf). Hence define a suitable digital signaling mechanism to exit from the low power idle state.

SuggestedRemedy

As per comment

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

At this point there is no clear alternative to a basic energy detect to waking up the PHY from sleep.

The receiver is just required to wake up within a certain time after detecting the electrical energy on the diff signal pair from a compliant, enabled transmitter.

The original KR signal_detect would not work for EEE because it requires that training to be complete before it could wake up the receiver. This was believed to be too long and we needed something to wake the PHY's receiver prior to that.

For EEE, the KR's transmit coefficients and receive equalization state are assumed to be saved before going quiet and quickly restored after wake so it can sync and lock much more quickly.

Changes were made to the state diagrams (see response to comment #425) to fix the observable behavior that may be caused by false detection. There is concern that the energy detect threshold level and detection circuitry could cause unnecessary activity in the receiver (due to noise and cross-talk).

Cl **72** *SC* **72.7.1** *P* **210** *L* **12** # 433
Thaler, Pat Broadcom

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

Also applies to 72.7.2

Need to provide an indication that the new characteristics are only required when EEE is supported.

SuggestedRemedy

It may be easiest to refer to the new characteristics by putting them in a separate table or tables creating a subclause Additional transmitter and receiver characteristics for EEE.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to Comment #430

Cl **73** *SC* **73.7.6** *P* **249** *L* **1** # 405
Thaler, Pat Broadcom

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

EEE needs to be added to Priority resolution. Since EEE is in an annex and unlike Clause 28, priority resolution is in the body, I'm not sure if it should be added to the existing resolution of 73.7.6 or as an additional subclause in Annex 73A but it needs to be somewhere.

SuggestedRemedy

I suggest that EEE resolution should occur after priority resolution for PHY selection. If both sides support EEE for the selected PHY type, then EEE operation is enabled.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment # 404

Cl **73A** *SC* **73A.4** *P* **249** *L* **33** # 417
Thaler, Pat Broadcom

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

Since the register is 16 bits, you might as well allow for use of 16 bits here. With extended next pages, 16 bits are available and any new PHY types are likely to support extended.

I made a similar comment on 45.2.7.13a.

SuggestedRemedy

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "6:0" to "15:0" and "22:16" to "31:16"

Cl **73A** *SC* **73A.4** *P* **249** *L* **33** # 111
Cobb, Terry Commscope

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

Bits 47:23 are sent as zeros and could be used to send a 24 bit NIC specific mac address. I assume this part is for message code 11 although the subclause title says message code 10.

SuggestedRemedy

Use registers 2 and 3 in subclause 22.2.4.3.1 to fill in the 24 bits. Use bits 7:0 of register 2 and then 15:0 of register 3. Then add an optional format for the PHY identifier in subclause 22.2.4.3.1 to allow the registers to contain a NIC specific mac address.

Response *Response Status* **C**

REJECT.

This feature is beyond the scope of this project.

Cl **74** *SC* **74.0.1** *P* **213** *L* **28** # 216
Gustlin, Mark Cisco

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

Why isn't the signal scrambler_reset shown in figure 74-1?

SuggestedRemedy

Add it.

Response *Response Status* **C**

REJECT.

This is a signal that is internal to the PCS.

Cl **74** *SC* **74.0.1** *P* **213** *L* **3** # 8

Anslow, Pete Nortel Networks

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

The Functional block diagram subclause is 74.4.1 not "74.0.1" as shown in the draft.
Also the Figure shown is Figure 74-2

SuggestedRemedy

change the subclause number to 74.4.1
change Figure to 74-2

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Numbering will be reconciled after discussion with the 802.3ba editor.

Cl **74** *SC* **74.0.1** *P* **213** *L* **37** # 434

Thaler, Pat Broadcom

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

The EEE primitives also need to go between the FEC and the PMA

SuggestedRemedy

Add lines for the primitives. Also, the subclause number should be 74.4.1.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Will add lines for the primitives.

Subclause number will be revisited to reconcile with changes underway in 802.3ba

Cl **74** *SC* **74.0.1** *P* **213** *L* **9** # 9

Anslow, Pete Nortel Networks

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

The Functional block diagram title (actually Figure 74-2 not as shown here) is being modified by 802.3ba

SuggestedRemedy

Coordinate changes to clause 74 with 802.3ba so that 802.3az does not reverse changes made by 802.3ba

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Clause 74 editor for 802.3az will coordinate with counterpart for 802.3ba.

If possible, will use the 802.3ba draft as the baseline and provide change instructions relative to that. Baseline used will be identified in the change instruction.

Cl **74** *SC* **74.5** *P* **214** *L* **11** # 364

Marris, Arthur Cadence

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

Two new items added not one.

SuggestedRemedy

Change text to:

Insert two new primitives after item (c) as shown below:

and underline item e)

Response *Response Status* **W**

ACCEPT.

Cl **74** *SC* **74.5** *P* **214** *L* **12** # 184

Ganga, Ilango Intel

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

Underline new primitive defined in item e) RX_LPI_ACTIVE

Also subclause numbering and Figure numbers for functional block diagrame are incorrect. Update the numbering as per the base spec (for example 74.0.1 should be 74.4.1 and Figure 74-1 should be Figure 74-2).

SuggestedRemedy

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Please refer to comments
364 and 8

Cl **74** *SC* **74.5** *P* **214** *L* **12** # 432

Thaler, Pat Broadcom

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

Editor's instruction says that one new primitive is added, but two are listed and others have has been added to the primitives but not to the list. Figure 49-4 shows 5 EEE primitives going between PCS and FEC.
tx_quiet, rx_quiet, scrambler_reset and rx_lpi_active going down and energy detect going up.

Also, indications go up the stack, requests go down the stack. tx_quiet, rx_quiet, scrambler_reset (if it is sent to FEC) and rx_lpi_active should be requests not indications.

SuggestedRemedy

Correct the instruction to say the correct number of new primitives and the RX_QUIET primitive and add missing primitives. Also add a statement that the new primitives are only required when EEE is supported. That could be added to the paragraph after the list.

It isn't clear why Clause 49 shows reset_scrambler crossing the interface since it isn't used by the lower layers.

Change primitves that go from PCS to FEC to .request.

Response *Response Status* **C**

ACCEPT.

Cl **74** *SC* **74.5** *P* **214** *L* **50** # 119

D'Ambrosia, John Force10 Networks

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

Proposed changes in 802.3az are only applicable to appropriate PHYs that support MAC rates of 10Gb/s. Proposed changes in 802.3ba are altering Clause 74 to support BASE-R PHYs, which would also include 40Gb/s and 100Gb/s. Therefore, it needs to be clear that the text in 802.3az should only be applied to sections specific to 10GBASE-R PHYs.

SuggestedRemedy

coordination between 802.3az and 802.3ba is necessary.

Add editor's note indicating that changes in 802.3az are only applicable to 10GBASE-R PHYS.

Response *Response Status* **W**

ACCEPT.

Cl **74** *SC* **74.5.4.1** *P* **215** *L* **3** # 365

Marris, Arthur Cadence

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

Why is this paragraph crossed out?

SuggestedRemedy

Remove crossed out text.

Also remove all underlining from 74.5.4 and 74.5.5

Change:
"Insert 74.5.4 as shown below after 74.5.3"
to:
"Insert 74.5.4 and 74.5.5 as shown below after 74.5.3"

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Accepting only the following:
Remove crossed out text.
Change:
"Insert 74.5.4 as shown below after 74.5.3"
to:
"Insert 74.5.4 and 74.5.5 as shown below after 74.5.3"

Rejecting:

Also remove all underlining from 74.5.4 and 74.5.5
- These are new text, it needs underlining.

Cl **74** *SC* **74.5.4.1** *P* **215** *L* **9** # 438

Thaler, Pat Broadcom

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

If this primitive is not removed (the subject of another comment of mine), this when generated section is incorrect.

SuggestedRemedy

When generated for this should be similar to 74.5.3.2 - FEC generates the primitive when the energy_detect primitive it received from the PMA changes. The model of the primitives for boolean variables (which is different than the real life signals) is that the primitive is generated when the value changes.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

ENERGY_DETECT is an indication coming from the PMA sublayer and FEC passes it to the PCS sublayer. Hence this primitive is not generated in the FEC sublayer.

Cl **74** *SC* **74.7** *P* **216** *L* **22** # 185

Ganga, Ilango Intel

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

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

SuggestedRemedy

As per comment

Response *Response Status* **W**

ACCEPT.

Cl **74** *SC* **74.7.4.1** *P* **216** *L* **30** # 385

Thaler, Pat Broadcom

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

The reverse gearbox function in the FEC is suppose to get block lock on the data from the PCS using the block lock state diagram in Figure 49-12. This is in the current standard. This doesn't work if deterministic blocks are to be produced with scrambler_reset.

The existing subclause does say that the reverse gearbox may not be required when the XSBI is not implemented.

SuggestedRemedy

Add an edit to the subclause to say that when FEC is present, the reverse gearbox is not used and 66-bit block lock is provided from the PCS to the FEC in an implementation dependent manner.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **74** *SC* **74.7.4.7** *P* **216** *L* **53** # 60

Bennett, Michael LBNL

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

Note: entered on behalf of Jonathan Ebbers, jpebbers@us.ibm.com
802-769-5034 (T/L 446-5034)

Sentence Otherwise fec_block_lock is fec_normal_block_lock OR fec_rapid_block_lock is inaccurate and does not match the behaviour implied by Figure 74-2. On this figure 74-2, transition from false to true of signal fec_rapid_block_lock is used as a trigger to the fec_normal_block_lock state machine. In fact, it is assumed that an other mechanism (as per 2nd paragraph and Note in section 74.7.4.8) will activate the signal fec_rapid_block_lock.

SuggestedRemedy

Remove this sentence

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

fec_rapid_block_lock signal generation needs explanation so explanation will not be removed.

See response to comment #439 which changes the description

Cl **74** *SC* **74.7.4.8** *P* **217** *L* **6** # 384

Thaler, Pat Broadcom

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

FEC doesn't have frames, it has blocks. Even though once or twice the current Clause 74 has slipped up and used the wrong word, don't extend that error.

SuggestedRemedy

Replace all occurences of "frame" in the text you have added to Clause 74 with "block".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace "frame" with "block" as in the suggested remedy and in the FEC lock state diagram (Figure 74-8)

Cl **74** *SC* **74.7.4.8** *P* **217** *L* **6** # 386

Thaler, Pat Broadcom

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

The use of "deterministic frame" implies that the FEC will be receiving one frame content that it can look for. This is not the case. It may receive a frame that is all LPI, one that is all normal idle, or one that starts out LPI and switches to normal idle (wake starts during the beginning of a refresh).

I couldn't find a prohibition on sending frames too early during waking though one would be foolish to do so. There is just infomative material to explain the maximum wake up time. If the MAC sends frames too soon, is it assumed that it is okay for rapid block sync to not work. It seems like that should be okay.

SuggestedRemedy

If it is acceptable for rapid block lock to only work for blocks that are all LPI or all idle, explain that lock needs to look for one of two deterministic blocks. If it needs to also work for a block with a transition between LPI and idle which means 256 possible blocks, state that.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Text will clarify that there are two types of deterministic frames.

Cl **74** *SC* **74.8.2.2** *P* **218** *L* **4** # 439

Thaler, Pat Broadcom

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

There is no need to rename fec_block_lock. Renaming variables can cause confusion and it should only be done where necessary or too painful to not change it. Here that isn't the case.

If it is necessary for signal_detect to go true before fec_block_lock goes true, then change the description of fec_signal_ok to be based on the received SIGNAL_OK = OK and (fec_block_lock + fec_rapid_block_lock). In addition, there is a problem with getting signal detect from combining normal and fec block lock as it will glitch False. In the following description, I have used fec_block_lock for the name of the signal generated by the block lock machine rather than fec_normal_block_lock.

fec_rapid_block_lock is described as going false when it doesn't receive the deterministic block. 4 complete "deterministic" blocks are sent in a 1 us scrambler_reset. Some of those are eaten by the time for signal detect and clock recovery so there may be only 1 or 2 received. The first one received will cause fec_rapid_block_lock to go true and will cause the block lock state machine to start trying lock at that slip value. Within another block or two, the block received isn't deterministic and fec_rapid_block_lock goes false. However, it takes at least 4 good blocks for the state machine to set fec_block_lock true.

As currently described, at the start of a recovery period or exit from LPI, signal detect will probably go true for an FEC block or two due to fec_rapid_block_lock, then go false for a few blocks due to the gap between fec_rapid_block_lock = true and fec_block_lock = true.

SuggestedRemedy

Don't change the name of fec_block_lock in the state machine. Just add fec_rapid_block_lock to the determination of signal_detect if it is necessary to speed that detection.

Additionally, if speeding the detection is necessary then fix the glitch where fec_rapid_block_lock goes false before fec_block_lock goes true.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Will change the fec_normal_block_lock to fec_block_lock. And change the description for fec_signal_ok to add fec_rapid_block_lock.

Rejecting any change needed for glitch. The commenter state that 1 or 2 FEC blocks will be consumed by the CDR and signal detect circuit. But the deterministic fec blocks are transmitted after 12us of scrambled IDLE code words. Hence the CDR and signal ok will not consume those 1 or 2 frames. The FEC block lock needs at least 8 frames to loose lock.

Cl **74** *SC* **74.8.2.3** *P* **218** *L* **52** # 440

Thaler, Pat Broadcom

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

Including T_TYPE_NEXT in the functions appears to be an error in the standard. It isn't used in this Clause.

SuggestedRemedy

Do a service to humanity and remove the extraneous function.

Response *Response Status* **C**

ACCEPT.

Task force reviewed the request and agreed to proceed with the suggested remedy.

Cl **74** *SC* **74.8.3** *P* **220** *L* **7** # 61

Bennett, Michael LBNL

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

In Figure 74-2-FEC Lock state diagram there is a dashed box around fec_rapid_block_lock_edge but there is no note to identify the addition of the variable to support LPI

SuggestedRemedy

Add a note

NOTE: If the optional Low Power Idle function is supported then fec_rapid_block_lock_edge is mandatory

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

NOTE: fec_rapid_block_lock_edge is only required for EEE capability

Cl **74** *SC* **Figure 74-1** *P* **213** *L* **36** # 383

Szczepanek, Andre HSZ Consulting

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

No path is shown for tx_quiet from (or through) the FEC layer to the PMD. tx_quiet must pass through or around the FEC layer in order to disable the PMA/PMD of the PHY. Similarly there is no path for rx_quiet.

SuggestedRemedy

Add tx_quiet, rx_quiet to the PMA service interface of the FEC sublayer

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Please refer to #434

Cl **74A** *SC* **74A.5** *P* **250** *L* **47** # 182

Ganga, Ilango Intel

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

Also update table numbering for Annex 74A. Should be 74A-1 etc., also underline the subclause title 74A.5

SuggestedRemedy

As per comment

Response *Response Status* **C**

ACCEPT.

Cl **74A** *SC* **74A.5** *P* **250** *L* **51** # 337

Koenen, David Hewlett Packard

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

The FEC encoder will not alway be receiving unscrambled data if the PHY support EEE.

SuggestedRemedy

Change sentence to: "If the optional Energy Efficient Ethernet function is supported (see Clause 78) then the reverse gearbox of the remote FEC encoder will receive unscrambled data low power idle periods. PCS sublayer will be encoding /I/ during the wake state, which produces the deterministic FEC frame."

Response *Response Status* **C**

REJECT.

OBE.

Discussion on the topic at the task force meeting and changes to the state machine have voided the reason to make the change and led to a change in the response that was originally proposed prior to the meeting.

Because of the new state machine change, there will be two types of deterministic FEC blocks. The fec rapid block lock will adjust the fec slip, which will enable the reverse gearbox to archive normal fec block lock during refresh and wake period.

See comment #99, #456 and #385

Cl **78** *SC* **1** *P* **226** *L* **16** # 64

Bennett, Michael LBNL

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

This paragraph seems verbose and repeats "is/are supported" several times. Why not use a table of supported PHYs instead?

SuggestedRemedy

Replace paragragph with:

The EEE operational mode supports the IEEE 802.3 MAC operation at 100 Mb/s, 1000 Mb/s, and 10 Gb/s. The following PHYs are supported:

100BASE-TX
1000BASE-T
10GBASE-T
1000BASE-KX
10GBASE-KX4
10GBASE-KR

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Suggested remedy will be followed but it does not need a table - an inline list should achieve the same objective

Cl **78** *SC* **1** *P* **226** *L* **7** # 63

Bennett, Michael LBNL

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

Please define the acronym LPI after the first instance of Low Power Idle in the paragraph, as was done for Eergy Efficient Ethernet and Media Access Control

SuggestedRemedy

Insert (LPI) between Low Power Idle and mode.

In the next sentence, replace Low Power Idle with LPI.

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.1** *P* **226** *L* **13** # 299

Hajduczenia, Marek ZTE Corporation

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

"transition time to and from the lower level of power consumption is kept small enough to be transparent to" and not a "lower power period" or status or mode

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Exact wording will be adjusted for best gramatical fit.

Change last sentence in second paragraph of page to read:
"The transition time in to and out of the lower power mode is kept small enough to be transparent to upper layer protocols and applications."

Cl **78** *SC* **78.1** *P* **226** *L* **17** # 210

Grow, Robert Intel

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

signaling schemes?

SuggestedRemedy

Change to: two PHY types, also change line 19 signaling systems to PHY types. Change other descriptions of PHY types as signaling schemes or signaling systems accordingly.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to Comment #64 which rewrites the same paragraph

Cl **78** *SC* **78.1** *P* **226** *L* **32** # 145

Estes, Dave UNH - IOL

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

Change "and selection best set of parameters" to "and select the best set of parameters"

SuggestedRemedy

Change "and selection best set of parameters" to "and select the best set of parameters"

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.1** *P* **226** *L* **5** # 328
Hajduczenia, Marek ZTE Corporation

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

Editorial changes in section 78.1
"operation in Low Power Idle" > "operation the in Low Power Idle"
"When Low Power Idle" > "When the Low Power Idle"
"EEE also specifies a means for the capabilities negotiation to enable link partners to determine whether EEE is supported and selection best set of parameters common to both devices." > "EEE also specifies ## means for ## capabilities negotiation to enable link partners to determine whether EEE is supported and selection ##the## best set of parameters common to both devices."
"The definition of 10BASE-Te allows reduced power consumption" > "The definition of 10BASE-Te allows for a reduced power consumption"

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Follow changes indicated in the comment after correction of typos.

Cl **78** *SC* **78.1.1** *P* **226** *L* **37** # 300
Hajduczenia, Marek ZTE Corporation

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

"is expected and components may use this" - what are these 'components'?

SuggestedRemedy

Please clarify per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace "components" with "the LPI Client"

Cl **78** *SC* **78.1.1** *P* **226** *L* **38** # 301
Hajduczenia, Marek ZTE Corporation

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

"Similarly, it informs the LPI" - what is this 'it' in this context?

SuggestedRemedy

Please clarify the meaning

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

"it" is "Low Power Idle signaling".

Rewrite sentence to read:
"The low power idle signaling also informs the LPI client that the link partner has sent such an indication."

Cl **78** *SC* **78.1.1.2** *P* **227** *L* **35** # 298
Hajduczenia, Marek ZTE Corporation

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

"Idle on the RS" > "Idle through the RS". RS is not visible to the client on the other side of the link, so you can signal through it but not on it ...

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.1.2.1** *P* **228** *L* **47** # 203
Grow, Robert Intel

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

When generated is too generic.

SuggestedRemedy

The primitive is generated because of a change from something (xMII normal Idle to assert low power idle) and vise versa.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Adopt suggested remedy with editorial licence to clear typos/gramatical errors.

Cl **78** *SC* **78.1.2.1.1** *P* **228** *L* **12** # 212

Grow, Robert Intel

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

Primitive and value are separated by a space.

SuggestedRemedy

LP_IDLE.request (LPI_REQUEST), also similar on line 39.

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.1.2.1.1** *P* **228** *L* **5** # 211

Grow, Robert Intel

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

Anthropomorphism ('wishes'). Not the only occurance.

SuggestedRemedy

...to indicate to the PHY to start or stop... Rewrite other uses of wishes.

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.1.2.1.2** *P* **228** *L* **16** # 327

Hajduczenia, Marek ZTE Corporation

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

Smaller font in "28.2.6.1.1". Increase the font to match the rest of the text

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.1.2.1.2** *P* **228** *L* **18** # 197

Grow, Robert Intel

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

Primitives are not signals, and as I recall, timing requirements can't be placed on the primitive, only on the layers causing generation of a primitive.

SuggestedRemedy

Needs thought and proper specification on the timing in multiple places in the standard.

All text (e.g., assert and deassert functions) related to service primitives needs to be reviewed for any language that reflects continuous visibility of a primitive value between (sub)layers to only a change in value being signaled by a primitive.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Change the two sentences on lines 17 and 18, page 228 from:

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

to:

"The effect of receipt of this primitive is undefined if link_status is not OK (see 28.2.6.1.1) or if LPI_REQUEST=ASSERT within 1 second of the change of link_status to OK."

Cl **78** *SC* **78.1.2.1.4** *P* **228** *L* **26** # 202

Grow, Robert Intel

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

Is signaling of LPI between an RS and its link partner, or between the RS and the lower parts of the PHY? If the PHY has no option to signal the request, then the language is appropriate, but it seems inconsistent with MII text describing the xMII signals. The effect of the primitive is to generate signals on the MII and that isn't specified here, but should be.

SuggestedRemedy

Assure MII clause are consistent in what layer is signaling to what peer layer, and that any additional requirements on conveying the LPI request in lower sublayers is properly represented. Add generic text that covers the three MII types -- how the assert or deassert is signaled, can probably be generic using the MII definition of assert low power idle.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

The PHY has no option to signal the request so the language is appropriate however editor will look into adding clarifying text as in the suggested remedy.

Editor to check if that this is clear in the xMII clauses.

Cl **78** *SC* **78.1.3** *P* **229** *L* **3** # 296

Hajduczenia, Marek ZTE Corporation

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

"The specific media independent interface is dependent on the speed of operation therefore this interface is shown as xMII in the diagram." > "The xMII interface in this diagram represents any of the family of medium intependent interfaces, supported by EEE.".

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.1.3** *P* **229** *L* **33** # 297

Hajduczenia, Marek ZTE Corporation

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

"found in the respective RS clauses." - which RS clauses?

SuggestedRemedy

Please provide a list of RS clauses in here. Perhaps in Table 78-1, it would be beneficial to add the list of RS clauses as well, and then just reference them per Table 78-1.

Response *Response Status* **C**

REJECT.

In general, enumerating clauses is a bad idea because subsequent changes to the standard which introduce new clauses will require an otherwise unnecessary update to this text.

Cl **78** *SC* **78.1.3.1** *P* **229** *L* **43** # 103

Chalupsky, David Intel Corp.

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

grammar: "starts to asserts"

SuggestedRemedy

replace "starts to asserts" with "starts to assert"

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.1.3.1** *P* **229** *L* **44** # 319

Hajduczenia, Marek ZTE Corporation

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

"LPI assert function starts to transmits the 'assert low power idle' encoding on the xMII." - it would be much more correct for the LPI client to transmit such data through the RS rather than for data to be generated locally in the RS. LPI assert function should in such a case disable the MAC and enable local generation of control frames in the LPI client.

SuggestedRemedy

Consider removing the function of generating 'assert low power idle' encoding on xMII from LPI assert function in RS per comment.

Response *Response Status* **W**

REJECT.

Proposes a change to an architecture that has already been approved by the task force.

Cl **78** *SC* **78.1.3.1** *P* **229** *L* **49** # 104
Chalupsky, David Intel Corp.

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

grammar: "starts to transmits"

SuggestedRemedy

replace "starts to transmits" with "starts to transmit"

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.1.3.2** *P* **230** *L* **16** # 335
Koenen, David Hewlett Packard

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

The middle paragraph says that the LPI detect function "continues to indicated idle", but last paragraph does not say that it resumes normal operation when 'assert low power idle' encoding.

SuggestedRemedy

Add the following to the last sentence:

and the RS receive function resumes normal decode operation.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Adopt suggested remedy.

In addition, change:
"continues to indicated idle"
to:
"continues to indicate idle"

Cl **78** *SC* **78.1.3.2** *P* **230** *L* **7** # 288
Hajduczenia, Marek ZTE Corporation

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

"service interface as normal." - probably "service interface under normal conditions".

SuggestedRemedy

Search for any other similar references of this term and scrub the draft.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

"service interface as under normal conditions"

Cl **78** *SC* **78.1.3.3** *P* **230** *L* **21** # 289
Hajduczenia, Marek ZTE Corporation

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

"can be found in the respective PHY." - which is? It would be very good to have reference to the PHYs supported by EEE in this place.

SuggestedRemedy

Per comment

Response *Response Status* **C**

REJECT.

See response to #297.

Cl **78** *SC* **78.1.3.3** *P* **230** *L* **21** # 65
Bennett, Michael LBNL

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

I think the word 'clause' is missing from the end of the sentence.

SuggestedRemedy

Change the last sentence to:

The actual specification of PHY LPI operation can be found in the respective PHY clause (see Table 78-1).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the last sentence to:

The specification of PHY LPI operation can be found in the respective PHY clause (see Table 78-1).

Cl **78** *SC* **78.1.3.3.1** *P* **230** *L* **26** # 290

Hajduczenia, Marek ZTE Corporation

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

Clarify what the meaning of "sleep signal" is. Typically, we avoid using the word "signal" since it has no clear meaning in this context. Probably an 'encoding / code-word' is sent instead

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Edit the sentence to read:
"At the start of the ‘assert low power idle’ encoding on the xMII, the PHY signals sleep to the link partner to indicate that the local system is entering Low Power Idle mode."

Cl **78** *SC* **78.1.3.3.1** *P* **230** *L* **30** # 291

Hajduczenia, Marek ZTE Corporation

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

"PHY enters a quiet mode after the sleep signal transmission." > "PHY enters the quiet mode after transmission of the sleep signal."
See also the comment on the "sleep signal"

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

"PHY enters a quiet mode after the sleep signal transmission." > "PHY enters the quiet mode after sleep is signalled."

Cl **78** *SC* **78.1.3.3.1** *P* **230** *L* **30** # 292

Hajduczenia, Marek ZTE Corporation

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

"quiet mode" - there are many different modes which areused in this draft, with different capitalization, and potentially with the same meaning / or simialr. To avoid reader confusion, please consider adding a section which describes all the modes which you use in this draft and then provide reference to them in the text. Also, use consistent capitalization

SuggestedRemedy

Per comment

Response *Response Status* **C**

REJECT.

Figure 78-3 and the accompanying text describe the basic modes at a high level.

Not clear what specific change is being requested by the Commentor.

Cl **78** *SC* **78.1.3.3.1** *P* **230** *L* **34** # 294

Hajduczenia, Marek ZTE Corporation

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

"can go quiet" - what does this mean? Does this mean that the transmission is suspended? Please clarify.

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

"Can go quiet" shall be replaced by "can go into quiet mode"

Cl **78** *SC* **78.1.3.3.1** *P* **230** *L* **34** # 293

Hajduczenia, Marek ZTE Corporation

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

"receives sleep", 'transmits sleep' - probably 'sleep signal' or something alike?

SuggestedRemedy

Please clarify

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace "transmits sleep" by "signals sleep"
Replace "receives sleep" by "receives a sleep signal"

Cl **78** *SC* **78.1.3.3.1** *P* **230** *L* **35** # 295

Hajduczenia, Marek ZTE Corporation

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

"system energy savings can be achieved even if the PHY link does not go quiet." - not sure what is really meant in here. Does that mean that the link can be maintained active and still there is power saving potential? If so, this needs to be clarified.

SuggestedRemedy

Per comment

Response *Response Status* **C**

REJECT.

The commentor's interpretation is correct. Not sure why further clarification is needed.

Editor will consider specific suggested text if the commentor can provide it.

Cl **78** *SC* **78.1.3.3.1** *P* **231** *L* **14** # 286

Hajduczenia, Marek ZTE Corporation

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

"No data frames are lost or corrupted during the transition to or from the Low Power Idle mode." - is this a requirement or just an option?

SuggestedRemedy

Per comment

Response *Response Status* **C**

REJECT.

It is exactly as stated, a requirement and not an option.

Cl **78** *SC* **78.1.3.3.2** *P* **231** *L* **18** # 326

Hajduczenia, Marek ZTE Corporation

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

Editorial changes to section 78.1.3.3.2. Changes indicated with ## characters
"triggered by the reception of sleep signal" > "triggered by the reception of ##the## sleep signal".
"link partner. This signals that the link partner is about to enter Low Power Idle mode." > "link partner##, which indicates## that the link partner is about to enter ##the## Low Power Idle mode."
"While the Link partner has ceased transmission the local" > "##When## the Link partner ##ceased## transmission##,## the local"
"recovery time the link supports nominal operational data rate." > "recovery time##,## the link supports nominal operational data rate."

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.1.4** *P* **231** *L* **30** # 198

Grow, Robert Intel

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

Bad subclause title, though some of the PHY types may have been defined in an amendment, they are all part of one standard IEEE Std 802.3. Also, bad table title.

SuggestedRemedy

78.1.4 Supported PHY types
Table 78-1 -- Specifications for Energy Efficient Ethernet PHY types

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.1.4** *P* **231** *L* **31** # 10

Anslow, Pete Nortel Networks

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

The title is "Relation of EEE to other standards" but the text seems to relate to 802.3. 802.3az is an amendment to 802.3, so "other standards" is inappropriate.

The title of Table 78-1 "Relation between EEE PHY's and IEEE protocols" is similarly inappropriate

SuggestedRemedy

Change subclause title to "EEE PHY types"
Change title of Table 78-1 to "EEE PHY types and associated clauses"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #198

Cl **78** *SC* **78.1.4** *P* **231** *L* **31** # 287

Hajduczenia, Marek ZTE Corporation

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

Section 78.1.4 should be located at the very beginning of Clause 78, prior to making any specifications. PHYs in Table 78-1 should be collectively referred to as "supported PHYs" or "PHYs supporting EEE" or imilar.
Clause 78.1.4 is too late in the draft to be of much use

SuggestedRemedy

Per comment

Response *Response Status* **C**

REJECT.

Position seems consistent with how this is handled in other clauses.

Cl **78** *SC* **78.1.4** *P* **231** *L* **33** # 107

Chalupsky, David Intel Corp.

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

The statement "EEE defines a Low Power Idle mode of operation for the following seven 802.3 PHYs" is inconsistent with the remainder of the draft as 10BASE-Te does not have an LPI mode.

SuggestedRemedy

strike "Low Power Idle" from line 33.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Will strike "idle" from line 33.

Cl **78** *SC* **78.1.4** *P* **231** *L* **36** # 66

Bennett, Michael LBNL

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

the apostophe in the title of the table should not be there

SuggestedRemedy

remove the apostophe

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.2** *P* **232** *L* **0** # 371

Ofelt, David Juniper Networks

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

Figure 78-3 nicely describes the parameters Ts, Tq, and Tr. The other paremeters in section 78.2 would benefit from a figure- especially the Tphy_shrink_tx and Tphy_shrink_rx parameters.

SuggestedRemedy

Add a figure or an explanation that gives some intuition on what Tphy_shrink_tx and Tphy_shrink_rx signify.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add in figure from:
http://www.ieee802.org/3/az/public/jan09/law_1_0109_V3_0.pdf slide 8

with any updates to names/terms that may have been made since the above presentation was put online

Cl **78** *SC* **78.2** *P* **232** *L* **23** # 284
Hajduczenia, Marek ZTE Corporation

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

What is a "Tx system"? Additionally, the use of 'tx system' is not consistent. Sometimes 'tx' is all small caps, sometimes it is capitalized. Scrub the draft

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

"Tx system" is an abbreviation for "transmitting system".

Capitalization will be scrubbed

Also see response to comment #285

Cl **78** *SC* **78.2** *P* **232** *L* **26** # 285
Hajduczenia, Marek ZTE Corporation

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

"It is the shortest period of time Rx system is provided between" - clarify the sentence. Probably commas are missing here to clarify which part of the sentence is relative to which

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change definition of Tw_sys_rx to:
Parameter employed by the system which corresponds to its requirements.
It is the minimum time required by the system between a request to wake and its readiness to receive data.

Make a similar change to Tw_sys_tx.

Cl **78** *SC* **78.2** *P* **232** *L* **26** # 105
Chalupsky, David Intel Corp.

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

The sentence is unclear. Assume you need a "the" between "time" & "Rx" - that would make it similar to the definition above it at least.

SuggestedRemedy

replace "time Rx" with "time the Rx"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #285

Cl **78** *SC* **78.2** *P* **232** *L* **29** # 325
Hajduczenia, Marek ZTE Corporation

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

"for the supported PHY's." - probably "for the supported PHYs."

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.2** *P* **232** *L* **3** # 283
Hajduczenia, Marek ZTE Corporation

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

What is this 'sleep signal'?
Replace the statement "Duration PHY" with "Time during which PHY" in lines 3 and 4.
What is "xxMII" - this term is neither defined anywhere nor even used consistently since in many places there is a term 'xMII' used instead. Decide on which term is to be used and then scrub the draft.

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace "transmits sleep signal" by "signals sleep"

No need to change "duration"

Replace "xxMII" wth "xMII"

Cl **78** *SC* **78.2** *P* **232** *L* **46** # 108

Chalupsky, David Intel Corp.

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

Table 78-2, Tq values for 10GBASE-T: The max value is lower than the min value. I can't provide the correct values, but these appear to be in error.

SuggestedRemedy

Correct Tq max & min for 10GBASE-T.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to #501.

Cl **78** *SC* **78.2** *P* **232** *L* **47** # 501

Taich, Dimitry Teranetics

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

Submitted on behalf of Curtis Donahue (UNH IOL)
This is concerning Table 78-2. For 10GBASE-T mode, the Tq(min) parameter is higher then Tq(max) parameter. In this mode both Tq(min) and Tq(max) take same value, 39.68usec (Ts - Tr = 320nsec*(128-4) = 39680nsec). It looks like Tq(min) was rounded while Tq(max) was not.

SuggestedRemedy

In 10GBASE-T row change Tq(min) to 39.68usec

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.3** *P* **233** *L* **12** # 11

Anslow, Pete Nortel Networks

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

why is most of the page blank?

SuggestedRemedy

Move 78.4 to start on page 233

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Will be done later. It is blank now because 78.4 is in a separate file from 78.1-3 as it is being edited by a different editor.

Cl **78** *SC* **78.3** *P* **233** *L* **5** # 146

Estes, Dave UNH - IOL

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

EEE cannot be used in only one direction for 1000BASE-T

SuggestedRemedy

Change "If EEE is supported by both link partners for the negotiated PHY type then the EEE function may be used independently in either direction" to "If EEE is supported by both link partners for the negotiated PHY type then the EEE function may be used independently in either direction, with the exception of 1000BASE-T which requires that both link partners use EEE at the same time"

Response *Response Status* **C**

REJECT.

While the 1000BASE-T PHY does not support one direction going into LPI independent of the the other direction, it allows one direction to signal LPI to the other independently of the other direction. This means that the system on one end can shut off some of its receive function even thought the PHY may not be in LPI mode in that direction.

Cl **78** *SC* **78.4** *P* **234** *L* **10** # 13

Anslow, Pete Nortel Networks

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

"10 Gbps" should be "10 Gb/s" see http://ieee802.org/3/tools/editorial/requirements/words.html

SuggestedRemedy

Change "10 Gbps" to "10 Gb/s"

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.4** *P* **234** *L* **13** # 338

Koenen, David Hewlett Packard

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

The EEE TLV type is not define in 78.4.1. Bad reference

SuggestedRemedy

I believe the reference you want here is 79.3a where it defines the EEE TLV.

Response *Response Status* **W**

ACCEPT.

Cl **78** *SC* **78.4** *P* **234** *L* **20** # 282
Hajduczenia, Marek ZTE Corporation

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

What "the nomenclature was edited to align" with P802.3bc? Does this note need to be here at all?

SuggestedRemedy

Clarify or remove

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete editor's note

Cl **78** *SC* **78.4** *P* **234** *L* **9** # 281
Hajduczenia, Marek ZTE Corporation

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

What is exactly the 'link rate' - is this the 'MAC rate' or a 'PHY rate'?

SuggestedRemedy

Clarify. Try not to add new terms to the already existing nomenclature.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "The Data Link Layer capabilities shall be implemented for devices operating at link rates equal to or greater
than 10 Gbps and may be implemented for all other devices."

to

"The Data Link Layer capabilities shall be implemented for devices with an operating speed equal to or greater
than 10 Gbps and may be implemented for all other devices."

Cl **78** *SC* **78.4.2.3** *P* **235** *L* **31** # 324
Hajduczenia, Marek ZTE Corporation

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

certain words in in 78.4.2.3 are in smaller font e.g. aLldpXdot3LocTxTwSys and other names of register attributes

SuggestedRemedy

Check teh size of the font and adjust to the overall font format.

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.4.3** *P* **240** *L* **32** # 279
Hajduczenia, Marek ZTE Corporation

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

The text says "The state diagrams above" - which ones precisely?

SuggestedRemedy

Add references to which state diagrams are referred to ...

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "The state diagrams describe the behavior above"

to

"The state diagrams in Figure 78-4 and Figure 78-5 describe the behavior in this subclause"

Cl **78** *SC* **78.4.3.1** *P* **240** *L* **36** # 323
Hajduczenia, Marek ZTE Corporation

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

Editorial changes in section 78.4.3.1
"if presently advertised value" to "if the presently advertised value"
"During normal operation the transmitting link" to "During normal operation, the transmitting link"
"If the transmitting link partner wants to initiate a change to the presently resolved value of Tw_sys, the local_system_change is asserted and the transmitting link partner enters the LOCAL CHANGE state where NEW_TX_VALUE is computed" - this sentence is probably missing a comma or two.
"Otherwise it returns" to "Otherwise, it returns"
"receiving link partner it" to "receiving link partner, it"
"is lesser than either" - probably "is smaller than either"

SuggestedRemedy

per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Make the following changes to section 78.4.3.1
- "if presently advertised value" to "if the presently advertised value"
- "During normal operation the transmitting link" to "During normal operation, the transmitting link"
- "Otherwise it returns" to "Otherwise, it returns"
- "receiving link partner it" to "receiving link partner, it"
- "is lesser than either" - probably "is smaller than either"

Cl **78** *SC* **78.4.3.1** *P* **240** *L* **46** # 280

Hajduczenia, Marek ZTE Corporation

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

What is a "link partner machine"? Do you mean a specific state machine?

SuggestedRemedy

Please clarify

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "If the transmitting link partner machine"

to "If the transmitting link partner"

Cl **78** *SC* **78.4.3.2** *P* **241** *L* **8** # 322

Hajduczenia, Marek ZTE Corporation

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

Missing comma between 'operation' and 'the receiving'

SuggestedRemedy

Per comma

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.5** *P* **242** *L* **3** # 321

Hajduczenia, Marek ZTE Corporation

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

Editorial changes on page 242
"In full duplex mode" to "In a full duplex mode" (scrub also the draft for the occurences of the word 'mode' and make sure that the use of 'a' / 'the' before statement like 'full duplex mode', 'lower power mode' etc is consistent.). Additionally decide whether it is 'in … mode' or 'at … mode' since it is not used consistently. Also make sure that the 'Lower Power Idle' is superceded by a correct preposition i.e. either 'the' or 'a'.
"propagation delays through the network" to "propagation delay through the network" - there is only one delay through the network rather than multiple delays.
"mode, PHY device" to "mode, a PHY device" - also, scrub the draft for the term "PHY device" and make sure that 'a' / 'the' is used consistently.
"for data transmission request" to "for a data transmission request" " - also, scrub the draft for the term "request" and make sure that 'a' / 'the' is used consistently.
"normal idle code" or "normal IDLE code"? Capitalization of the word "IDLE " is not consistent throughout the draft.
"the systems designer" to "a system designer"

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.5** *P* **242** *L* **31** # 116

D'Ambrosia, John Force10 Networks

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

The first column is labeled PHY type, but the inclusion of the case with the PHY name could cause confusion.

SuggestedRemedy

Create a new column called "CASE" and indicate that there are different CASES for the same PHY type.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Follow suggested remedy.

In addition, on Page 242, line 23, change the sentence to read:

"Case-1 of the 10GBASE-KR PHY applies to PHYs without FEC. Case-2 of the 10GBASE-KR PHY applies to PHYs with FEC."

This fixes an unrelated issue identified from the floor at the meeting.

Cl **79** *SC* **79** *P* **243** *L* **1** # 320
Hajduczenia, Marek ZTE Corporation

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

Missing space between "79" and "IEEE 802.3"

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Cl **79** *SC* **79** *P* **243** *L* **1** # 14
Anslow, Pete Nortel Networks

Comment Type **E** *Comment Status* **A** *See 320*

The format of the clause title is incorrect (no dot or space before "IEEE")

SuggestedRemedy

fix the format

Response *Response Status* **C**

ACCEPT.

OBE #320

Cl **79** *SC* **79.3.1.1** *P* **244** *L* **13** # 336
Koenen, David Hewlett Packard

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

Pronoun 'it' ambiguous in sentence "Receive Tw_sys (2 octets wide) is the time (expressed in microseconds) that the receiving link partner is requesting the transmitting link partner to wait before it starts transmitting data following the Low Power Idle."

SuggestedRemedy

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

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change to "Receive Tw_sys (2 octets wide) is the time (expressed in microseconds) that the receiving link partner is requesting the transmitting link partner to wait before starting the transmission data following the Low Power Idle.

Cl **79** *SC* **79.3.1.2** *P* **244** *L* **21** # 277
Hajduczenia, Marek ZTE Corporation

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

"A receiving link partner may inform of the transmitter of what" should be rewritten, e.g. "A receiving link partner may inform the transmitter of "

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Cl **79** *SC* **79.3.a** *P* **243** *L* **25** # 15
Anslow, Pete Nortel Networks

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

The headings in 79.3.a are inconsistent:
79.3.a
79.3.a.1
79.3.1.1
79.3.1.2
79.3.1.3

SuggestedRemedy

Fix the format

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change from
79.3.a
79.3.a.1
79.3.1.1
79.3.1.2
79.3.1.3

to
79.3.a
79.3.a.1
79.3.a.2
79.3.a.3
79.3.a.4

Cl **79** *SC* **79.3.a** *P* **243** *L* **26** # 278

Hajduczenia, Marek ZTE Corporation

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

"The EEE TLV is used to perform the EEE Data Link Layer capabilities" - how does one 'perform' capabilities? Do you mean 'exchange' information about capabilities?

SuggestedRemedy

Please rewrite consistently

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Will change:

"The EEE TLV is used to perform the EEE Data Link Layer capabilities"

To:
"The EEE TLV is used to exchange information about the EEE Data Link Layer capabilities"

Cl **79** *SC* **79.3.a.1** *P* **243** *L* **1** # 16

Anslow, Pete Nortel Networks

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

"(" missing

SuggestedRemedy

change "2 octets wide)" to "(2 octets wide)"

Response *Response Status* **C**

ACCEPT.

Cl **79** *SC* **79.3.a.1** *P* **244** *L* **3** # 265

Hajduczenia, Marek ZTE Corporation

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

Missing opening parenthesis in "Transmit Tw_sys 2 octets wide)" - should be "Transmit Tw_sys (2 octets wide)

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

See comment #16

Cl **99** *SC* *P* **1** *L* **51** # 175

Ganga, Ilango Intel

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

As per style manual, add email id for IEEE Standards Activities Department (stds.ipr@ieee.org).

SuggestedRemedy

Add email id after IEEE Standards Activities Department (stds.ipr@ieee.org).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #213

Cl **99** *SC* *P* **15** *L* **7** # 204

Grow, Robert Intel

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

This is really old and in fact inaccurate (there are four editing instructions, not three).

SuggestedRemedy

Replace with current NOTE -- as found on page 35 of the style manual. The additional paragraphs are acceptable, though if any base text needs to reference another amendment, the first paragraph needs to be updated to indicate that unless otherwise indicated in the editing instructions, base text comes from IEEE Std 802.3-2008.

Response *Response Status* **C**

ACCEPT.

Check formatting of text copied from style manual.

Cl **99** *SC* *P* **3** *L* **40** # 176

Ganga, Ilango Intel

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

Add the following on page 3:

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SuggestedRemedy

This text is part of IEEE master pages. Use appropriate master page with this background text for the abstract page 3.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #213

Cl **99** *SC* *P* **4** *L* **19** # 213

Grow, Robert Intel

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

Comments on similar front matter have been recommended to the WG Chair for acceptance. For example, this statement about the historical listing of projects is appropriate for the base standard, but not for amendments.

SuggestedRemedy

Assure front matter is current before beginning Sponsor ballot.

Response *Response Status* **C**

ACCEPT.

WG chair to provide most current front matter for amendments.

Cl **99** *SC* *P* **5** *L* **15** # 177

Ganga, Ilango Intel

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

Add IEEE 802.3bc, 802.3ba and 802.3-2008/Cor1 to the list

SuggestedRemedy

Insert the following amendments/corrigendum to the list in order:

IEEE Std 802.3bcT-200X
This amendment includes changes to IEEE Std 802.3-2008 and adds Clause 79. This amendment transfers the IEEE 802.3 Organizationally Specific TLVs that were orginally specified in IEEE Std 802.1AB Station and Media Access Control Connectivity Discovery to IEEE Std 802.3.

IEEE Std 802.3-2008T/Cor 1-200X
This corrigendum corrects the PAUSE reaction timing delay value for the 10GBASE-T PHY type.

IEEE Std 802.3baT-20XX
This amendment includes changes to IEEE Std 802.3-2008 and adds Clause 80 through Clause 88 and Annex 83A through Annex 83C, Annex 85A and Annex 86A. This amendment includes IEEE 802.3 Media Access Control (MAC) parameters, physical layer specifications, and management parameters for the transfer of IEEE 802.3 format frames at 40 Gb/s and 100 Gb/s.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #213

Cl **99** *SC* *P* **5** *L* **48** # 178

Ganga, Ilango Intel

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

Incorrect link, Fix the URL:

SuggestedRemedy

Update URL and hyper link as follows:
http://standards.ieee.org/reading/ieee/interp/index.html

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

WG chair to provide the right frontmatter for amendments
See response to comment #213

Cl **99** *SC* **99** *P* **5** *L* **23** # 251

Hajduczenia, Marek ZTE Corporation

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

P802.3av added clauses 75 through 77 with Annexes 75A, 75B, 75C and 76A, and not "Clauses 91 through 93 and Annex 91A" as written in lines 23/24. Change the description accordingly.

SuggestedRemedy

Per comment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

WG chair will provide the right frontmatter to use for amendments. See response to comment #213

Cl **99** *SC* **ToC** *P* **12** *L* **1** # 179

Ganga, Ilango Intel

Comment Type **E** *Comment Status* **A** *toc*

Add Title to Table of contents

SuggestedRemedy

Add title: "Contents" to the title of this page

Response *Response Status* **C**

ACCEPT.

Cl **99** *SC* **TOC** *P* **13** *L* **15** # 112

D'Ambrosia, John Force10 Networks

Comment Type **E** *Comment Status* **R** *toc*

Unnecessary carriage return for entry for Clause 36

SuggestedRemedy

remove carriage return between Independent and Interface

Response *Response Status* **C**

REJECT.

This is a machine generated file that gets regenerated every draft. This will get fixed by IEEE professional editorial staff prior to publication.

Cl **99** *SC* **ToC** *P* **14** *L* **47** # 180

Ganga, Ilango Intel

Comment Type **E** *Comment Status* **A** *toc*

Per style manual, the ToC entries for Annexes should indicate if the annex is normative or informative with annex titles

SuggestedRemedy

Update the list with the following (see base document for reference):

Annex 28B (normative) IEEE 802.3 Selector base page definition
Annex 28C (normative) Next page Message Code field definitions
Annex 73A (normative) Next page message code field definitions
Annex 74A (informative) FEC block encoding examples

Response *Response Status* **C**

ACCEPT.