Cl **00** *SC* *P* *L* *Comment #* 301

Glenn Parsons Nortel

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

The headers are different throughout the draft:

IEEE P802.3an DRAFT 2.0 LOCAL AND METROPOLITAN AREA NETWORKS
IEEE P802.3an DRAFT 2.0 Revisions based on IEEE Draft P802.3REVam/D2.1
IEEE P802.3an DRAFT 2.0 Revisions based on IEEE P802.3REVam/Draft 1.0/June 2004
IEEE P802.3an DRAFT 2.0 Revisions based on P802.3REVam/Draft 1.1/October 2004

If this is correct, and the revisions are truly based on older versions of REVam, then there is a bigger problem.

If this is simply a typo, then it can simply be fixed.

SuggestedRemedy

Ensure that this draft is tracking 802.3REVam and that the revisions are againast the latest draft D2.2.

Change all to:

IEEE P802.3an DRAFT 2.0 Draft Amendment to IEEE STD 802.3-2005

Response *Response Status* **C**

ACCEPT.

Change all headers to:

IEEE P802.3an DRAFT 2.1 Draft Amendment to IEEE STD 802.3-2005

Cl **00** *SC* *P* *L* *Comment #* 444

Wael William Diab Cisco Systems

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

Please ensure that the document is correctly formated and that the template is properly aplied. For instance, the line numbers are supposed to alternate sides between even and odd pages. It looks like this may be broken in some of the chapters like 55.

SuggestedRemedy

Ensure that the IEEE template is applied correctly.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Cl **00** *SC* *P* *L* *Comment #* 442

Wael William Diab Cisco Systems

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

Please add an Annex similar to that found in 1000BASE-T (Annex 40A), which addresses cabling design guidlines and Alien Crosstalk.

SuggestedRemedy

Intorduce an Annex such as 40A in 1000BASE-T , could be Annex 55B.

Response *Response Status* **C**

ACCEPT.

Cl **00** *SC* *P* *L* *Comment #* 338

Dawe, Piers Agilent

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

Template has no line 43!

SuggestedRemedy

Response *Response Status* **C**

ACCEPT.

Will add line 43.

Cl **00** SC P L Comment # 682

Law, David 3Com

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

Need to follow the editing instructions stated in the editors notes at the start of each changed Clause.

Examples:
Page 8, line 29:
A insert editing instruction is provided however the text being inserted is under lined. This is not correct, only the Change instruction uses underscore and strikeout, the text should not be underlined.

Page 48, line 43:
A Insert editing instruction is given but new text is added to an existing subclause. An insert should 'add new material without disturbing existing material, what is being done here is actually a Change. Make the editing instruction a change instruction.
In addition generally a Clause or subclause heading is given, the editing instruction follows and then, in the case of a Change instruction for example, the change text is shown.

Page 54, line 12
A Modify instruction is used however no such editing instruction is defined.

Page 57, line 20
A insert instruction is give where a Change instruction should be used. In addition aPHYType is the attribute, what is being added is an additional enumeration.

SuggestedRemedy

Please follow editing instructions stated in the editors notes at the start of each changed Clause.

Response *Response Status* **C**

ACCEPT.

Cl **00** SC P L Comment # 683

Law, David 3Com

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

The titled for the changed Clauses is incorrect, Revision is a keyword in IEEE-SA speak and is being used incorrectly here.

SuggestedRemedy

Change the title of the changed Clauses from 'Revisions to IEEE P802.3REVam ... ' to read 'Changes to IEEE P802.3REVam ...'.

Response *Response Status* **C**

ACCEPT.

Cl **00** SC P L Comment # 684

Law, David 3Com

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

Genrally too much of the existing text is included where changes are shown, and example of this is where the entire Annex 30B is reprodcued to show just one additonal line.

SuggestedRemedy

Suggest some of the existing text that is provided for the changed Clauses is beyond that required to provide context to the proposed change and should not be included in future drafts

Response *Response Status* **C**

ACCEPT.

Cl **00** SC P **1** L **1** Comment # 605

Grow, Robert Intel

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

I hope the fonts are a font substitution thing (because the editor doesn't have all the right fonts) and not a change to the styles. The fonts in the document are mostly all wrong.

SuggestedRemedy

Perhaps the editor could load appropriate fonts.

Response *Response Status* **C**

ACCEPT.

Appropriate fonts have been loaded and this problem should disappear from subsequent drafts.

Cl **00** SC P **217-235** L Comment # 375

George Eisler Solarflare

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

The PICS need an editorial scrub, based on the following general guidelines:

1. Each "shall" in the text has a corresponding PICS item.

2.The PICS Item column contains the "shall" statement while the Value/Comment column contains the directed value, bit sequence, etc.

3. The body of the text should reviewed to eliminate multiple "shall" statements in single paragraphs. Rather, it should be understood that any description of a bit sequence, multiple actions, etc. in a paragraph is covered by a single "shall" and the entire contents are mandatory.

SuggestedRemedy

The Editor and his designee(s) be authorized to edit Cause 55.12 according to the above guidelines at his discretion.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The PICS will be scrubbed based on the following general guidelines:

1. Each "shall" in the text shall be covered by a PICS.

2.The PICS Item column contains reference to the "shall" statements while the Value/Comment column, where appropriate, contains the directed value, bit sequence, etc.

And:

Review the document and remove multiple "shall"s on the same specification item.

Cl **00** SC P **3** L **0** Comment # 606

Grow, Robert Intel

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

Headers are not correct.

SuggestedRemedy

Replace with recommended headers.

Response *Response Status* **C**

ACCEPT.

Cl **00** SC P **3** L **15** Comment # 618

Grow, Robert Intel

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

To aid the publication editor and reduce the problems of parallel projects modifying the same portions of the standard add an Editor's Note.

SuggestedRemedy

Insert an "Editor's Note (to be removed prior to final publication).
The publication editor might want to change some of the editing instructions for this clause to be "Change" instructions rather than "Insert". Reviewers and the publication editor should note that editing instructions have been written to minimize the probability of changes being lost at publication. Other active amendment projects (e.g., P802.3aq and P802.3ap) are likely to modify the same text, and the order of approval for the active amendments is uncertain.

Response *Response Status* **C**

ACCEPT.

Cl **00** SC **14.3.1.2.1** P L Comment # 502

Dave, Nack Solarflare Communicati

Comment Type **T** *Comment Status* **A** *link pulse*

The link pulse template defined in clause 14 requires conformance to the template both with and without the category 3 cable model (Fig. 14-7.) Auto -negotiation to 10GBaseT requires link pulses to conform to this template. 10GBaseT transmitters are required to have high linearity, but the transmit output level is only 2.5Vp-p differential. This is only about half the amplitude that would be required to meet the link pulse template with the cat-3 cable model (transmit output needs to be about 2.5V zero-peak or 5.0V p-p.) If the 10GBaseT transmitters are burdened with the requirement to drive this larger amplitude, the linearity performance will be compromised. A POTENTIAL SOLUTION All of the cables specified in 10GBaseT (55.7) have dramatically less attenuation than the old category 3 cable. In fact the normal transmit amplitude for 10GBaseT (1.25V zero to peak) is sufficient to meet the link pulse template when passed through any of the cables specified in 55.7.

SuggestedRemedy

Replace 28.2.1.1.1 "FLP bursts shal be composed of link pulses meeting the requirements of Fig. 14-12." with "For devices auto-negotiating to 10/100/1,000 Mb/s, all link test pulses in the FLP Burst Sequence shall meet the template requirments of Figure 14-12 when measured across each of the test loads defined in Figure 14-11; both with the load connected directly to the TD circuit and with the the load connected through the twisted pair model as defined in Figures 14-7 and 14-8. For devices auto-negotiating to 10,000 Mb/s, all link test pulses in the FLP Burst sequence shall meet the template requirments of Figure 14-12 when measured across each of the test loads defined in Figure 14-11; both with the load connected directly to the TD circuit and with the load connected through each of the cable types and distances defined in 55.7."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 543

Cl **01** *SC* *P* **3** *L* **1** *Comment #* 609

Grow, Robert — Intel

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

The style for the changed clauses is cumbersome and can be improved, both for readability and for closer resemblance to how the document will be published.

SuggestedRemedy

Insert an additional title page as the first page of the standard (as found in IEEE Std 802.3ah-2002, appropriately edited for a draft). Include the appropriate Editorial Note on this page (the one about Change, Insert, Delete, and Replace).

Delete lines 1-16 on pages 5, 47, 50, 53, 57, 61, 75, 83

Editor's choice whether to begin each changed clause on a new page, but I recommend not.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Will follow suggested remedy but will have text for each clause start on a new page.

Cl **01** *SC* **1.4** *P* **3** *L* **35** *Comment #* 424

Daines, Kevin — World Wide Packets

Comment Type **ER** *Comment Status* **A** *DSQ128*

The definition for the term DSQ128 is included in clause 1.4. However, Clause 30 and 44 use the term 128DSQ. Clause 55 reverts back to DSQ128.

SuggestedRemedy

Harmonize on a consistent term.

DSQ128 is found 52 times within D2.0.

128DSQ is found 4 times within D2.0.

Changing 128DSQ to DSQ128 would be less work.

Response *Response Status* **C**

ACCEPT.

Will change all to DSQ128

Cl **01** *SC* **1.4** *P* **3** *L* **40** *Comment #* 304

Dawe, Piers — Agilent

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

A code is not a block

SuggestedRemedy

Change to 'A block oriented encoding in which 64-bit blocks are scrambled and prepended with single bits to indicate whether a block contains ...'

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Correct to "A block oriented encoding where 64-bit blocks are prepended with a single bit (to indicate whether the block contains only data or a mix of data and control information) and then scrambled. "

Cl **01** *SC* **1.4** *P* **3** *L* **40** *Comment #* 305

Dawe, Piers — Agilent

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

In 64B/65B, do you really scramble before prepending?

SuggestedRemedy

Swap around if necessary. Make 55.3.2 more explicit if necessary.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Page 3, line 50 is incorrect.

We scramble the full (64+1)bit block, including the data/ctrl header. This will be corrected in clause 1

Cl **01** *SC* **1.4** *P* **3** *L* **44** *Comment #* 2

David V James — JGG

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

DVJ-2
Misspelling

SuggestedRemedy

).
==>
.)

Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1.4** *P* **3** *L* **58** *Comment #* 321

Dawe, Piers — Agilent

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

Please add Tomlinson-Harashima precoder to list of definitions.

SuggestedRemedy

per comment

Response *Response Status* **C**

ACCEPT.

Add:
1.4.xxx Tomlinson-Harashima precoder (THP): A precoding technique for intersymbol interference mitigation. (See IEEE 802.3 Clause 55.)

Cl **01** *SC* **1.5** *P* **3** *L* **52** *Comment #* 454

Healey, Adam — Agere Systems

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

Multiple abbreviations are used in clauses 28 and 45 without a corresponding definition in clause 1.5 (based on 802.3REVam/D2.2).

SuggestedRemedy

Include the following abbreviations in subclause 1.5:
AN - Auto-Negotiation
BP - Base Page
LD - Local Device
LP - Link Partner
NP - Next Page
XNP - Extended Next Page

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add as follows:
AN - auto-negotiation
BP - base page
LD - local device
LP - link partner
NP - next page
XNP - extended next page

Cl **01** *SC* **1.5** *P* **3** *L* **58** *Comment #* 320

Dawe, Piers — Agilent

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

Please add THP to list of abbreviations. A search on the web seemed to indicate that the two names are usually joined by a hyphen.

SuggestedRemedy

THP Tomlinson-Harashima precoder

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to 321

Cl **01** *SC* **1.5** *P* **3** *L* **58** *Comment #* 257

Marris, Arthur — Cadence

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

Add abbreviations

SuggestedRemedy

Add
FIR Finite Impulse Response
IIR Infinite Impulse Response
THP Tomlinson Harashima Precoder

Maybe also add definitions for these to 1.4

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

THP - see comments #320, 321

For IIR and FIR, add to 1.5 only:
FIR - finite impulse response
IIR - infinite impluse response

Cl **28** *SC* *P* **25** *L* **36** *Comment #* 556

Bradshaw, Peter — Intersil

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

"after a sucsessful master/slave" msiss-spelt

SuggestedRemedy

Replace "after a sucsessful master/slave" by "after a successful master/slave"

Response *Response Status* **C**

ACCEPT.

Cl **28** *SC* **28** *P* **6** *L* **1** *Comment #* 307

Dawe, Piers — Agilent

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

This title is getting unnecessarily long. 10 Mb/s, 100 Mb/s, 1000 Mb/s, and 10Gb/s is basically everything we care about.

SuggestedRemedy

Shorten title to 'Physical layer link signaling for auto-negotiation on twisted pair'. If necessary, add text within 28 to mention any twisted pair types that the clause doesn't apply to. Change title of 28.5 and 28.5.4, and text of 28.5.1 and 28.5.2.2, in step.

Response *Response Status* **C**

ACCEPT.

Cl **28** *SC* **28.2.1.1.1** *P* *L* *Comment #* 552

Bradshaw, Peter — Intersil

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

Title of this subclause does not mention 'Extended FLP Bursts', but the proposed addition relates to this type of burst.

SuggestedRemedy

Change "28.2.1.1.1 FLP burst encoding" to "28.2.1.1.1 FLP and Extended FLP burst encoding

Response *Response Status* **W**

REJECT.

The title of the subclause accurately reflects the contents within the subclause.

Cl **28** *SC* **28.2.1.1.1** *P* **6** *L* **10** *Comment #* 543

Zimmerman, George — Solarflare Communicati

Comment Type **TR** *Comment Status* **A** *link pulse*

THE PROBLEM (referring to the last paragraph of 14.3.1.2.1) The link pulse template defined in clause 14 requires conformance to the template both with and without the category 3 cable model (Fig. 14-7.) Auto -negotiation to 10GBaseT requires link pulses to conform to this template. 10GBaseT transmitters are required to have high linearity, but the transmit output level is only 2.5Vp-p differential. This is only about half the amplitude that would be required to meet the link pulse template with the cat-3 cable model (transmit output needs to be about 2.5V zero-peak or 5.0V p-p.) If the 10GBaseT transmitters are burdened with the requiremen to drive this larger amplitude, the linearity performance will be compromised. A POTENTIAL SOLUTION All of the cables specified in 10GBaseT (55.7) have dramatically less attenuation than the old category 3 cable. In fact the normal transmit amplitude for 10GBaseT (1.25V zero to peak) is sufficient to meet the link pulse template when passed through any of the cables specified in 55.7

SuggestedRemedy

PROPOSED MODIFICATION: Replace 28.2.1.1.1 "FLP bursts shall be composed of link pulses meeting the requirements of Fig. 14-12." with "For devices auto-negotiating to 10/100/1,000 Mb/s, all link test pulses in the FLP Burst Sequence shall meet the template requirments of Figure 14-12 when measured across each of the test loads defined in Figure 14-11; both with the load connected directly to the TD circuit and with the the load connected through the twisted pair model as defined in Figures 14-7 and 14-8. For devices auto-negotiating to 10,000 Mb/s, all link test pulses in the FLP Burst sequence shall meet the template requirments of Figure 14-12 when measured across each of the test loads defined ir Figure 14-11; both with the load connected directly to the TD circuit and with the load connected through each of the cable types and distances defined in 55.7.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace 28.2.1.1.1 "FLP bursts shall be composed of link pulses meeting the requirements of Fig. 14-12." with "All link test pulses in the FLP Burst Sequence shall meet the template requirements of Figure 14-12 when measured across each of the test loads defined in Figure 14-11; both with the load connected directly to the TD circuit and with the load connected through all of the cable types and distances supported by the advertised capabilities.

Related comments 502, 543

Cl **28** *SC* **28.2.1.1.1** *P* **6** *L* **16** *Comment #* 544

Matt Squire Hatteras Networks

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

When introducing the 49/48 coding, should indicate that odds are still clock symbols and evens data.

SuggestedRemedy

Change last sentence to say "49 (odd numbered) clock pulses and 48 (even numbered) data pulses.

Response *Response Status* **C**

ACCEPT.

Cl **28** *SC* **28.2.1.1.1** *P* **6** *L* **17** *Comment #* 400

Barrass, Hugh Cisco Systems

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

It is not clear that the use of the extended burst must be limited to situations where extended next page ability has been established.

The use of an extended burst with an incapable link partner might cause unpleasant behavior...

SuggestedRemedy

At the end of the current paragraph add the following sentence:

A transmitter shall not use extended FLP bursts until after extended next page ability for the AN LP has been established (see 28.2.1.2.3).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 598.

Cl **28** *SC* **28.2.1.1.1** *P* **6** *L* **22** *Comment #* 4

David V James JGG

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

DVJ-4
Misleading capitalization

SuggestedRemedy

Clock Pulses
==>
Clock pulses

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an and was provided only as a reference for the reader. See response to comment 611.

Cl **28** *SC* **28.2.1.1.1** *P* **6** *L* **23** *Comment #* 3

David V James JGG

Comment Type **E** *Comment Status* **R** *figure font*

DVJ-3
Wrong figure font.

SuggestedRemedy

Use 8-point Arial, here and throughout.

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an and was provided only as a reference for the reader. See response to comment 611.

Cl **28** *SC* **28.2.1.1.1** *P* **6** *L* **28** *Comment #* 5

David V James JGG

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

DVJ-5
Misleading capitalization

SuggestedRemedy

First Bit on Wire
==>
First bit on wire

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an and was provided only as a reference for the reader. See response to comment 611.

Cl **28** *SC* **28.2.1.1.1** *P* **6** *L* **32** *Comment #* 6

David V James JGG

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

DVJ-6
Misleading capitalization

SuggestedRemedy

Pulse Position
==>
Pulse position
OR
pulse position

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an and was provided only as a reference for the reader. See response to comment 611.

Cl **28** *SC* **28.2.1.1.2** *P* **6** *L* **48** *Comment #* 308

Dawe, Piers Agilent

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

Gratuitous Capital Syndrome. It seems 'Extended Next Page' is a term coined by P802.3an, so it doesn't inherit its capitals from somewhere else. Therefore, it doesn't need capitals.

SuggestedRemedy

Change to 'extended next pages'. Make similar editorial changes as appropriate in the document.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Next Page is consistently capitalized throughout the clause. Will make consistent within Clause 28 by using 'extended Next Page'.

Cl **28** *SC* **28.2.1.1.2** *P* **7** *L* **17** *Comment #* 13

David V James JGG

Comment Type **E** *Comment Status* **R** *figure font*

DVJ-13
Wrong figure font.

SuggestedRemedy

Use 8-point Arial, here and throughout.

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an and was provided only as a reference for the reader. See response to comment 611.

Cl **28** *SC* **28.2.1.1.2** *P* **7** *L* **20** *Comment #* 15

David V James JGG

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

DVJ-15
Misleading capitalization

SuggestedRemedy

FLP Burst
==>
FLP burst
(multiple instances)

Response *Response Status* **C**

REJECT.

The change was to add "or T7" to the figure. The suggested remedy is beyond the scope of IEEE P802.3an.

Cl **28** *SC* **28.2.1.1.2** *P* **7** *L* **29** *Comment #* 7

David V James JGG

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

DVJ-7
Misleading capitalization

SuggestedRemedy

Clock/Data Pulse Width
==>
Clock/cata pulse width

Response *Response Status* **C**

REJECT.

The change to the table is to modify T4 and T5 and to add T7. The suggested remedy is beyond the scope of IEEE P802.3an.

Cl **28** *SC* **28.2.1.1.2** *P* **7** *L* **31** *Comment #* 8

David V James JGG

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

DVJ-8
Misleading capitalization

SuggestedRemedy

Clock Pulse to Clock Pulse==>
Clock pulse to clock pulse

Response *Response Status* **C**

REJECT.

The change to the table is to modify T4 and T5 and to add T7. The suggested remedy is beyond the scope of IEEE P802.3an.

Cl **28** *SC* **28.2.1.1.2** *P* **7** *L* **32** *Comment #* 9

David V James JGG

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

DVJ-9
Misleading capitalization

SuggestedRemedy

Clock Pulse to Data Pulse
==>
Clock pulse to data pulse

Response *Response Status* **C**

REJECT.

The change to the table is to modify T4 and T5 and to add T7. The suggested remedy is beyond the scope of IEEE P802.3an.

Cl **28** *SC* **28.2.1.1.2** *P* **7** *L* **33** *Comment #* 551

Bradshaw, Peter Intersil

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

Table 28-1, the 'Min' value for T4 is missing a space

SuggestedRemedy

Replace addition 'for 16-bit' with ' for 16-bit'

Response *Response Status* **C**

ACCEPT.

Cl **28** *SC* **28.2.1.1.2** *P* **7** *L* **34** *Comment #* 10

David V James JGG

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

DVJ-10
Misleading capitalization

SuggestedRemedy

Pulses in a Burst
==>
Pulses in a burst

Response *Response Status* **C**

REJECT.

The change is to the T4 value. The suggested remedy is beyond the scope of IEEE P802.3a

Cl **28** *SC* **28.2.1.1.2** *P* **7** *L* **36** *Comment #* 11

David V James JGG

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

DVJ-11
Misleading capitalization

SuggestedRemedy

Burst Width
==>
Burst width

Response *Response Status* **C**

REJECT.

The change is to the T5 value. The suggested remedy is beyond the scope of IEEE P802.3a

Cl **28** *SC* **28.2.1.1.2** *P* **7** *L* **6** *Comment #* 12

David V James JGG

Comment Type **E** *Comment Status* **R** *figure font*

DVJ-12
Wrong figure font.

SuggestedRemedy

Use 8-point Arial, here and throughout.

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an and was provided only as a reference for the reader. See response to comment 611.

Cl **28** *SC* **28.2.1.1.2** *P* **7** *L* **9** *Comment #* 14

David V James JGG

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

DVJ-14
Misleading capitalization

SuggestedRemedy

Clock Pulse
==>
clock pulse
(multiple instances)

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an and was provided only as a reference for the reader. See response to comment 611.

Cl **28** *SC* **28.2.1.2** *P* **8** *L* **3** *Comment #* 566

Booth, Brad Intel

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

Figure 28-7 should have a change bar as it is not the same as in 802.3REVam.

SuggestedRemedy

Add a change bar to the figure.

Response *Response Status* **C**

ACCEPT.

Cl **28** *SC* **28.2.1.2.1** *P* **8** *L* **6** *Comment #* 16

David V James JGG

Comment Type **E** *Comment Status* **R** *figure font*

DVJ-16
Wrong figure font.

SuggestedRemedy

Use 8-point Arial, here and throughout.

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an. See response to comment 611.

Cl **28** *SC* **28.2.1.2.3** *P* **8** *L* **37** *Comment #* 347

Dawe, Piers Agilent

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

orthogonal to? I think I understand the metaphor, but why not just say it rather than use a metaphor.

SuggestedRemedy

Change to 'not dependent on'

Response *Response Status* **C**

REJECT.

Similar text has previously been used to describe PAUSE and has not caused considerable confusion.

Cl **28** *SC* **28.2.1.2.3** *P* **8** *L* **39** *Comment #* 545

Matt Squire Hatteras Networks

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

Include a forward reference to where XNP is explained in more detail.

SuggestedRemedy

See sentence at the end of remote fault section as an example.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add the following text:

The extended Next Page bit shall be used in accordance with the extended Next Page function specifications (28.2.3.4).

Cl **28** *SC* **28.2.1.2.3** *P* **8** *L* **8** *Comment #* 598

Law, David — 3Com

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

The description of the operation of the XNP bit during a Next Page exchange in the second paragraph of this subclause should be moved to subclause 28.2.3.4 where the description of the operation of the NP bit is already provided.

SuggestedRemedy

Delete the text 'This ability shall be enabled at the end of base page exchange when both sides have indicated that they support the ability. Otherwise the ability shall be disabled.'

Change the third paragraph of subclause 28.2.3.4 to read:

Next Page operation is controlled by the same two mandatory control bits, Next Page and Acknowledge, used in the Base Link Code Word. Setting the NP bit in the Base Link Code Word to logic one indicates that the device is Next Page Able. Setting the XNP bit in the Base Link Code Word to logic one indicates that the device is Extended Next Page Able. If both a device and its Link Partner are Next Page Able, then Next Page exchange may occur. If both a device and its Link Partner are Extended Next Page Able, then any Next Page exchange that occurs shall use the Extended Next page encoding. If one or both devices are not Next Page Able, then Next Page exchange will not occur and, after the base Link Code Words have been exchanged, the FLP LINK GOOD CHECK state will be entered. The Toggle bit is used to ensure proper synchronization between the Local Device and the Link Partner.

Response *Response Status* **C**

ACCEPT.

Comment 400 is also related to this.

Cl **28** *SC* **28.2.2.1** *P* **10** *L* **20** *Comment #* 17

David V James — JGG

Comment Type **E** *Comment Status* **R** *figure font*

DVJ-17
Wrong figure font.

SuggestedRemedy

Use 8-point Arial, here and throughout.

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an. See response to comment 611.

Cl **28** *SC* **28.2.2.1** *P* **10** *L* **45** *Comment #* 18

David V James — JGG

Comment Type **E** *Comment Status* **R** *figure font*

DVJ-18
Wrong figure font.

SuggestedRemedy

Use 8-point Arial, here and throughout.

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an. See response to comment 611.

Cl **28** *SC* **28.2.2.1** *P* **10** *L* **51** *Comment #* 476

Thaler, Pat — Agilent Technologies

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

The nlp_test_min_timer range shown in Figure 28-10 applies to non-extended burst operation, the tolerance is tighter for extended burst mode.

SuggestedRemedy

Add a clarification such as:
The nlp_test_min_timer range for devices that do not support extended Next Pages is shown in Figure 28-10. The range of nlp_test_timer for devices that support extended Next pages is specified in 28.3.2.

Response *Response Status* **C**

ACCEPT.

Cl **28** *SC* **28.2.2.1** *P* **11** *L* **3** *Comment #* 19

David V James — JGG

Comment Type **E** *Comment Status* **R** *figure font*

DVJ-19
Wrong figure font.

SuggestedRemedy

Use 8-point Arial, here and throughout.

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an and was provided only as a reference for the reader. The comment is considered beyond the scope of IEEE P802.3an.

Cl **28** *SC* **28.2.2.1** *P* **11** *L* **4** *Comment #* 20

David V James JGG

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

DVJ-20
Misleading capitalization

SuggestedRemedy

FLP Burst
==>
FLP burst
(here and throughout)

Response *Response Status* **C**

REJECT.

The FLP Burst is not being changed by IEEE P802.3an. The comment is considered beyond the scope of IEEE P802.3an.

Cl **28** *SC* **28.2.3.4** *P* **12** *L* **45** *Comment #* 597

Law, David 3Com

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

It isn't clear that the text in this subclause applies to Extended Next Page but it must as this is where there Ack, Ack2 and NP functionality is defined. Based on this the following changes are suggested to this subclause.

Note 1. - The term "Extended Next Page" is unclear. Is this a function, ability (Page 8, line 38) or a encoding (Figure 28-13).

Note 2. - These changes are based on the assumption that XNP is only supported by devices with a selector field of IEEE 802.3 (01Hex). If the addition of XNP is to be global, that is A7 changed to XNP and the ability filed reduced to 7 bits, then the text in the third paragraph of this subclause will need refined in relation to what message pages are exchanged when the selector fields do not match (See Page 13, line 16).

SuggestedRemedy

Page 12, Line 50:
Change the text 'Two types of Next Page encoding are defined: Message Pages and Unformatted Pages.' to read 'Three types of Next Page encoding are defined: Message Pages, Unformatted Pages, and Extended Next Page.'

Page 13, Line 5:
Change the text 'Next Page operation is controlled by the same two mandatory control bits, Next Page and Acknowledge, used in the Base Link Code Word' to read 'Next Page operatior is controlled by the same two mandatory control bits, Next Page and Acknowledge, used in the Base Link Code Word.'.

Page 13, line 13:
Change the text to read:
Next Page exchange occurs after the base Link Code Words have been exchanged. Next Page exchange consists of using the normal Auto-Negotiation arbitration process to send Next Page messages. Three message encoding are defined: Message Pages, Unformatted Pages and Extended Next Pages. Unformatted Pages can be combined to send extended messages. If the Selector Field values do not match, then each series of Unformatted Pages shall be preceded by a Message Page containing a message code that defines how the following Unformatted Pages will be interpreted. If the Selector Field values match, then the convention governing the use of Message Pages shall be as defined by the Selector Field value definition. Any number of Next Pages may be sent in any order; however, it is recommended that the total number of Next Pages sent be kept small to minimize the link start-up time.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Page 12, Line 50:
Change the text 'Two types of Next Page encoding are defined: Message Pages and Unformatted Pages.' to read Four types of Next Page encoding are defined: Message Pages, Unformatted Pages, Extended Next Pages, and Extended Unformatted Next Pages.'

Page 13, Line 5:
Change the text 'Next Page operation is controlled by the same two mandatory control bits, Next Page and Acknowledge, used in the Base Link Code Word' to read 'Next Page operation is controlled by the same three mandatory control bits, Next Page, Acknowledge, and extended Next Page used in the Base Link Code Word.' (note the suggested remedy contained no changes to the original text)

Page 13, line 13:
Change the text to read:
Next Page exchange occurs after the base Link Code Words have been exchanged. Next Page exchange consists of using the normal Auto-Negotiation arbitration process to send Next Page messages. Four message encodings are defined: Message Pages, Unformatted Pages, Extended Next Pages, and Extended Unformatted Next Pages. Unformatted Pages can be combined to send extended messages. If the Selector Field values do not match, then each series of Unformatted Pages shall be preceded by a Message Page containing a message code that defines how the following Unformatted Pages will be interpreted. If the Selector Field values match, then the convention governing the use of Message Pages shall be as defined by the Selector Field value definition. Any number of Next Pages may be sent in any order; however, it is recommended that the total number of Next Pages sent be kept small to minimize the link start-up time.

Cl **28** *SC* **28.2.3.4** *P* **13** *L* **26** *Comment #* 602

Law, David 3Com

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

From Annex 28C (page 51, line 17) it appears that devices that negotiate Extended Next Page Support only transmit Extended Next Pages hence will not transmit Message or Unformatted pages.

Based on this the statement that 'Once a device has completed transmission of its Next Page information, it shall transmit Message Pages with Null message codes and the NP bit set to logic zero while its Link Partner continues to transmit valid Next Pages.' seems to be in conflict with this.

SuggestedRemedy

Suggest the paragraph 5 of subclause 28.2.3.4 be changed to read:

Next Page transmission ends when both ends of a link segment set their Next Page bits to logic zero, indicating that neither has anything additional to transmit. It is possible for one device to have more pages to transmit than the other device. Once a device has completed transmission of its Next Page information, it shall transmit Message Pages, or Extended Next Pages, with Null message codes and the NP bit set to logic zero while its Link Partner continues to transmit valid Next Pages. An Auto-Negotiation able device shall recognize reception of Message Pages, or Extended Next Pages, with Null message codes as the end of its Link Partner's Next Page information.

Response *Response Status* **C**

ACCEPT.

Cl **28** *SC* **28.2.3.4.1** *P* **13** *L* **45** *Comment #* 21

David V James JGG

Comment Type **E** *Comment Status* **R** *figure font*

DVJ-21
Wrong figure font.

SuggestedRemedy

Use 8-point Arial, here and throughout.

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an. See response to comment 611.

Cl **28** *SC* **28.2.3.4.1** *P* **14** *L* **15** *Comment #* 24

David V James JGG

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

DVJ-24
Consistency in names is important.

SuggestedRemedy

Pick and use only one of:
message code field
Message code field
Message Code Field
----Also, develop a nomenclature strategy, and enforce this for all uses of similar field names.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Will use Message Code Field to be consistent with the nomenclature used in the base standard.

Development of a nomenclature strategy and enforcement of that strategy is beyond the scope of IEEE P802.3an.

Cl **28** *SC* **28.2.3.4.1** *P* **14** *L* **19** *Comment #* 23

David V James JGG

Comment Type **E** *Comment Status* **R** *figure font*

DVJ-23
Wrong figure font.

SuggestedRemedy

Use 8-point Arial, here and throughout.

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an. See response to comment 611.

Cl **28** *SC* **28.2.3.4.1** *P* **14** *L* **5** *Comment #* 22

David V James JGG

Comment Type **E** *Comment Status* **R** *figure font*

DVJ-22
Wrong figure font.

SuggestedRemedy

Use 8-point Arial, here and throughout.

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an. See response to comment 611.

Cl **28** *SC* **28.2.3.4.12** *P* **15** *L* **53** *Comment #* 603

Law, David 3Com

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

The 'Use of Next Pages' text needs updated to include Extended Next Pages. This includes when to send then, the fact they can carry the Null message and also that a Message code can be now carried in either a Message Page or an Extended Message Page.

SuggestedRemedy

Suggest the text be changed to read:

a) Both devices must indicate Next Page ability for either to commence exchange of Next Pages.
b) Both devices must indicate Extended Next Page ability for either to commence exchange o Extended Next Pages.
c) If both devices are Next Page able, then both devices shall send at least one Next Page.
d) If both devices are Extended Next Page able, then both devices shall only transmit Extended Next Pages.
e) Next Page exchange shall continue until neither device on a link has more pages to transmit as indicated by the NP bit. A Message Page, or Extended Next Page, with a Null Message Code Field value shall be sent if the device has no other information to transmit.
f) A Message Page provides a Message Code that can carry either a specific message or information that defines how following Unformatted Page(s) should be interpreted.
g) If a Message Code in a Message Page references Unformatted Pages, the Unformatted Pages shall immediately follow the referencing Message Code in the order specified by the Message Code.
h) Unformatted Page users are responsible for controlling the format and sequencing for their Unformatted Pages.
i) A Extended Next Page provides a Message Code and a Unformatted code. The Message Code can carry either a specific message or information that defines how following Unformatted code should be interpreted.

Response *Response Status* **C**

ACCEPT.

Cl **28** *SC* **28.2.3.4.2** *P* **14** *L* **12** *Comment #* 14000

Thaler, Pat — Agilent Technologies

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

There also should be an Extended Unformatted Next page encoding for extended next pages with no message code field. The text for how messages for 16 bit message code field values are transmitted when extended next pages are active requires this format for messages that would be followed by more than two unformatted 16-bit pages.

SuggestedRemedy

Add extended unformatted next page format (all bits other than the flag bits form an unformatted field.

Response *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

Has been resubmitted from D.14 by Editor. See response to comment 474.

Cl **28** *SC* **28.2.3.4.2** *P* **14** *L* **14** *Comment #* 474

Thaler, Pat — Agilent Technologies

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

An extended next page encoding for unformatted extended next page is needed, just as there are two encodings for 16-bit next pages. Some existing message codes require more than 32 bits of unformatted information so those will need to be followed by unformated extended next pages.

SuggestedRemedy

The MP bit determines which encoding is in use for the page. In the unformatted extended next page, bits D0 through D10 are part of the unformatted code field. The remainder of the encoding is the same as the message extended next page.

You can leverage from the .3ap draft or from the text of the unextended next pages for this.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace first paragraph of 28.2.3.4.2 with the following:

Extended Next Pages shall use the encoding shown in Figure 28-13 and Figure 28-14 for the NP, Ack, MP, Ack2, and T bits. The 11-bit field D10:D0 shall be encoded as a Message Code Field if the MP bit is logic one and an Unformatted Code Field if MP is set to logic zero.

Also add Figure 28-14 showing unformatted extended Next page.

See comment 601 for changes to 'unformatted code field'.

Cl **28** *SC* **28.2.3.4.2** *P* **14** *L* **17** *Comment #* 567

Booth, Brad — Intel

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

Figure 28-13 is new to Clause 28.

SuggestedRemedy

Insert change bar for the figure.

Response *Response Status* **C**

ACCEPT.

Cl **28** *SC* **28.2.4.1.1** *P* **16** *L* **38** *Comment #* 553

Bradshaw, Peter — Intersil

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

RevAM subclause 28.2.4.1.1 covers extensively the use of MII registers in Clause 22, specifically in subclause 22.2.4.1, and especially related to Auto-nogotiation. Yet Clause 55 contains no mention of this subclause, except for one reference to a power-down situation, and a PICS reference, but there are no edits to 22.2.4.1, or to Table 22-11, which does not include 10GBASE-T among it's possibilities. How will a 1000Base-T PMA/PMD recognize a 10GBASE-T device? In particular, some of the slower PHYs are allowed to default to a half-duplex mode in tghe "parallel detect" mode. However, 10GBASE-T does not seem to allow a half-duplex mode.

SuggestedRemedy

I am not sure there is a problem, but I would like to be sure it has been considered!

Response *Response Status* **C**

REJECT.

All management for 10GBASE-T is contained within Clause 45. Parallel detection, which may be used for 10/100 devices, allows devices which do auto-negotiate to link with devices that do not. Since auto-negotiation is required for both 1000BASE-T and 10GBASE-T, parallel detection is not necessary, nor is it allowed.

Cl **28** *SC* **28.2.4.1.4** *P* *L* *Comment #* 679

Law, David 3Com

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

The Technology ability field is now only 7 bits with an additional XNP bit. Assuming we are taking the approach of replacing ability bit A7 rather than considering XNP as just another ablility.

SuggestedRemedy

Based on bit A7 being replaced by XNP 'Technology ability field' needs to be reduced to 7 bits, and a new XNP bit added. Note that this is backwardly compatibly with all existing conformant implementations as bit A7 has always been defined as zero in the past hence legacy devices will always correctly report as being not Extended Next Page able.

Response *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

Based on response to 604

Cl **28** *SC* **28.3** *P* **17** *L* **42** *Comment #* 675

Law, David 3Com

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

There is a statement that 'their appropriate initialization conditions when mapped to the MII interface are covered in 28.2.4 and 22.2.4, and Clause 45 MDIO management interface.' however I cannot find any default values in the Clause 45 registers. Take the Restart auto-negotiation bit (7.0.9), a default is defined for it in 22.2.4.1.7, the same seems to be true of the Auto-Negotiation Enable bit (7.0.12).

SuggestedRemedy

Either [1] Add default values to the Clause 45 registers and make the cross-reference more direct, say to 45.2.7, or [2] delete the text 'and Clause 45 MDIO management interface.'.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add default values to the Clause 45 registers and make the cross-reference more direct. Need to make sure Clause 45 editor is aware of these changes.

Cl **28** *SC* **28.3** *P* **18** *L* **15** *Comment #* 30

David V James JGG

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

DVJ-30
Misleading capitalization

SuggestedRemedy

Technology Dependent Function
==>
Technology dependent function

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an. See response to comment 611.

Cl **28** *SC* **28.3** *P* **18** *L* **2** *Comment #* 26

David V James JGG

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

DVJ-26
Misleading capitalization

SuggestedRemedy

Management Interface
==>
Management interface

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an. See response to comment 611.

Cl **28** *SC* **28.3** *P* **18** *L* **21** *Comment #* 31

David V James JGG

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

DVJ-31
Misleading capitalization

SuggestedRemedy

Technology Dependent PMAs
==>
Technology dependent PMAs

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an. See response to comment 611.

Cl **28** *SC* **28.3** *P* **18** *L* **3** *Comment #* 25

David V James JGG

Comment Type **E** *Comment Status* **R** *figure font*

DVJ-25
Wrong figure font.

SuggestedRemedy

Use 8-point Arial, here and throughout.

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an. See response to comment 611.

Cl **28** *SC* **28.3** *P* **18** *L* **8** *Comment #* 379

George Claseman Micrel

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

The link code word can be 16 or 48 bits in both the RX and TX paths based on the new XNP.

SuggestedRemedy

Expand the range to 48 bits or indicate the 2 options.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Also see response to comment 550.

Cl **28** *SC* **28.3** *P* **18** *L* **8** *Comment #* 27

David V James JGG

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

DVJ-27
Misleading capitalization

SuggestedRemedy

Auto-Negotiation Receive Function
==>
Auto-negotiation receive function

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an. See response to comment 611.

Cl **28** *SC* **28.3** *P* **18** *L* **8** *Comment #* 28

David V James JGG

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

DVJ-28
Misleading capitalization

SuggestedRemedy

Auto-Negotiation Arbitration Function
==>
Auto-negotiation arbitration function

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an. See response to comment 611.

Cl **28** *SC* **28.3** *P* **18** *L* **8** *Comment #* 29

David V James JGG

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

DVJ-29
Misleading capitalization

SuggestedRemedy

Auto-Negotiation Transmit Function
==>
Auto-negotiation transmit function

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an. See response to comment 611.

Cl **28** *SC* **28.3.1** *P* **19** *L* **29** *Comment #* 309

Dawe, Piers Agilent

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

Unwanted new-page.

SuggestedRemedy

Remove, use 'keep paragraph together' as appropriate

Response *Response Status* **C**

ACCEPT.

Cl **28** *SC* **28.3.1** *P* **23** *L* **23** *Comment #* 360

Kim, Yong — Broadcom

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

Is page_size a condition? Or is it more of a status?

From Draft: "page_size
Condition indicating the size of Next Page that the device is prepared to transmit and receive.

SuggestedRemedy

Select a better (and consistent datatype) and use it.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Text will be changed to reflect page_size as status.

Cl **28** *SC* **28.3.1** *P* **23** *L* **27** *Comment #* 546

Matt Squire — Hatteras Networks

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

To converse the previous case, should say XNP is both supported and enabled, rather than just enabled.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Text will be added. It should be noted that extended next page ability cannot be enabled unless extended next pages are supported.

Cl **28** *SC* **28.3.1** *P* **23** *L* **36** *Comment #* 380

George Claseman — Micrel

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

RX link code word can be either 16 or 48 bits.

SuggestedRemedy

Change range to 48 bits or indicate that this is either 16 bit or 48 bit (fixed values).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Also see response to comment 550.

Cl **28** *SC* **28.3.1** *P* **24** *L* **38** *Comment #* 381

George Claseman — Micrel

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

TX link code word can be either 16 or 48 bits.

SuggestedRemedy

Change range to 48 bits or indicate that this is either 16 bit or 48 bit (fixed values).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Also see response to comment 550.

Cl **28** *SC* **28.3.1** *P* **25** *L* **36** *Comment #* 358

Kim, Yong — Broadcom

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

Please clarify "..after a sucsessful master/slave resolution..". While you are at it, correct the spelling as well.

From the paragraph: "CHECK state for devices operating at 10/100/1,000 Mb/s. The Link_fail_inhibit_timer shall expire 2000–2250 ms after entering the FLP LINK GOOD CHECK state after a sucsessful master/slave resolution for devices operating at 10,000 Mb/s"

SuggestedRemedy

Please refer to the state transition or timer event, instead of using the phase above.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Text to be changed to:
The link_fail_inhibit_timer shall expire 2000-2250 ms after entering the FLP_LINK_GOOD_CHECK state for devices operating at 10Gb/s.

Cl **28** *SC* **28.3.1** *P* **26** *L* **2** *Comment #* 359

Kim, Yong — Broadcom

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

The specification makes little sense.. or I am missing something. If there is no interoperability issue, it ought to be lower bound of old and upper bound of new, i.e. 5 mS ~ 7.25 mS. If there is interoperability issue, then this seems unduely complex. Are you saying that if XNP is enabled, I need to go change my timer, and if XNP is disabled or enabled but not used, I need to change timer? Or is it if XNP capability is present (regardless of AN state), I need to use the new timer...

From the Draft: "Timer for the minimum time between two consecutive FLP Bursts. The nlp_test_min_timer shall expire 5–7 ms after being started or restarted. for devices that do no support extended Next Pages, and shall expire 6.75–7.25 ms after being started or restarted for devices that do support extended Next Pages."

SuggestedRemedy

Multiple issues on this comment:
1. Request for one range, not two, if no interoperability issue
2. Clarify the text (editorial), so XNP AN state refers to the correct timer, if more than one exis
3. If interopeability issue(s) effected this clause change, then let me knwow so that I could suggest a remedy, or you might find a better way without me :-).

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

The lower bound of nlp_test_min_timer was extended due to the fact that the timer is referenced from the first pulse of the FLP burst. We are extending the FLP burst from 16-48 data bits for extended Next Pages, so we needed to push the lower bound of the timer up.

A device that does not support extended next pages does not need to change any of its timer values. A device that supports 10GBASE-T should always use the new timer values. This is an option within Clause 28 that is made mandatory in Clause 55. It is not believed that any interoperability problems will exist between devices that support and do not support the new timer values. Text and PICS should be added to subclause 55.6 to make this clear.

To be modified in 55.6.1
All 10GBASE-T PHYs shall provide support for extended Next Pages as defined in 28.2.3.4.2 and shall support and use optimized FLP Burst to FLP Burst, nlp_link_test_min_timer, and link_fail_inhibit_timer as defined in (put appropriate references here).

Cl **28** *SC* **28.3.1** *P* **26** *L* **4** *Comment #* 547

Matt Squire — Hatteras Networks

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

The answer to me isn't clear, so I'll ask this as a question rather than a comment, but shouldn't the time be based on whether XNP is enabled, rather than supported (there are provisions for not enabling it, where you would want to run as if its not supported).

SuggestedRemedy

If the timer should be based on XNP "enabled" rather than "supported", make text read that way. Ditto the table below (L36, L39).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 359.

Cl **28** *SC* **28.3.2** *P* **25** *L* **35** *Comment #* 310

Dawe, Piers — Agilent

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

Editorials: 'Mb/s.The' 'sucsessful' '10,000 Mb/s'

SuggestedRemedy

Change to 'Mb/s. The' 'successful' '10 Gb/s.' (note the full stop). In table 28-9 and in 28.5.4.8, change '10,000 Mb/s' to '10 Gb/s'. Correct 'sucsessful' in 28.5.4.8.

Response *Response Status* **C**

ACCEPT.

Cl **28** *SC* **28.3.2** *P* **25** *L* **36** *Comment #* 382

George Claseman — Micrel

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

"sucsessful"

SuggestedRemedy

"successful"

Response *Response Status* **C**

ACCEPT.

Cl **28** *SC* **28.3.2** *P* **25** *L* **36** *Comment #* 32

David V James JGG

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

DVJ-32
Spelling incorrect, space missing after the period.

SuggestedRemedy

10/100/1,000 Mb/s.The link...
==>
10/100/1,000 Mb/s. The link...

Response *Response Status* **C**

ACCEPT.

Cl **28** *SC* **28.3.2** *P* **25** *L* **38** *Comment #* 33

David V James JGG

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

DVJ-33
Spelling incorrect, period missing.

SuggestedRemedy

operating at 10,000 Mb/s
==>
operating at 10,000 Mb/s.

Response *Response Status* **C**

ACCEPT.

Cl **28** *SC* **28.3.2** *P* **25** *L* **54** *Comment #* 568

Booth, Brad Intel

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

The variable name is separated from the value.

SuggestedRemedy

Keep variable name with the value.

Response *Response Status* **C**

ACCEPT.

Cl **28** *SC* **28.3.2** *P* **26** *L* **16** *Comment #* 34

David V James JGG

Comment Type **E** *Comment Status* **R** *small values centered*

DVJ-34
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Min, Typ, Max, Units

Response *Response Status* **C**

REJECT.

The change to the table is to modify link_fail_inhibit_timer. The suggested remedy is beyond the scope of IEEE P802.3an.

Cl **28** *SC* **28.3.3** *P* **27** *L* **23** *Comment #* 550

Matt Squire Hatteras Networks

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

I'll admit I haven't spent enough time parsing the state diagrams again, but in the first few minutes of reading it seems we've adjusted the rx_bit_cnt and tx_bit_cnt from 16 to 48 in some cases via page_size. However, these variables are used as indices into rx_link_code_word and tx_link_code_word, which are still fixed at 16-bits. Should the code_word variables be page_size, or am I just worrying that the indices have values that are out-of-range for the defined arrays?

SuggestedRemedy

Adjust the size of rx_link_code_word and tx_link_code_word to page_size.

Response *Response Status* **C**

ACCEPT.

Task force should discuss.

Cl **28** *SC* **28.3.4** *P* **28** *L* **7** *Comment #* 35

David V James JGG

Comment Type **E** *Comment Status* **R** *figure font*

DVJ-35
Wrong figure font.

SuggestedRemedy

Use 8-point Arial, here and throughout.

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an. See response to comment 611.

Cl **28** *SC* **28.3.4** *P* **29** *L* **5** *Comment #* 36

David V James JGG

Comment Type **E** *Comment Status* **R** *figure font*

DVJ-36
Wrong figure font.

SuggestedRemedy

Use 8-point Arial, here and throughout.

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an. See response to comment 611.

Cl **28** *SC* **28.3.4** *P* **30** *L* **3** *Comment #* 37

David V James JGG

Comment Type **E** *Comment Status* **R** *figure font*

DVJ-37
Wrong figure font.

SuggestedRemedy

Use 8-point Arial, here and throughout.

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an. See response to comment 611.

Cl **28** *SC* **28.3.4** *P* **31** *L* **8** *Comment #* 38

David V James JGG

Comment Type **E** *Comment Status* **R** *figure font*

DVJ-38
Wrong figure font.

SuggestedRemedy

Use 8-point Arial, here and throughout.

Response *Response Status* **C**

REJECT.

Figure is not being changed by IEEE P802.3an. See response to comment 611.

Cl **28** *SC* **28.5** *P* **31** *L* **42** *Comment #* 569

Booth, Brad Intel

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

PICS section should start at top of page.

SuggestedRemedy

Start PICS at top of the page.

Response *Response Status* **C**

ACCEPT.

Cl **28** *SC* **28.5** *P* **31** *L* **46** *Comment #* 39

David V James JGG

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

DVJ-39
The title of this subclause is too long, which forces error-prone manual manipulation during the otherwise automatic TOC generation.

SuggestedRemedy

1) Change the title to:
55.12 Protocol implementation conformance statement (PICS) proforma for Clause 28
2) Change the following sentence to include the full clause name.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 307.

Cl **28** *SC* **28.5.3** *P* **33** *L* **14** *Comment #* 40

David V James JGG

Comment Type **E** *Comment Status* **R** *small values centered*

DVJ-40
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Value/comment

Response *Response Status* **C**

REJECT.

The change to the table is to modify or add PICS. The suggested remedy is beyond the scope of IEEE P802.3an.

Cl **28** *SC* **28.5.3** *P* **33** *L* **24** *Comment #* 311

Dawe, Piers — Agilent

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

ENP status 'O' contradicts 28D.6 which says 'Extended Next Page support is mandatory for 10GBASE-T.' OPT status 'O' contradicts 28.2.1.1.2 which says 'Devices supporting Extended Next Pages shall use optimized FLP Burst to FLP Burst timing.'

SuggestedRemedy

Reconcile (both issues).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Extended next page support is optional for a device that wishes to support auto-negotiation. For devices that support 10GBASE-T, extended next page support is mandatory. There is a mandatory PICS item in Clause 55 for support of extended next pages that a vendor will need to check. Then, the vendor can go into Clause 28 and check support of the optional Clause 28 feature.

For the comment about OPT, see response to comment 681.

Cl **28** *SC* **28.5.3** *P* **33** *L* **27** *Comment #* 681

Law, David — 3Com

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

This PICS item states that optimize FLP to FLP burst timining is optional however subcluase 28.2.1.1.2 states that it is manditory in devices that support extended Next Page.

SuggestedRemedy

Change the Status field to read:

ENP:M
!ENP:O

Response *Response Status* **C**

ACCEPT.

Cl **28** *SC* **28.5.3** *P* **33** *L* **6** *Comment #* 41

David V James — JGG

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

DVJ-41
Misleading capitalization

SuggestedRemedy

Value/comment
==>
Value/Comment

Response *Response Status* **C**

REJECT.

The change to the table is to modify or add PICS. The suggested remedy is beyond the scope of IEEE P802.3an.

Cl **28** *SC* **28.5.4** *P* **34** *L* **1** *Comment #* 611

Grow, Robert — Intel

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

There is significant unnecessary information in the draft.

SuggestedRemedy

Delete 28.5.4.1, 28.5.4.2, 28.5,4,4 through 28.5.4.7, 28.5.4.9 through 10, and 28.6.

Response *Response Status* **C**

ACCEPT.

Cl **28** *SC* **28.5.4.1** *P* **34** *L* **5** *Comment #* 42

David V James — JGG

Comment Type **E** *Comment Status* **R** *small values centered*

DVJ-42
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Value/comment

Response *Response Status* **C**

REJECT.

The change to the table is to modify or add PICS. The suggested remedy is beyond the scope of IEEE P802.3an.

Cl **28** *SC* **28.5.4.10** *P* **45** *L* **14** *Comment #* 53

David V James JGG

Comment Type **E** *Comment Status* **R** *small values centered*

DVJ-53
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Value/comment

Response *Response Status* **C**

REJECT.

The change to the table is to modify or add PICS. The suggested remedy is beyond the scope of IEEE P802.3an.

Cl **28** *SC* **28.5.4.2** *P* **34** *L* **25** *Comment #* 43

David V James JGG

Comment Type **E** *Comment Status* **R** *small values centered*

DVJ-43
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Value/comment

Response *Response Status* **C**

REJECT.

The change to the table is to modify or add PICS. The suggested remedy is beyond the scope of IEEE P802.3an.

Cl **28** *SC* **28.5.4.2** *P* **34** *L* **30** *Comment #* 459

McClellan, Brett Solarflare

Comment Type **T** *Comment Status* **A** *not done*

According to 28.5.4.6 items 20 and 21, Parallel Detection Faults are mandatory only for an MI interface. Furthermore, 10GBASE-T does not require (or even allow) the reporting of a parallel detection fault. See Clause 45.2 and Table 28-8 (both indicate no means of reporting parallel detection faults).
The only instance of link_status_[NLP] is in parallel detection part of the arbitration state diagram (LINK STATUS CHECK of Figure 28-17).
Since parallel detection is only mandatory if an MII interface is present, then the NLP Receive Link Integrity Test should also be mandatory only when an MII interface is present. (Removing the parallel detection functionality from the arbitration state diagram removes all references to link_status_[NLP]).

SuggestedRemedy

Modify 28.5.4.2 Item 4, NLP Receive Link Integrity Test, from a Status of M to a Status of MII:M.

Response *Response Status* **C**

ACCEPT.

Cl **28** *SC* **28.5.4.3** *P* *L* *Comment #* 557

Bradshaw, Peter Intersil

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

My understanding of the PICS requrements are that the items may NOT be renumbered (hence MM43a and MM43b in 45.5.5.3).

SuggestedRemedy

Either we get together and overcome this rukle, or we should follow it. Actaully, I personally prefer the former, since I think it makes more sense; the concept of the PICS (as expressed in the footnotes to all thier initial headings) is that the user will copy the table(s) into their statement, and add the conformance items, so a renumber merely reflects the original source level.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

We will not renumber PICS and will add new items using letter format (ex. 11a, 11b)

Cl **28** *SC* **28.5.4.3** *P* **35** *L* **30** *Comment #* 312

Dawe, Piers — Agilent

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

Item 8 contradicts item 9.

SuggestedRemedy

Reconcile. Maybe status of 8 should be !OPT:M ?

Response *Response Status* **C**

REJECT.

Item 8 says that the pulses must be separated by 8 - 24 ms, and that this is mandatory. Item 9 says that the pulses must be separated by 8 - 8.5 ms, and that this is optional. Support of the optional item 9 also means you support the mandatory item 8.

Cl **28** *SC* **28.5.4.3** *P* **35** *L* **52** *Comment #* 258

Dove, Daniel — HP ProCurve Networki

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

Maybe I missed something but I note changes to the table show insertion of item 9 and changes to numbering underlined for 10,11,12...15 but 16 is shown as it was originally there and the original item 15 appears to be deleted but it not shown with strike-through.

Item 15:
15
Acknowledge bit set, Next Page to be sent
28.2.1.2.4
NP:M
Set to logic one in the transmitted Link Code Word after the reception of at least three consecutive and consistent FLP Bursts and the current receive Link Code Word is saved

SuggestedRemedy

Resolve my question by either pointing to my failure to properly interpret the document, or insert item 15 back in the table and renumber.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Good catch. The original item 15 was mistakenly overwritten. It will be added back and the rest will be renumbered accordingly.

Cl **28** *SC* **28.5.4.3** *P* **35** *L* **7** *Comment #* 44

David V James — JGG

Comment Type **E** *Comment Status* **R** *small values centered*

DVJ-44
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Value/comment

Response *Response Status* **C**

REJECT.

The change to the table is to modify or add PICS. The suggested remedy is beyond the scope of IEEE P802.3an.

Cl **28** *SC* **28.5.4.3** *P* **36** *L* **29** *Comment #* 46

David V James — JGG

Comment Type **E** *Comment Status* **R** *small values centered*

DVJ-46
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Value/comment

Response *Response Status* **C**

REJECT.

The change to the table is to modify or add PICS. The suggested remedy is beyond the scope of IEEE P802.3an.

Cl **28** *SC* **28.5.4.3** *P* **36** *L* **7** *Comment #* 45

David V James — JGG

Comment Type **E** *Comment Status* **R** *small values centered*

DVJ-45
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Value/comment

Response *Response Status* **C**

REJECT.

The change to the table is to modify or add PICS. The suggested remedy is beyond the scope of IEEE P802.3an.

Cl **28** *SC* **28.5.4.3** *P* **37** *L* **5** *Comment #* 47

David V James JGG

Comment Type **E** *Comment Status* **R** *small values centered*

DVJ-47
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Value/comment

Response *Response Status* **C**

REJECT.

The change to the table is to modify or add PICS. The suggested remedy is beyond the scope of IEEE P802.3an.

Cl **28** *SC* **28.5.4.5** *P* **40** *L* **29** *Comment #* 48

David V James JGG

Comment Type **E** *Comment Status* **R** *small values centered*

DVJ-48
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Value/comment

Response *Response Status* **C**

REJECT.

The change to the table is to modify or add PICS. The suggested remedy is beyond the scope of IEEE P802.3an.

Cl **28** *SC* **28.5.4.6** *P* **42** *L* **27** *Comment #* 49

David V James JGG

Comment Type **E** *Comment Status* **R** *small values centered*

DVJ-49
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Value/comment

Response *Response Status* **C**

REJECT.

The change to the table is to modify or add PICS. The suggested remedy is beyond the scope of IEEE P802.3an.

Cl **28** *SC* **28.5.4.7** *P* **43** *L* **43** *Comment #* 50

David V James JGG

Comment Type **E** *Comment Status* **R** *small values centered*

DVJ-50
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Value/comment

Response *Response Status* **C**

REJECT.

The change to the table is to modify or add PICS. The suggested remedy is beyond the scope of IEEE P802.3an.

Cl **28** *SC* **28.5.4.8** *P* **44** *L* **22** *Comment #* 313

Dawe, Piers Agilent

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

Item 11a contradicts item 11b.

SuggestedRemedy

Reconcile. Is one predicated on 10GBASE-T? Are these two a set of options?

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Item 11b is meant to be predicated on 10Gb/s and will be made so you can select one of the two options.

Cl **28** *SC* **28.5.4.8** *P* **44** *L* **9** *Comment #* 51

David V James JGG

Comment Type **E** *Comment Status* **R** *small values centered*

DVJ-51
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Value/comment

Response *Response Status* **C**

REJECT.

The change to the table is to modify or add PICS. The suggested remedy is beyond the scope of IEEE P802.3an.

Cl **28** *SC* **28.5.4.9** *P* **45** *L* **5** *Comment #* 52

David V James JGG

Comment Type **E** *Comment Status* **R** *small values centered*

DVJ-52
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Value/comment

Response *Response Status* **C**

REJECT.

The change to the table is to modify or add PICS. The suggested remedy is beyond the scope of IEEE P802.3an.

Cl **28** *SC* **28.5.5.2** *P* **32** *L* **29** *Comment #* 610

Grow, Robert Intel

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

This change is wrong.

SuggestedRemedy

Delete 25.2 from the draft.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Subclause 28.5.2.2 to be deleted.

Cl **28** *SC* **Figure 28-13** *P* **14** *L* **24** *Comment #* 601

Law, David 3Com

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

The Extended Next Page encoding includes bits D16 to D47 which are described as 'Unformatted code filed' however subclause 28.2.3.4.11 describes this as an eleven bit wide field.

SuggestedRemedy

Define bits D16 to D47 as the 'Extended unformatted code field', or something similar, and add a definition for this as a new subclause 28.2.3.4.13.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Extended unformatted code field is 32 or 43 bit wide field, which may contain an arbitrary value. The field is 32 bits wide in extended next page message pages and 43 bits wide in unformatted extended next pages.

Cl **28** *SC* **Figure 28-13** *P* **14** *L* **24** *Comment #* 600

Law, David 3Com

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

The Extended Next Page encoding includes a MP bit (D13) which is then defined in subclause 28.2.3.4.5 to differentiate between a Message Page and an Unformatted page of which this is neither since it is a Extended Next Page.

SuggestedRemedy

Remove the MP bit from the Extended Next Page encoding.

Response *Response Status* **C**

REJECT.

The message page bit can still be used to differentiate between a formatted and unformatted extended next page. Also see comment 474.

Cl **28** *SC* **Figure 28-7** *P* **8** *L* **5** *Comment #* 604

Law, David 3Com

Comment Type **TR** *Comment Status* **A** *not done*

While the base pages encoding is owned by IEEE 802.3 and specified in IEEE std 802.3 it is used by three other Working Groups which have allocated selector filed values. These Working Groups are IEEE 802.5, IEEE 802.9, which are probably just of academic interest at this point, but more importantly, and the most recent allocation which is being implemented as part of IEEE P802.3REVam, IEEE 1394.

While I think it is very unlikely that these other Working Groups have defined so many abilities that A7 is in use, by changing the global definition of the base page encoding for all Selector field values, as is being done here we are effectively changing these other Standards if they cross reference this figure, or placing us in conflict with them if they simply reproduce the figure.

SuggestedRemedy

I see two choices here:

[Option 1] On the assumption that IEEE 802.5, 802.9 and 1394 haven't used A7, which I think is likely, we do redefined A7 to be XNP globally and update Figure 28-7 as shown. This would give the advantage that the XNP function would actually become available to IEEE 1394 and any other Working groups that are allocated a Selector field.

The disadvantage to this approach however is that we may break the text that exists in some of these standards - at a minimum we would need to liase with 1394 on this approach.

Note to support this the text of subclause 28.2.1.2.3 will need to be changed to read "Extended Next Page (XNP) is encoded in bit D12 of the base Link Code word regardless of the value of the Selector Field.".

[Option 2] On the assumption that we do not want to do anything that would have any impact on IEEE 802.5, 802.9, or 1394, leave the definition of the Base Page encoding as is. Extende Next page would then simply then become another IEEE 802.3 Selector value related Technology ability bit defined in Annex 28B.2. The text from 28.2.1.2.3 would then be moved to Annex 28B.2.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Use Option 2

Cl **28B** *SC* **28B.2** *P* **48** *L* **25** *Comment #* 54

David V James JGG

Comment Type **E** *Comment Status* **R** *small values centered*

DVJ-54
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Bit

Response *Response Status* **C**

REJECT.

The change to the table is to modify A7. The suggested remedy is beyond the scope of IEEE P802.3an.

Cl **28B** *SC* **28B.3** *P* **49** *L* **34** *Comment #* 55

David V James JGG

Comment Type **E** *Comment Status* **R** *small values centered*

DVJ-55
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
PAUSE, ASM_DIR, PAUSE, ASM_DIR

Response *Response Status* **C**

REJECT.

Table is not being changed by IEEE P802.3an. See response to comment 611.

Cl **28B** *SC* **28B.3** *P* **51** *L* **23** *Comment #* 56

David V James JGG

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

DVJ-56
Consistency is needed.

SuggestedRemedy

Pick only one of the following, used througout:
Message Code Field
Message code field

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Message Code Field will be used for text inserted by IEEE P802.3an.

Cl **28B** *SC* **28B.3** *P* **51** *L* **31** *Comment #* 58

David V James JGG

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

DVJ-58
Misleading capitalization

SuggestedRemedy

Message Code Description
==>
Message Code description

Response *Response Status* **C**

REJECT.

The change to the table is to modify Message Code #9. The suggested remedy is beyond the scope of IEEE P802.3an.

Cl **28B** *SC* **28B.3** *P* **51** *L* **32** *Comment #* 57

David V James JGG

Comment Type **E** *Comment Status* **R** *small values centered*

DVJ-57
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Message Code #, M10, ... M0

Response *Response Status* **C**

REJECT.

The change to the table is to modify Message Code #9. The suggested remedy is beyond the scope of IEEE P802.3an.

Cl **28C** *SC* **28C** *P* **51** *L* **17** *Comment #* 348

Dawe, Piers Agilent

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

Is this accurate: 'Devices that have negotiated extended Next Page support will only transmit extended Next Pages.'? 'Only' excludes what? receiving extended Next Pages? transmitting data?

SuggestedRemedy

If the following is what's meant, change to 'Devices that have negotiated extended next page support will transmit extended next pages but not other next pages.'

Response *Response Status* **C**

ACCEPT.

Cl **28C** *SC* **28C** *P* **51** *L* **17** *Comment #* 401

Barrass, Hugh Cisco Systems

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

IEEE standards will not use "will"

It must be expressed as a mandatory requirement "shall"; an option "may"; or a statement (not a requirement).

I interpret this as a mandatory requirement, but it might also be a statement.

SuggestedRemedy

Change the sentence to:

"Devices that have negotiated extended Next Page support shall only transmit extended Next Pages."

Alternative resolution (for non normative text):

"Devices that have negotiated extended Next Page support only transmit extended Next Pages."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The non-normative text will be used.

Cl **28C** *SC* **28C** *P* **51** *L* **20** *Comment #* 599

Law, David 3Com

Comment Type **T** *Comment Status* **A** *not done*

The mapping here seems to be unclear. The statement that additional unformatted pages would be mapped to bits M0:10, U0:10 and U16:26 seems to imply that the message code associated with these unformatted pages, already sent in bits M0:10 of the first Extended Nex Page should be repeated in bits M0:10 of the second Extended Next page. I believe that this is correct but should be made clearer.

Other issues are:
- The term '16-bit Next page' is used but not defined.
- It should be specified that multiple Next Pages associated with a single Message Code neec to be transmitted in order as there is no way to reorder on reception if they are not.
- Suggest that multiple Next Pages associated with a single massage code be transmitted in a burst and not interspersed by other Message Codes. While this is not a protocol requirement, all Extended Next Pages contain a Message Code so can be identified, it will prevent the nee to reassembly more than one message at a time at the receiver and also the need for specification of how many messages can be active at one time.

in the following manner. The 11-bit Message Code Field is mapped to bits M0:10 of the extended next page, and the first two unformatted pages associated with the Message Code Field are mapped to bits U0:U10 and U16:U26, respectively of the extended next page. Additional unformatted pages would be mapped to bits M0:10, U0:10, and U16:26

or with other message interspursed.

SuggestedRemedy

Suggest this paragraph be replaced with the following, also should consider moving this text to the body of Clause 28, possibly 28.2.3.4.

An Extended Next Page may be used to transmit a Message Code field and up to two associated Unformatted Code fields. The 11-bit Message Code field is mapped to bits M0:10 of the Extended Next Page. The first 11-bit Unformatted Code field, if required by the message code, is mapped to bits U0:U10 of the Extended Next Page. The second 11-bit Unformatted Code field, if required by the message code, is mapped to bits U16:U26 of the Extended Next Page. All unused bits of the Extended Unformatted Code field of the Extended Next Page shall be set to zero.

If more that two Unformatted Code fields are required by a Message Code, then additional Unformatted Code fields shall be transmitted in subsequent extended next pages. The 11-bit Message Code field is repeated in bits M0:10 of the subsequent Extended Next Pages. The next 11-bit Unformatted Code field is mapped to bits U0:U10 of the Extended Next Page. The following 11-bit Unformatted Code field, if required by the message code, is mapped to bits U16:U26 of the Extended Next Page. All unused bits of the Extended Unformatted Code field of the Extended Next Page shall be set to zero.

If a Message Code requires the transmission of multiple Extended Next Pages, due to the number of Unformatted Code fields it defines, these Extended Next Pages shall be transmitted so that the Unformatted Code fields are in the order specified by the Message code.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change paragraph to read as follows:

Extended Next Pages may be used to transmit multiple Message Page and Unformatted Pages in the following manner. The Message Code Field is mapped to bits M0:10 of the extended Next Page, and the first two unformatted pages associated with the Message code field value are mapped to bits U0:U10 and U16:U26, respectively, of the extended Next Page. Additional Unformatted Pages would be mapped to bits U0:U42 of subsequent extended Unformatted Pages. Any unused bits in the extended Next Pages are transmitted as zero or one and ignored by the receiver.

Cl **28D** *SC* **28D** *P* **53** *L* *Comment #* 314

Dawe, Piers Agilent

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

Wrong page headers

SuggestedRemedy

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Correct headers will be added to D2.1.

Cl **28D** *SC* **28D.5** *P* **54** *L* **18** *Comment #* 59

David V James JGG

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

DVJ-59
Unclear what is meant by the parenthesis, particularly when bits are identified with such numbers

SuggestedRemedy

. (40.5.1)
==>
(see 40.5.1).
Search for other similar instances and update accordingly.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This particular instance will be updated.

Cl **28D** SC **28D.5** P **54** L **19** Comment # 60

David V James JGG

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

DVJ-60
Excess period.

SuggestedRemedy

messages.
==>
messages

Response *Response Status* **C**

ACCEPT.

Cl **28D** SC **28D.6** P **54** L **23** Comment # 548

Matt Squire Hatteras Networks

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

Unresolved cross-reference.

SuggestedRemedy

Fix.

Response *Response Status* **C**

ACCEPT.

Cl **28D** SC **28D.6** P **54** L **38** Comment # 558

Bradshaw, Peter Intersil

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

"#CrossRFef#" appears here, and also at line 53, and pages 96, line 58, & 175, line 49, p 176 line 12, and several more.

SuggestedRemedy

Fix crossreferences

Response *Response Status* **C**

ACCEPT.

Cl **28D** SC **28D.6** P **54** L **40** Comment # 259

Dove, Daniel HP ProCurve Networki

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

#Crossref# is visible

SuggestedRemedy

Fix it.

Response *Response Status* **C**

ACCEPT.

Cl **28D** SC **28D.6** P **54** L **45** Comment # 402

Barrass, Hugh Cisco Systems

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

10GBASE-T requires the transfer of more than 1 next page message...

SuggestedRemedy

Change item c) to:

10GBASE-T requires an exchange of extended Next Page messages.

Response *Response Status* **C**

REJECT.

Currently, 10GBASE-T requires the exchange of a single extended next page.

Cl **28D** SC **28D.6** P **55** L **1** Comment # 549

Matt Squire Hatteras Networks

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

It might be beneficial to add a note or other indication that this is the first auto-negotiated BASE-T phy that is full-duplex only, so anyone wondering about duplex negotiations is o-o-luck.

SuggestedRemedy

Maybe something as simple as: "Note: 10GBASE-T does not support half-duplex capabilities.

Response *Response Status* **C**

REJECT.

The first objective listed for 10GBASE-T in subclause 55.1.1 states that it supports full duplex operation only. In addition, item h in this list states that full duplex is added to the priority resolution list in 28B.3.

Cl **28D** SC **28D.6** P **55** L **3** Comment # 315

Dawe, Piers Agilent

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

Something missing in 'the signal source.Annex 28B'?

SuggestedRemedy

Compare with 28D.5 bullets h, i.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Bullet I will be fixed.

Cl **30** *SC* **30.3.2.1.2** *P* **57** *L* **42** *Comment #* 316

Dawe, Piers — Agilent

Comment Type **E** *Comment Status* **A** *DSQ128*

Document uses a mix of DSQ128 and 128DSQ. Acronyms that start with a numeral are inconvenient.

SuggestedRemedy

Change '128DSQ' to 'DSQ128' throughout.

Response *Response Status* **C**

ACCEPT.

See response to #424

Cl **30** *SC* **30.3.2.1.2** *P* **57** *L* **44** *Comment #* 570

Booth, Brad — Intel

Comment Type **ER** *Comment Status* **A** *DSQ128*

128DSQ should be DSQ128 as per Clauses 1 & 55.

SuggestedRemedy

Change to DSQ128. Applies also to 30.3.2.1.3.

Response *Response Status* **C**

ACCEPT.

See response to #424.

Cl **30B** *SC* **30B.2** *P* **61** *L* **28** *Comment #* 612

Grow, Robert — Intel

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

This change could be significantly shortened.

SuggestedRemedy

Make the change instruction to simply insert the line and indicate after which existing line, do not show remainder of the subclause.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Some information is provided to ensure a level of context. Where not required, the information will be removed.

Cl **30B** *SC* **30B.2** *P* **69** *L* **3** *Comment #* 571

Booth, Brad — Intel

Comment Type **ER** *Comment Status* **A** *DSQ128*

128DSQ should be DSQ128 as per Clauses 1 & 55.

SuggestedRemedy

Change to be DSQ128.

Response *Response Status* **C**

ACCEPT.

See response to #424.

Cl **30B** *SC* **30B.2** *P* **69** *L* **3** *Comment #* 613

Grow, Robert — Intel

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

In reducing the size of the repeated text, this change needs a new editor instruction.

SuggestedRemedy

Insert into the PhyTypeValue enumeration after 10GBASE-W.

Response *Response Status* **C**

ACCEPT.

Cl **30B** *SC* **30B.2** *P* **72** *L* **5** *Comment #* 61

David V James — JGG

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

DVJ-61
Illegal character code.

SuggestedRemedy

Use an em dash, rather than the two dash near equivalent, here and througout.

Response *Response Status* **C**

REJECT.

Editing of this text is beyond the scope of IEEE P802.3an.

Cl **30B** *SC* **30B.2** *P* **73** *L* **18** *Comment #* 614

Grow, Robert Intel

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

In reducing the amount of repeated text, this change will need its own change instruction.

SuggestedRemedy

Insert into the TypeValue enumeration after 10GBASE-SW.

Response *Response Status* **C**

ACCEPT.

Cl **44** *SC* **44.1** *P* **75** *L* **35** *Comment #* 615

Grow, Robert Intel

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

Too much of the base standard is repeated.

SuggestedRemedy

Delete all subclauses, figures, tables and paragraphs that are not changed, and insert appropriate change instructions when necessary.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Some information is provided to ensure a level of context. Where not required, the information will be removed.

Cl **44** *SC* **44.1.3** *P* **76** *L* **27** *Comment #* 559

Bradshaw, Peter Intersil

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

In Figure 44-1, all the PCS "boxes" except that for 10GBASE-T have their coding ratios shown (64B/66B, 8B/10B).

SuggestedRemedy

Change the PCS box label to "64B/65B PCS".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change to read:
LDPC PCS

Cl **44** *SC* **44.1.4.1** *P* **77** *L* **7** *Comment #* 62

David V James JGG

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

DVJ-62
Misleading capitalization

SuggestedRemedy

Media Access Control (MAC)
==>
media access control (MAC)

As per acronyms in 802.3rev.

Response *Response Status* **C**

REJECT.

This edit is beyond the scope of IEEE P802.3an. See response to comment 615.

Cl **44** *SC* **44.1.4.1** *P* **77** *L* **8** *Comment #* 63

David V James JGG

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

DVJ-63
Misleading capitalization

SuggestedRemedy

Reconciliation Sublayer
==>
reconciliation sublayer

As per acronyms in 802.3rev.

Response *Response Status* **C**

REJECT.

This edit is beyond the scope of IEEE P802.3an. See response to comment 615.

Cl **44** *SC* **44.1.4.4** *P* **77** *L* **31** *Comment #* 616

Grow, Robert Intel

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

The change instruction could be clearer.

SuggestedRemedy

Insert new row and column into Table 44-1 to add 10GBASE-T

Response *Response Status* **C**

REJECT.

Picture is worth a thousand words. Table is shown to reduce confusion for the IEEE editor.

Cl **44** *SC* **44.1.4.4** *P* **78** *L* **30** *Comment #* 572

Booth, Brad — Intel

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

128DSQ should be DSQ128 as per Clauses 1 & 55.

SuggestedRemedy

Change to be DSQ128.

Response *Response Status* **C**

ACCEPT.

See response to #424.

Cl **44** *SC* **44.1.4.4** *P* **78** *L* **34** *Comment #* 302

Dawe, Piers — Agilent

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

Clashing edits: P802.3am/D2.2 has 'Specifications of each physical layer device are contained in Clause 52 through Clause 54 inclusive.', P802.3aq/D2.0 has 'Specifications of these physical layer devices are contained in Clause 52 through Clause 54 and Clause 68.', here we have 'Specifications of each physical layer device are contained in Clause 52 through Clause 55 inclusive.' The 'each' is problematical - implies that specifications of each physical layer device is in some or all of the clauses, when actually the specifications for any one physical layer device are contained within just one clause. Also, 'through' is not a substitute for 'to' in English for international use, although that might be a common usage in some geographies. We want a form of words that will still work with 802.3aq, 802.3an and 802.3ap.

SuggestedRemedy

If the style rules and Frame let us, change to 'Specifications of these physical layer devices are contained in Clauses 52, 53, 54 and 55.' If not, change to 'Specifications of these physical layer devices are contained in Clause 52 to Clause 55.' or 'Specifications of these physical layer devices are contained in Clause 52, Clause 53, Clause 54 and Clause 55.' Coordinate with P802.3aq and P802.3ap.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change to read:
Physical layer device specifications are contained in Clauses 52, 53, 54 and 55.

Cl **44** *SC* **44.3** *P* **79** *L* **28-29** *Comment #* 236

Shimon Muller — Sun Microsystems, Inc.

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

The delay constraints specified for 10GBASE-T are at least an order of magnitude greater than what would be acceptable for many applications that are intended to be deployed using this technology.
Furthermore, I do not recall any contributions made to the Task Force that justify such a high latency in the PHY.
See my presentation (muller_1_0304.pdf) for latency considerations for the 10GBASE-T PHY

SuggestedRemedy

Change the 10GBASE-T entry in Table 44-2 such that the round-trip latency does not exceed 20480 bit times or 40 pause_quanta.

Response *Response Status* **U**

See response to comment 242

Cl **44** *SC* **44.3** *P* **79** *L* **3** *Comment #* 617

Grow, Robert — Intel

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

Editor instruction could be clearer.

SuggestedRemedy

A row is inserted.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change editing instruction to read:
Insert row into Table 44-2…

Cl **44** *SC* **Table 44-2** *P* **79** *L* **28** *Comment #* 619

Grow, Robert — Intel

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

This should simply be 10GBASE-T as it is a complete PHY (PCS, PMA and PMD).

SuggestedRemedy

Change per comment. I would also move to the bottom of the table.

Response *Response Status* **C**

ACCEPT.

Cl **45** SC P L Comment # 531
Zimmerman, George Solarflare Communicati

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

No register indicating skew delay between pairs

SuggestedRemedy

Add a register indicating skew delay as described in the attached document.

Response *Response Status* **C**

ACCEPT.

As per zimmerman_2_0505.pdf with clarification that the pair A is the physical pair A.

Cl **45** SC P L Comment # 530
Zimmerman, George Solarflare Communicati

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

No register indicating the status of pair swap and status of polarity reversal.

SuggestedRemedy

Add a register indicating status of pair swap and status of polarity reversal as described in the attached document.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Registers 1.130 and 1.131 will be re-organized to bit fields which will free space for these.

Cl **45** SC P **91** L **31** Comment # 78
David V James JGG

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

DVJ-78
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Bit(s), R/W

Response *Response Status* **C**

REJECT.

Table follows the existing approved and readable format.

Cl **45** SC P **91** L **37** Comment # 76
David V James JGG

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

DVJ-76
This inconsistency is very confusing. Most lists start from 0.

SuggestedRemedy

Here and througout, list the 0 value first and start counting upwards.

Response *Response Status* **C**

REJECT.

Register bit definitions are performed from MSB to LSB.

Cl **45** SC P **91** L **46** Comment # 75
David V James JGG

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

DVJ-75
The clear line on the bottom makes it look like this row is continued.

SuggestedRemedy

Use fixed templates, or manually force to very-thin.

Response *Response Status* **C**

REJECT.

This table uses the approved IEEE template. This will be fixed by the IEEE editorial staff prio to publication.

Cl **45** SC P **92** L **16** Comment # 79
David V James JGG

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

DVJ-79
Move the footnote to the RO entry, where it applies, not the header.

SuggestedRemedy

NoRemedySupplied

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Modification would be outside the scope of IEEE P802.3an.

Cl **45** *SC* **2.1** *P* **87** *L* **50** *Comment #* 529

Zimmerman, George Solarflare Communicati

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

The document refers to all processing occuring in pairs A,B,C, and D. However, the names o the registers 1.133 through 1.144 refer to channels 0 through 3.

SuggestedRemedy

Change references in register names from channel 0 through 3 to pair A through D, respectively. This change affects: lines 50 through 59 on page 87, lines 5 through 11 on page 88, subclauses 45.2.1.163 through 45.2.1.174

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **2.1.60** *P* **91** *L* **36** *Comment #* 535

Zimmerman, George Solarflare Communicati

Comment Type **E** *Comment Status* **R** *THP45*

Descriptions in table do not have the correct setting number for settings 3, 2, 1, and 0, for both link partner and PMA (registers 1.130.11 through 1.130.8, and 1.130.3 through 1.130.0)

SuggestedRemedy

Correct setting numbers in descriptions to match names.

Response *Response Status* **C**

REJECT.

See comment 478

Cl **45** *SC* **2.1.60.6** *P* **92** *L* **52** *Comment #* 536

Zimmerman, George Solarflare Communicati

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

Typo in title - "If.." precedes "THP 4 setting"

SuggestedRemedy

Delete "If"

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **2.1.61** *P* **93** *L* **29** *Comment #* 537

Zimmerman, George Solarflare Communicati

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

Text says precoder setting, should be power level setting

SuggestedRemedy

change to power level setting

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **2.1.61** *P* **93** *L* **42** *Comment #* 538

Zimmerman, George Solarflare Communicati

Comment Type **E** *Comment Status* **A** *THP45*

Subclause 45.2.1.61 CORRECTLY defines that the selected power level setting is described by register 1.131. The following sub-subclauses 45.2.1.61.1 through 45.2.1.61.16 incorrectly state that the bits represent whether the PHY has "the ability to operate" at a certain power level

SuggestedRemedy

Change text in 45.2.1.61.1 through .16 from "has the ability to operate with" or "has the ability to support" to "has selected" the power level, or, preferable, delete the one-bit-per-level encoding and replace with a 3 bit binary number, encoding the power level selected (0 through 7).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment 478

Cl **45** *SC* **2.1.8** *P* **89** *L* **38** *Comment #* 522

Zimmerman, George Solarflare Communicati

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

There is no transmit disable function control for 10GBASE-T. Such control may be required externally for test purposes and internally to prevent spurious signal emission during power up or release from power-down in accordance with 55.8.3

SuggestedRemedy

use bits 1.9.4:1 for disabling transmitter on channels 3:0 respectively. Use bit 1.9.0 for global (all channels) transmit disable. Add reference to the appropriate section of Clause 55 in the register 1.9 description. This control should be defined in addition to defining the "Transmit Disable" functionality in Clause 55.

Response *Response Status* **C**

ACCEPT.

Bits are already defined as stated. Editors comment to be removed and change made as suggested.

Cl **45** *SC* **2.7.10.4** *P* **113** *L* **4** *Comment #* 527

Zimmerman, George Solarflare Communicati

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

In the description of the bit 7.32.12: "When read as a logic zero, bit 7.32.12 indicates that the PHY lacks the ability to support full duplex operation". The implication is that it can still support 10GBASE-T (which is defined in full duplex only). the bit description in the table is more accurate.

SuggestedRemedy

Change the above statement to: "When read as a logic zero, bit 7.32.12 indicates that the PHY lacks the ability to support 10GBASE-T full duplex operation."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Related comments: 237, 460, 461, 527

See response to 237

Cl **45** *SC* **45.2** *P* **84** *L* **12** *Comment #* 64

David V James JGG

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

DVJ-64
Looks bad.

SuggestedRemedy

Center this left column.
Also, do this for all columns with only small width values.

Response *Response Status* **C**

REJECT.

Table is only adding MMD 7. Suggested remedy is beyond the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.1** *P* **87** *L* **48** *Comment #* 317

Dawe, Piers Agilent

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

case

SuggestedRemedy

Change 'Test' to 'test'

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.10** *P* **90** *L* **14** *Comment #* 72

David V James JGG

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

DVJ-72
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Bit(s), R/W

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.1.10** *P* **90** *L* **16** *Comment #* 563

Bradshaw, Peter Intersil

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

Table 45-12; I would prefer to see 10GBASE-T as bit 1.11.1, to conform to the likely order of the PMA types elsewhere in the various tables, etc.

SuggestedRemedy

swap 1.11.1 & 1.11.2

Response *Response Status* **C**

REJECT.

Choice of bits previously agreed upon with other groups. 1.11.1 is being used by 802.3aq

---

Cl **45** *SC* **45.2.1.10** *P* **90** *L* **22** *Comment #* 71

David V James JGG

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

DVJ-71
Misleading capitalization

SuggestedRemedy

Read Only
==>
Read only

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.1.10** *P* **90** *L* **23** *Comment #* 70

David V James JGG

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

DVJ-70
Move the footnote to the RO entry, where it applies, not the header.

SuggestedRemedy

NoRemedySupplied

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.1.10** *P* **90** *L* **4** *Comment #* 624

Grow, Robert Intel

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

Needs better change instruction.

SuggestedRemedy

Insert row into Table 45-11 to define reserved bit 1.11.2 for 10GBASE_T, as follows:
Editor's Note (to be removed prior to publication): Other projects are defining bits in this register (e.g., P802.3ap and P802.3aq). Depending on order of publication, the number of rows in the table my need to be adjusted at time of publication. Bit 1.11.1 is proposed for use by 10GBASE-LRM, bits 1.11.3, and bits 1.11.4 are proposed for use by 10GBASE-KR4 and 10GBASE-KR respectively. Reserved bits will also need to be adjusted based on order of publication. Reserved bits will also need to be adjusted based on order of publication.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.59.1** *P* **91** *L* **10** *Comment #* 73

David V James JGG

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

DVJ-73
Misspelling

SuggestedRemedy

Bit(s))
==>
Bit(s)

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.59.1** *P* **91** *L* **11** *Comment #* 77

David V James JGG

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

DVJ-77
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Bit(s), R/W

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.1.59.1** *P* **91** *L* **16** *Comment #* 74

David V James JGG

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

DVJ-74
Move the footnote to the RO entry, where it applies, not the header.

SuggestedRemedy

NoRemedySupplied

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.1.6** *P* **86** *L* **23** *Comment #* 560

Bradshaw, Peter Intersil

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

In Table 45-3, Registers 1.16 to 1.29 have no label. (This is actually a bug in Rev AM).

SuggestedRemedy

Add "reserved" in column (if RevAM does not fix it).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Cl **45** *SC* **45.2.1.6** *P* **86** *L* **54** *Comment #* 67

David V James JGG

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

DVJ-67
Use thin line at bottom of pages, preferably using a good template that does this automatically. There is a reason for this, which is that it makes it clearer that the table is continued.

SuggestedRemedy

Fix it, here and throughout.

Response *Response Status* **C**

REJECT.

This table based upon existing 802.3 table format. See also response to comment 611.

Cl **45** *SC* **45.2.1.6** *P* **86** *L* **7** *Comment #* 66

David V James JGG

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

DVJ-66
Looks bad.

SuggestedRemedy

Center this left column.
Also, do this for all columns with only small width values.

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.1.6** *P* **87** *L* **42** *Comment #* 561

Bradshaw, Peter Intersil

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

I see no good reason why register 1.128 should not be the beginning of the 10GBASE-T-specific registers. This is a binarily-significant number, and makes a logical break. Other breaks have (mainly) ended in either a binary or decimal break point, while 129 is divisible only by 3 and 43, neither of them really useful in either binary or decimal descriptions.

SuggestedRemedy

Start 10GBASE-T registers at 1.128 (1.80'h). This would require corresponding changes to 45.2.1.59 through 74

Response *Response Status* **C**

REJECT.

Register 128 was listed as reserved to maintain consistancy with previous register schemes. The first register in a set has consistantly been a control register with the next register being a status. Thus register 128 was reserved should a control register be necessary.

See comment 621

Cl **45** *SC* **45.2.1.6** *P* **88** *L* **30** *Comment #* 68

David V James JGG

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

DVJ-68
This is nonsense. A constant 4-bit value is never assigned a variable value, as the equals sign implies.

SuggestedRemedy

Either:
Put a header here and eliminate the '=' sign.
OR
Expand this into a distinct following table.

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.1.6** *P* **88** *L* **31** *Comment #* 554

Bradshaw, Peter Intersil

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

In Table 45-8; although my attempts to "rationalize" the assignments in this table during the CX4 task force were resoundingly rejected, it would still seem more rational to use '1000' for 10GBASE-T (closer to '0000' for the other electrical cable standard, CX4) and '1001' for 10GBASE-LRM (here listed as "reserved"), since they are both under initial review currently.

SuggestedRemedy

Swap the two lines for 10GBASE-T and the 'reserved' left for 10GBASE-LRM, so that 10GBASE-T is 1000.

Obviously, this would need to be co-ordinated with the 10GBASE-LRM task force.

Response *Response Status* **C**

REJECT.

Choice of bits previously agreed upon with other groups.

Cl **45** *SC* **45.2.1.6** *P* **88** *L* **39** *Comment #* 69

David V James JGG

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

DVJ-69
This footnote is nonsense. There are two distinct meanings for R/W, used the header and used in the cells.

SuggestedRemedy

Put RW in the cell, and use the footnote to describe it.

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.1.6.1** *P* **88** *L* **45** *Comment #* 555

Bradshaw, Peter Intersil

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

The subclause heading references bits 2:0, whereas the corresponding table utilizes bits 3:0

SuggestedRemedy

Replace "2:0" by "3:0"

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.60** *P* **19** *L* **91** *Comment #* 323

Dawe, Piers Agilent

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

The title is 'THP setting' yet 45.2.1.60.1-10 talk about 'will operate', 'will not operate', 'will not able to operate', 'will to operate', 'will not able to', ... 'will bypass', 'will not bypass'. - sounds like an ability register, with some typos.

SuggestedRemedy

Tidy it up.

Response *Response Status* **C**

REJECT.

See comment 564

The text will go into a field description and this comment will not apply

Cl **45** *SC* **45.2.1.60** *P* **91** *L* **11** *Comment #* 634

Lynskey, Eric UNH-IOL

Comment Type **E** *Comment Status* **R** *THP45*

In table 45-50, bit 1.130.1, description should be for setting 1.

SuggestedRemedy

Change to THP setting one is selected and THP setting one is not selected.

Response *Response Status* **C**

REJECT.

see comment 478

Cl **45** *SC* **45.2.1.60** *P* **91** *L* **14** *Comment #* 635

Lynskey, Eric UNH-IOL

Comment Type **E** *Comment Status* **R** *THP45*

In table 45-50, bit 1.130.0, description should be for setting 0.

SuggestedRemedy

Change to THP setting zero is selected and THP setting zero is not selected.

Response *Response Status* **C**

REJECT.

See 478

Cl **45** SC **45.2.1.60** P **91** L **19** Comment # 14006

McClellan, Brett Solarflare

Comment Type **T** *Comment Status* **R** *D1.4*

The use of one-hot encoding for the register bits appears to be a remnant from an ability register rather than a status register.
Also only 4 THP settings are defined (including bypass) so there are too many bits defined.

SuggestedRemedy

Change register bit definitions of 1.130.15:0 to:
1.130.12:10 Reserved Value always 0, writes ignored
1.130.9:8 Link Partner THP setting
00 = bypass
01 = SHORT
10 = MEDIUM
11 = LONG
1.130.7:2 Reserved Value always 0, writes ignored
1.130.1:0 THP setting
00 = bypass
01 = SHORT
10 = MEDIUM
11 = LONG

Response *Response Status* **C**

REJECT.

Nothing wrong with current implementation. The suggested remedy appears to be an improvement but it should be submitted during working group ballot.

Editor to resubmit to working group ballot

Cl **45** SC **45.2.1.60** P **91** L **20** Comment # 539

Zimmerman, George Solarflare Communicati

Comment Type **E** *Comment Status* **A** *THP45*

Encoding for THP level selected is overly complicated. One of 5 levels is selected, encode simply as a 3 bit number.

SuggestedRemedy

Change register bit definitions in Table 45-50 to encode both the Link partner and PMA THP settings as a 3 bit unsigned number.
Delete sections 45.2.1.60.1 through 45.2.1.60.10 and replace with description that the index number of the PMA THP setting selected (and link partner settings) are encoded as 3 bit unsigned numbers. Delete "onlhy one THP setting may be selected at any time" on line 24, page 91. Reserve remaining bits, or combine with the power backoff register.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment 478

Cl **45** SC **45.2.1.60** P **91** L **21** Comment # 319

Dawe, Piers Agilent

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

Problems with 'The THP setting register will reflect the THP setting selected during the startup process and will only be valid if bit 1.129.0 is set to one.' Why is it in the future tense? Move 'only' to be next to the thing it is meant to qualify (the 'if', not the 'be valid').

SuggestedRemedy

Change to 'The THP setting register reflects the THP setting selected during the startup process and will only be valid if bit 1.129.0 is set to one.' Similarly fix the tense in 45.2.1.61 and 45.2.1.63.

Response *Response Status* **C**

ACCEPT.

Cl **45** SC **45.2.1.60** P **91** L **22** Comment # 481

Thaler, Pat Agilent Technologies

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

It is more friendly to the reader to mention the bit by name, LP information valid, rather than only by number

SuggestedRemedy

change to "will only be valid if the LP information valid bit, 1.129.0, is set to one." Please do this here and in the other places where the bit is referenced.

Response *Response Status* **C**

ACCEPT.

Cl **45** SC **45.2.1.60** P **91** L **25** Comment # 349

Dawe, Piers Agilent

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

Grammar: assignment is singular

SuggestedRemedy

Change 'are' to 'is'.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.60** *P* **91** *L* **32** *Comment #* 564

Bradshaw, Peter Intersil

Comment Type **E** *Comment Status* **R** *THP45*

In Table 45-50, the descriptions for the THP settings seem to disagree with the descriptions ir the following subclauses (45.2.1.60.1 through 10); it is suspicious that they are all identical.

SuggestedRemedy

Check, and fix if needed

Response *Response Status* **C**

REJECT.

See response to comment 478

Cl **45** *SC* **45.2.1.60** *P* **91** *L* **34** *Comment #* 626

Lynskey, Eric UNH-IOL

Comment Type **E** *Comment Status* **R** *THP45*

In Table 45-60, description should contain THP. This comment applies to one location in 1.130.12, and two locations in 1.130.11:1.130.8 for a total of 9 additions.

SuggestedRemedy

Add THP before setting in each location so that it reads Link Partner THP setting N...

Response *Response Status* **C**

REJECT.

See 478

Cl **45** *SC* **45.2.1.60** *P* **91** *L* **36** *Comment #* 627

Lynskey, Eric UNH-IOL

Comment Type **E** *Comment Status* **R** *THP45*

In table 45-50, description should be for setting 3.

SuggestedRemedy

Change to Link Partner THP setting three is selected and Link Partner THP setting three is nc selected.

Response *Response Status* **C**

REJECT.

Also 478

Cl **45** *SC* **45.2.1.60** *P* **91** *L* **39** *Comment #* 628

Lynskey, Eric UNH-IOL

Comment Type **E** *Comment Status* **R** *THP45*

In table 45-50, description should be for setting 2.

SuggestedRemedy

Change to Link Partner THP setting two is selected and Link Partner THP setting two is not selected.

Response *Response Status* **C**

REJECT.

See comment 478

Cl **45** *SC* **45.2.1.60** *P* **91** *L* **42** *Comment #* 629

Lynskey, Eric UNH-IOL

Comment Type **E** *Comment Status* **R** *THP45*

In table 45-50, description should be for setting 1.

SuggestedRemedy

Change to Link Partner THP setting one is selected and Link Partner THP setting one is not selected.

Response *Response Status* **C**

REJECT.

See comment 478

Cl **45** *SC* **45.2.1.60** *P* **91** *L* **45** *Comment #* 630

Lynskey, Eric UNH-IOL

Comment Type **E** *Comment Status* **R** *THP45*

In table 45-50, description should be for setting 0.

SuggestedRemedy

Change to Link Partner THP setting zero is selected and Link Partner THP setting zero is not selected.

Response *Response Status* **C**

REJECT.

See comment 478

Cl **45** *SC* **45.2.1.60** *P* **91** *L* **6** *Comment #* 632

Lynskey, Eric UNH-IOL

Comment Type **E** *Comment Status* **R** *THP45*

In table 45-50, bit 1.130.3, description should be for setting 3.

SuggestedRemedy

Change to THP setting three is selected and THP setting three is not selected.

Response *Response Status* **C**

REJECT.

See comment 478

Cl **45** *SC* **45.2.1.60** *P* **91** *L* **8** *Comment #* 633

Lynskey, Eric UNH-IOL

Comment Type **E** *Comment Status* **R** *THP45*

In table 45-50, bit 1.130.2, description should be for setting 2.

SuggestedRemedy

Change to THP setting two is selected and THP setting two is not selected.

Response *Response Status* **C**

REJECT.

See comment 478

Cl **45** *SC* **45.2.1.60** *P* **91-92** *L* **36-46** *Comment #* 280

Lee Sendelbach IBM

Comment Type **ER** *Comment Status* **R** *THP45*

The table uses setting 4 in the text in the column for every case in the description. This flows on to the same table on the next page also.

SuggestedRemedy

Put the proper setting values in there.

Response *Response Status* **C**

REJECT.

See comment 478

Cl **45** *SC* **45.2.1.60.2** *P* **92** *L* **29** *Comment #* 478

Thaler, Pat Agilent Technologies

Comment Type **ER** *Comment Status* **A** *THP45*

Why does this line say "will not able to operate" rather than "will not operate"? That isn't grammatically correct and even if it was changed to "will not be able to operate" it doesn't seem accurate. Don't the bits reflect the chosen operating mode rather than the ability to operate in the mode?

SuggestedRemedy

Change to "will not operate" as in 45.2.1.60.1. This comment needs to be applied to several o the subclauses of 45.2.1.60.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

THP settings will be changed to 3 bit field for both the local transmitter and the link partner with descriptions corrected to reflect the change.

Cl **45** *SC* **45.2.1.60.5** *P* **92** *L* **48** *Comment #* 479

Thaler, Pat Agilent Technologies

Comment Type **TR** *Comment Status* **A** *THP45*

Does this bit bypass the use of the other THP settings (bits 12 through 9). That's what the text seems to say.

SuggestedRemedy

If it acts as a bypass for the other bits, then state that more clearly. Perhaps each of the other bits should specify that they only operate as described when this bit is 0.

Or, if only one of the 5 settings can be selected at a time (all the bits but one must be zero) which seems to be what 45.2.1.60 says, then it would make more sense to construct this as a 3 bit field that showed the setting selected rather than 5 single bits.

The same comment applies to 45.2.1.60.10.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See 478; text is being removed.

Cl **45** *SC* **45.2.1.61** *P* **93** *L* **23** *Comment #* 14007

McClellan, Brett Solarflare

Comment Type **T** *Comment Status* **R** *D1.4*

The use of one-hot encoding for the register bits appears to be a remnant from an ability register rather than a status register.

SuggestedRemedy

Change register bit definitions of 1.131.15:0 to:
1.130.15:11 Reserved Value always 0, writes ignored
1.130.10:8 Link partner TX power level
Link partner is operating with TX power level setting = -2dB * 1.130.10:8

1.130.7:3 Reserved Value always 0, writes ignored
1.130.2:0 TX power level
PMA is operating with TX power level setting = -2dB * 1.130.2:0

Response *Response Status* **C**

REJECT.

Nothing wrong with current implementation. The suggested remedy appears to be an improvement but it should be submitted during working group ballot.

Editor will resubmit to working group ballot.

Cl **45** *SC* **45.2.1.61** *P* **93** *L* **28** *Comment #* 480

Thaler, Pat Agilent Technologies

Comment Type **TR** *Comment Status* **A** *TX Power45*

Similar problems to those in 45.2.1.60 occur in this subclause. If only one power level can be selected at a time, it makes more sense to use s 3 bit field to show the level rather than 8 individual bits. Also, the subclauses say "is not able to" but everything else says these bits indicate the current setting rather than ability.

SuggestedRemedy

Change to a bit field indicating the setting level, or if that isn't done, at a minimum remove the "is not able to" language.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change to 3 bit fields for both Link partner and local TX setting. Correct 45.2.1.61.1 thru 45.2.1.61.16 to reflect the bit field settings for TX power level setting and Link partner TX power level setting.

Also change table 55-2 to clearly associate power level setting numbers (1-8) to TX power.

Cl **45** *SC* **45.2.1.61.4** *P* **94** *L* **5** *Comment #* 82

David V James JGG

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

DVJ-82
Double parenthesis.

SuggestedRemedy

Bit(s))
==>
Bit(s)

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.61.4** *P* **94** *L* **6-45** *Comment #* 281

Lee Sendelbach IBM

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

Table 45-51 the power level setting uses 0 sometimes and uses one/two/three sometimes. This should be made consistent.

SuggestedRemedy

Use text or digital numbers consistently.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See 480

Cl **45** *SC* **45.2.1.61.4** *P* **94** *L* **7** *Comment #* 80

David V James JGG

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

DVJ-80
This inconsistency is very confusing. Most lists start from 0.

SuggestedRemedy

Here and througout, list the 0 value first and start counting upwards.

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.1.61.4** *P* **94** *L* **8** *Comment #* 81

David V James JGG

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

DVJ-81
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Bit(s), R/W

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.1.62** *P* **96** *L* **32** *Comment #* 84

David V James JGG

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

DVJ-84
This inconsistency is very confusing. Most lists start from 0.

SuggestedRemedy

Here and througout, list the 0 value first and start counting upwards.

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.1.62** *P* **96** *L* **32** *Comment #* 85

David V James JGG

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

DVJ-85
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Bit(s), R/W

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.1.62** *P* **96** *L* **33** *Comment #* 463

McClellan, Brett Solarflare

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

Register bits 1.132.15:13 = 1 1 1 is currently shown as Reserved, but 55.5.2 defines a Test Mode 7 for that setting.

SuggestedRemedy

Change text to:
1 1 1 = Test Mode 7

Response *Response Status* **C**

ACCEPT.

Coordinate with editor for 55.5.2

Cl **45** *SC* **45.2.1.62** *P* **96** *L* **40** *Comment #* 86

David V James JGG

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

DVJ-86
Misleading capitalization

SuggestedRemedy

Transmitter Test Frequencies
==>
Transmitter test frequencies

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.62** *P* **96** *L* **49** *Comment #* 83

David V James JGG

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

DVJ-83
Move the footnote to the cell entry, where it applies, not the header.
Also, change the cell entry to RW.

SuggestedRemedy

Do it.

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.1.62.1** *P* **96** *L* **58** *Comment #* 631

Lynskey, Eric UNH-IOL

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

Wrong bit reference.

SuggestedRemedy

Change 7.9.15:13 to 1.132.15:13 on both lines 58 and 59.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.63** *P* **97** *L* **11** *Comment #* 325

Dawe, Piers Agilent

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

Need spaces between number and unit

SuggestedRemedy

e.g. '0.1 dB'. There are several more.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This will be fixed by the professional IEEE editorial staff prior to publication.

Cl **45** *SC* **45.2.1.63** *P* **97** *L* **11** *Comment #* 324

Dawe, Piers Agilent

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

0.5 dB of accuracy sounds difficult. Even if it's used for power setting, is it necessary? I'm sorry I did not have time to research this comment.

SuggestedRemedy

Relax to 1 dB?

Response *Response Status* **C**

REJECT.

Previously decided by vote.

Cl **45** *SC* **45.2.1.63** *P* **97** *L* **12** *Comment #* 326

Dawe, Piers Agilent

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

Clause 45 doesn't use this nerdy and misleading '0x' notation (one would imagine that x means don't care). Please don't start now.

SuggestedRemedy

Delete '0x', use subscript 16 unless clause 45 has another established notation for denoting hex. Applies to several following subclauses.

Response *Response Status* **C**

REJECT.

Section 1.2.5 of 802.3 permits the use of "0x" preceding the hexidecimal value. 802.3an has decided to use this convention.

Cl **45** *SC* **45.2.1.7.4** *P* **89** *L* **15** *Comment #* 318

Dawe, Piers Agilent

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

'for 10GBASE-T PMA'?

SuggestedRemedy

Change to 'for the 10GBASE-T PMA' or 'for a 10GBASE-T PMA'. Similarly in 45.2.1.7.4.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.71** *P* **98** *L* **12** *Comment #* 636

Lynskey, Eric UNH-IOL

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

Need better cross reference. Also applies to lines 20, 27, and 35 on the same page.

SuggestedRemedy

Replace "section 55" with appropriate reference.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.8** *P* **89** *L* **53** *Comment #* 261

Dove, Daniel HP ProCurve Networki

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

"PMDs" is incorrectly used.

SuggestedRemedy

Change to "PMD" or strike the "s", whichever you want to do. :)

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.8** *P* **89** *L* **56** *Comment #* 562

Bradshaw, Peter Intersil

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

My opinion as an answer to the editor's comment is "at least something". Since there are four twisted pairs, there would seem to be some point in being able to disable them individually, and certainly collectively would surely be desirable.

SuggestedRemedy

Define a function for Transmit Disable in 10GBASE-T. The Working group should surely do this.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to 522

Cl **45** *SC* **45.2.3** *P* **98** *L* **48** *Comment #* 88

David V James JGG

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

DVJ-88
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Register address

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.3** *P* **98** *L* **56** *Comment #* 87

David V James JGG

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

DVJ-87
The clear line on the bottom makes it look like this row is continued.

SuggestedRemedy

Use fixed templates, or manually force to very-thin.

Response *Response Status* **C**

REJECT.

See response to comment 75.

Cl **45** *SC* **45.2.3.11.4** *P* **103** *L* **6** *Comment #* 327

Dawe, Piers Agilent

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

This last long sentence is too ambitious and does not succeed in saying what is intended

SuggestedRemedy

Try using two paragraphs as in 45.2.3.11.3.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Cl **45** *SC* **45.2.3.12** *P* **103** *L* **25** *Comment #* 96

David V James JGG

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

DVJ-96
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Bit(s), R/W

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.3.12** *P* **103** *L* **31** *Comment #* 95

David V James JGG

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

DVJ-95
This inconsistency is very confusing. Most lists start from 0. VERY few lists count in a nonmonotonic fashion, like this one does.

SuggestedRemedy

Here and througout, list the 0 value first and start counting upwards.

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.3.6** *P* **100** *L* **31** *Comment #* 90

David V James JGG

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

DVJ-90
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Bit(s), R/W

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.3.6** *P* **100** *L* **36** *Comment #* 89

David V James JGG

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

DVJ-89
This inconsistency is very confusing. Most lists start from 0.

SuggestedRemedy

Here and througout, list the 0 value first and start counting upwards.

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.3.7** *P* **101** *L* **13** *Comment #* 92

David V James JGG

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

DVJ-92
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Bit(s), R/W

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.3.7** *P* **101** *L* **15** *Comment #* 91

David V James JGG

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

DVJ-91
This inconsistency is very confusing. Most lists start from 0. VERY few lists count in a nonmonotonic fashion, like this one does.

SuggestedRemedy

Here and througout, list the 0 value first and start counting upwards.

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.3.7.4** *P* **102** *L* **12** *Comment #* 94

David V James JGG

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

DVJ-94
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Bit(s), R/W

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.3.7.4** *P* **102** *L* **16** *Comment #* 93

David V James JGG

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

DVJ-93
This inconsistency is very confusing. Most lists start from 0. VERY few lists count in a nonmonotonic fashion, like this one does.

SuggestedRemedy

Here and througout, list the 0 value first and start counting upwards.

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.7** *P* **104** *L* **31** *Comment #* 97

David V James JGG

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

DVJ-97
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Register address

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.7** *P* **104** *L* **48** *Comment #* 414

McConnell, Mike KeyEye Communicatio

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

Register 7.16 name AN LD Advertisement doesn't match 45.2.7.6 name

SuggestedRemedy

Make name is register table 45-117 match register description (45.2.7.6) and subsequent table (45-120) match. Also fix the PICs (AM25)

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.7** *P* **105** *L* **14** *Comment #* 455

Healey, Adam Agere Systems

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

Table 45-117: 10GBASE-T AN control, AN status, and AN control 2 registers (7.32-34) use register space currently claimed by P802.3ap.

A corresponding comment will be generated against P802.3ap/D0.9. This comment is intended to highlight the issue and ensure cooperation between the two Task Forces to ensure register space overlap is eliminated and avoided in the future.

SuggestedRemedy

It is expected that P802.3ap will defer to P802.3an and re-arrange registers accordingly. Therefore, no changes to the draft are proposed.

However, the commenter humbly requests that, prior to allocating additional registers in MMD 7, P802.3an first consult with P802.3ap to avoid any further situations that would require significant re-ordering of P802.3ap registers.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.7** *P* **113** *L* **45** *Comment #* 460

McClellan, Brett Solarflare

Comment Type **E** *Comment Status* **A** *FD45*

Reference to the Page received bit is incorrect. This refers to the Clause 22 bit instead of the Clause 45 bit.

SuggestedRemedy

Change the Page received bit (6.1) to (7.1.6).

Response *Response Status* **C**

ACCEPT.

Related comments: 237, 460, 461, 527

See response to 237

Cl **45** *SC* **45.2.7.1** *P* **105** *L* **32** *Comment #* 99

David V James JGG

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

DVJ-99
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Bit(s), R/W

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.7.1** *P* **105** *L* **36** *Comment #* 98

David V James JGG

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

DVJ-98
This inconsistency is very confusing. Most lists start from 0. VERY few lists count in a nonmonotonic fashion, like this one does.

SuggestedRemedy

Here and througout, list the 0 value first and start counting upwards.

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.7.1.3** *P* **106** *L* **30** *Comment #* 676

Law, David 3Com

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

The text 'Bit 7.0.12 is a copy of bit 0.12 in register 0 as defined in section 22.2.4.', particularly the text 'is a copy of', implies that when bit 7.0.12 exists, register 0 has to exist. I though that the intent was that a permissible implementation would be to only have the Clause 45 MDIO MMD 7 register set to support Auto-Negotiation.

SuggestedRemedy

If it is not mandatory to implement register 0 when MMD 7 is implemented, suggest the text should be changed to read 'Bit 7.0.12 is a copy of bit 0.12 in register 0 if present (see 22.2.4). and a default condition for the bit defined. Perform similar changes through subclause 45.2.7.

If this text is correct, editorially '.. as defined in section 22.2.4.' should read '.. (see 22.2.4).'.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

It is not mandatory to implement register 0 and the editor will add appropriate text to clarify this.

Cl **45** *SC* **45.2.7.10** *P* **112** *L* **12** *Comment #* 108

David V James JGG

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

DVJ-108
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Bit(s), R/W

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.7.10** *P* **112** *L* **22** *Comment #* 107

David V James JGG

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

DVJ-107
This inconsistency is very confusing. Most lists start from 0. VERY few lists count in a nonmonotonic fashion, like this one does.

SuggestedRemedy

Here and througout, list the 0 value first and start counting upwards.

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.7.10** *P* **112** *L* **22-25** *Comment #* 237

Shimon Muller Sun Microsystems, Inc.

Comment Type **T** *Comment Status* **A** *FD45*

Bit 7.32.12 makes no sense whatsoever, at least the way it is described. 10-GE is defined for full duplex operation only. Therefore, there is no need to negotiate this capability.

SuggestedRemedy

Delete this bit from Table 45-124.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove the "full duplex ability" from the bit description and rename it as capability. This applies to paragraph 45.2.7.10.4 and 45.2.7.11.5 and the associated tables 45-124 and 45-125 and table 55-6.

Related comments: 237, 460, 461, 527

Cl **45** *SC* **45.2.7.10** *P* **112** *L* **29** *Comment #* 110

David V James JGG

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

DVJ-110
Misleading capitalization

SuggestedRemedy

Read/Write
==>
read/write

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.7.10** *P* **112** *L* **29** *Comment #* 462

McClellan, Brett Solarflare

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

The seed value in 1000BASE-T was not settable by the host, and there is no description or allowance for it to be settable by the host in 10GBASE-T. However, Table 45-124 has a R/W register for the seed value.

SuggestedRemedy

Change the R/W status to RO for 7.32.10:0. Suggest moving these bits to a status register instead of in a control register. Clarify if this is the local device seed that was generated. (If the purpose was to allow the host to set these bits, a description needs to be written somewhere in the specification as to what happens if/when the host sets these bits. This is undefined. It appears the purpose was to report the value of the seed which was generated.)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Make it read only and move to register 7.34.15:6.

Cl **45** *SC* **45.2.7.10** *P* **112** *L* **29** *Comment #* 109

David V James JGG

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

DVJ-109
Misleading capitalization

SuggestedRemedy

Latching High
==>
Latching high

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.7.10** *P* **112** *L* **3** *Comment #* 487

Thaler, Pat Agilent Technologies

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

The contents of this register seems to duplicate some but not all of the values that are in the 10GBASE-T and 1000BASE-T technology message. It isn't clear how this is to be used. What happens if there is a discrepancy between this register and the registers loaded for the extneded next page exchange of the technology message? Since this register contains only some of the information how cna it allow a power up or reset to a nomral operational state without management intervention?

SuggestedRemedy

Remove this register or clarify its use.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Will provide clarification on the use of extended next page register after the initial base page exchange. Provide clarification 45.2.7.8.

Cl **45** *SC* **45.2.7.10** *P* **114** *L* **514** *Comment #* 297

Reviriego, Pedro Agere Systems

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

Bits 7.33.6 and 7.33.5:4 have not been updated to reflect the changes in section 55.4.3.1. The same applies to bits 7.34.5 and 7.34:4:3.

The text in sections 45.7.11.9 through 45.7.11.11 and 45.7.12.1 and 45.7.12.2 has not been updated to reflect the changes in section 55.4.3.1.

SuggestedRemedy

Remove those bits as they are no longer needed.

Remove the text in those sections.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Modify 45 to be consistent with changes in 55.4

Cl **45** *SC* **45.2.7.10.4** *P* **113** *L* **1-6** *Comment #* 238

Shimon Muller Sun Microsystems, Inc.

Comment Type **T** *Comment Status* **A** *FD45*

See my comment against 45.2.7.10.

SuggestedRemedy

Delete this sub-clause.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to 237

Cl **45** *SC* **45.2.7.10.4** *P* **113** *L* **3** *Comment #* 461

McClellan, Brett — Solarflare

Comment Type **E** *Comment Status* **A** *FD45*

The wording in this paragraph is not worded to indicate that this is a control bit. The paragraph reads as if this is a status bit only.

SuggestedRemedy

Re-word 45.2.7.10.4 to indicate that this bit controls whether or not the PHY advertises during auto-negotiation whether it is 10BASE-T full-duplex capable (and not simply reporting this ability to the host).
Suggested wording:"Bit 7.32.12 is to be used to select whether or not auto-negotation will advertise the ability to operate as a 10GBASE-T full-duplex PHY..."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Related comments: 237, 460, 461, 527

See response to comment 237

Cl **45** *SC* **45.2.7.11** *P* **113** *L* **20** *Comment #* 488

Thaler, Pat — Agilent Technologies

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

With this register as with the AN control register, there seems to be an odd split between whether the auto-negotiation for 10GBASE-T operation is controled and understood by the hardware or by the manager.

The management interaction determines what to send as a next page and reads the next page, but this status register contains data that is read only and must have been extracted from the received extended next page or from the combination of the receceived and sent next pages.

SuggestedRemedy

Clarify who is doing what. Either rewrite auto-negotiation management to enable a total hardware bring-up of the link explaining where hardware gets the bits that aren't in the AN control register including the 1000BASE-T bits or remove the items that contradict a management controlled bring-up.

If the expectation is that the auto-negotiation goes on auto-pilot for the base page and the firs extended next page (the 10GBASE-T and 1000BASE-T technology message) and that the AN LD XNP register is used only after that, then state that clearly.

Response *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **45** *SC* **45.2.7.11** *P* **113** *L* **29** *Comment #* 113

David V James — JGG

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

DVJ-113
Its unclear if this is an ROLLSC value.

SuggestedRemedy

Put commas, so this looks like:
RO, LL, SC

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.7.11** *P* **113** *L* **29** *Comment #* 112

David V James — JGG

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

DVJ-112
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Bit(s), R/W

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.7.11** *P* **113** *L* **29** *Comment #* 111

David V James — JGG

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

DVJ-111
This inconsistency is very confusing. Most lists start from 0. VERY few lists count in a nonmonotonic fashion, like this one does.

SuggestedRemedy

Here and througout, list the 0 value first and start counting upwards.

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.7.11** *P* **113** *L* **41-45** *Comment #* 239

Shimon Muller Sun Microsystems, Inc.

Comment Type **T** *Comment Status* **A** *FD45*

See my comment against 45.2.7.10.

SuggestedRemedy

Delete this bit from Table 45-125.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to 237

Cl **45** *SC* **45.2.7.11** *P* **114** *L* **7** *Comment #* 412

McConnell, Mike KeyEye Communicatio

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

Table 45-125 description columns contain "shalls"

SuggestedRemedy

Remove "shall" from table and add to appropriate subclauses (45.2.7.11.10 & 45.2.7.11.11). Also add to PICS

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.7.11.5** *P* **114** *L* **53-58** *Comment #* 240

Shimon Muller Sun Microsystems, Inc.

Comment Type **T** *Comment Status* **A** *FD45*

See my comment against 45.2.7.10.

SuggestedRemedy

Delete this sub-clause.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 237

Cl **45** *SC* **45.2.7.12** *P* **116** *L* **14** *Comment #* 115

David V James JGG

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

DVJ-115
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Bit(s), R/W

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.7.12** *P* **116** *L* **22** *Comment #* 114

David V James JGG

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

DVJ-114
This inconsistency is very confusing. Most lists start from 0. VERY few lists count in a nonmonotonic fashion, like this one does.

SuggestedRemedy

Here and througout, list the 0 value first and start counting upwards.

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.7.2.1** *P* **106** *L* **55** *Comment #* 482

Thaler, Pat — Agilent Technologies

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

This bit doesn't make sense and there are multiple problems with the note.
The problems:
1) If support for the register requires extended next page ability, then why have a bit in the register to indicate extended next page ability?
2) Notes are non-binding. If one must support extended next page ability to have this MMD, that should be stated as part of 45.2.7 rather than in a note.
3) "use of" extended next page can't be the gating factor in having the registers since that use depends on the result of the negotiation and the AN MMD shouldn't disappear when the link partner doesn't negotiates non-extended next pages.

SuggestedRemedy

Move the content of the note to 45.2.7 as part of the clause, not a note and replace "use of" with "support for"

Delete Bit 45.2.7.2.1 or if there is some reason to retain it. Add that 1 is the only legal value.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete the bit

Cl **45** *SC* **45.2.7.2.1** *P* **107** *L* **4** *Comment #* 101

David V James — JGG

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

DVJ-101
Nonstandard table lines.

SuggestedRemedy

Thin on the outside.
Very-thin on the inside.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.7.2.1** *P* **107** *L* **6** *Comment #* 102

David V James — JGG

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

DVJ-102
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Bit(s), R/W

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.7.2.1** *P* **107** *L* **8** *Comment #* 100

David V James — JGG

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

DVJ-100
This inconsistency is very confusing. Most lists start from 0. VERY few lists count in a nonmonotonic fashion, like this one does.

SuggestedRemedy

Here and througout, list the 0 value first and start counting upwards.

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.7.2.3** *P* **107** *L* **42** *Comment #* 582

Ilango Ganga Intel

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

"The Page Received bit shall be reset to logic Zero on a read of the LD base page register (Register 7.1)". Register 7.1 is actually AN status register and not LD base page register. Also since this bit is also a copy of expansion register 6.1, hence reading register 6 will have the same effect as reading (AN stauts Register 7.1)

SuggestedRemedy

Fix the appropriate line to read as "AN Status register (Register 7.1)" Also add a note to specify Reading expansion register 6 will also clear the bit.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change text to read, "The Page Received bit shall be reset to zero on a read of the AN status register (Register 7.1) or if present the Auto-Negotiation expansion register 6 as defined in 28.2.1.4.5.

See comment 413

Cl **45** *SC* **45.2.7.2.3** *P* **107** *L* **43** *Comment #* 413

McConnell, Mike KeyEye Communicatio

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

The wrong register and register name is referenced (AN LD base page register (7.1))

SuggestedRemedy

Change reference to 7.16 AN Advertisement Register.

Response *Response Status* **C**

REJECT.

See comment 582

Cl **45** *SC* **45.2.7.2.4** *P* **107** *L* **50** *Comment #* 484

Thaler, Pat Agilent Technologies

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

This doesn't make sense.

7.16 contains the advertised values so its validity shouldn't depend on the completion of auto-negotiation.

The description of when auto-negotiation is complete is vague and these registers seem unusable if it means what it says. Auto negotiation has many page exchanges. The Base page registers must be valid when the base page exchange is complete because one will want to read their contents before deciding on the next page exchange.

SuggestedRemedy

There should be a bit for base page exchange complete and another bit for next page exchange complete. For the next page exchange complete bit, one will have to provide a mechanism for clearing it to enable use for a further page exchange. Perhaps it should be cleared when the next page registers have been read.

I know you leveraged this bit, but I went back and looked at 22 and it didn't clarify the operation. 22 may have a maintenance issue too.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change second sentence to read, "When read as a logic zero, bit 7.1.5 indicates that the auto negotiation process has not been completed, and that the contents of 7.16, 7.19 and 7.22 through 7.27 are as defined by the current state of the Auto-Negotiation protocol, or as written for manual configuration."

Cl **45** *SC* **45.2.7.2.7** *P* **108** *L* **21** *Comment #* 415

McConnell, Mike KeyEye Communicatio

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

AN Reset should reset this bit.

SuggestedRemedy

Add text indicating that the bit 7.1.2 shall be cleared upon AN Reset. Add to PICS.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.7.6** *P* **109** *L* **1** *Comment #* 677

Law, David 3Com

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

If the Auto-Negotiation advertisement register (Register 4) is present, (see 28.2.4.1.3), reads to the AN advertisement register (7.16) will report the value of the Auto-Negotiation advertisement register (Register 4). Any write to the AN advertisement register (7.16) will also cause a write to also occur to the Auto-Negotiation advertisement register (Register 4).

There is no text here, or in subclause 28.3, to describe what happens if an implementation chooses to implement both the Clause 22 register set (Note 1) and the Clause 45 register set and therefore has both register bits 4.15:0 and 7.16.15:0 present. What happens when these registers have different values, what is the Figure 28-15 to 28-18 state machine variable mr_adv_ability[16:1] to be set to, the Clause 22 value or the Clause 45 value.

There would seem to be various options here but I would assume that what is intended is that a write to either of these register will be reflected in the other - the text 'This register is a copy of the Advertisement register 4 described in section 28.2.4.1.3 (See Table 45-120).' seems to imply this however the text doesn't seem to make it clear what to do when the Clause 22 interface is not present.

Note 1 - A Clause 22 register set in the same device as a Clause 45 register set can be accessed though the Clause 45 electrical interface by using the Clause 22 ST encoding of 01 instead of the Clause 45 ST encoding 00.

SuggestedRemedy

Suggest one possibility would be that the text 'This register is a copy of the Advertisement register 4 described in section 28.2.4.1.3 ' be deleted at the following paragraph be added to the end of subclause 45.2.7.6:

If the Auto-Negotiation advertisement register (Register 4) is present, (see 28.2.4.1.3), then this register is a copy of the Auto-Negotiation advertisement register (Register 4). In this case reads to the AN advertisement register (7.16) will report the value of the Auto-Negotiation advertisement register (Register 4), writes to the AN advertisement register (7.16) will cause a write to occur to the Auto-Negotiation advertisement register (Register 4).

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.7.6** *P* **109** *L* **15** *Comment #* 103

David V James JGG

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

DVJ-103
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Bit(s), R/W

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.7.6** *P* **109** *L* **7** *Comment #* 405

McConnell, Mike KeyEye Communicatio

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

bit 7.16.14 mentioned in text is not included in table 45-120.

SuggestedRemedy

Correct table accordingly

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.7.6** *P* **109** *L* **8** *Comment #* 406

McConnell, Mike KeyEye Communicatio

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

Last sentence read, "The Technology Ability Field (7.16.12:5) is set based on the values.

SuggestedRemedy

Remove "values" are replace with text description or reference to relevant subclause that defines the values.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Values referenced to Annex 28B.

Also, XNP bit will added as 7.19.12 and Technology ability field will be changed to 7.19.11:5

see comment 485

Cl **45** *SC* **45.2.7.7** *P* **110** *L* **12** *Comment #* 104

David V James JGG

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

DVJ-104
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Bit(s), R/W

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.7.7** *P* **110** *L* **18** *Comment #* 485

Thaler, Pat Agilent Technologies

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

In clause 28, the extended next page ability bit (7.19.12 here) was moved out of the technology ability field, so you will have to match that here.

SuggestedRemedy

put a separate entry in the table for extended next page ability to match it to Clause 28.

Response *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

No change necessary. Overtaken by other events.

Cl **45** *SC* **45.2.7.7** *P* **110** *L* **18** *Comment #* 678

Law, David 3Com

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

The Technology ability field is now only 7 bits with an additional XNP bit. Assuming we are taking the approach of replacing ability bit A7 rather than considering XNP as just anoither ablility.

SuggestedRemedy

Based on bit A7 being replaced by XNP 'Technology ability field' needs to be reduced to 7 bits, a new XNP bit added.

Response *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

See response to comment 604

XNP bit will 7.19.12 and Technology ability field will be changed to 7.19.11:5

Does Annex 28B will need to be updated to reflect the usage of bit 7 for XNP?

Cl **45** *SC* **45.2.7.8** *P* **110** *L* **30** *Comment #* 407

McConnell, Mike KeyEye Communicatio

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

Sentence begins with "On power-up ..."

SuggestedRemedy

Change to read, "On power-up or reset ..." and correct the PICS accordingly (AM34)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

"On power-up or AN reset ..."

Cl **45** *SC* **45.2.7.8** *P* **110** *L* **38** *Comment #* 580

Ilango Ganga Intel

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

Table 45-122 The AN LD XNP transmit register is a three register set (7.22, 7.23, 7.24) which is formatted as lowest number register in higher row in the table. Other multi-register sets in Clause 45(example Table 48-75) are tabulated with lowest numbered register in the lowest row in the table. To be consistent reformat table 45-122 to read as {7.24, 7.23, 7.22}lowest numbered register in lowest row in table etc.,

SuggestedRemedy

To be consistent with other tables in Clause 45 (example Table 48-75) reformat Table 45-122 to read as {7.24, 7.23, 7.22} lowest numbered register in lowest row in table and so on..

Response *Response Status* **C**

REJECT.

Register ordering is accordance with previously approved comments in prior rev.

See 581

Cl **45** *SC* **45.2.7.8** *P* **110** *L* **39** *Comment #* 105

David V James JGG

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

DVJ-105
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Bit(s), R/W

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.2.7.9** *P* **111** *L* **1** *Comment #* 486

Thaler, Pat Agilent Technologies

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

Since this is a multiple register set, there needs to be a way to ensure that it is frozen so that the three reads are returning a consistant set - the values from a single next page exchange.

SuggestedRemedy

Specify that reading one of the registers, e.g. 27 causes the other two values to be latched for reading. See the multi-register counters for an example of the text.

Response *Response Status* **C**

ACCEPT.

Will add text.

Cl **45** *SC* **45.2.7.9** *P* **111** *L* **14** *Comment #* 581

Ilango Ganga Intel

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

Table 45-123 The AN LD XNP ability register is a three register set (7.25, 7.26, 7.27) which is formatted as lowest number register in higher row in the table. Other multi-register sets in Clause 45(example Table 48-75) is tabulated with lowest numbered register first in the lowest row in the table. To be consistent reformat table 45-122 to read as {7.27, 7.26, 7.25} lowest numbered register in lowest row in table etc.,

SuggestedRemedy

To be consistent with other tables in Clause 45 (example Table 48-75) reformat rows in Table 45-123 to read as {7.27, 7.26, 7.25} lowest numbered register in lowest row in table and so on..

Response *Response Status* **C**

REJECT.

See response to comment 580

Cl **45** *SC* **45.5.10.1** *P* **119** *L* **38** *Comment #* 118

David V James JGG

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

DVJ-118
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Support

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.5.10.2** *P* **120** *L* **7** *Comment #* 119

David V James JGG

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

DVJ-119
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Support

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.5.10.3** *P* **121** *L* **8** *Comment #* 120

David V James JGG

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

DVJ-120
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Support

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.5.10.3** *P* **123** *L* **40** *Comment #* 411

McConnell, Mike KeyEye Communicatio

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

subclause references are wrong for MM47-MM50

SuggestedRemedy

change 45.2.1.11.1 to correct subclause

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.5.10.6** *P* **127** *L* **7** *Comment #* 408

McConnell, Mike KeyEye Communicatio

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

All references to subclause 45.2.1.71

SuggestedRemedy

change 45.2.1.71 to 45.2.3

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.5.10.6** *P* **127** *L* **7** *Comment #* 121

David V James JGG

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

DVJ-121
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Support

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.5.10.8** *P* **132** *L* **1** *Comment #* 574

Booth, Brad Intel

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

*AT is not required with *AN.

SuggestedRemedy

Delete.

Response *Response Status* **C**

REJECT.

Referenced subclause doesn't exist nor does *AT => eight ball

Cl **45** *SC* **45.5.10.8** *P* **132** *L* **8** *Comment #* 122

David V James JGG

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

DVJ-122
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Support

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.5.10.9** *P* **132** *L* **16** *Comment #* 123

David V James JGG

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

DVJ-123
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Support

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.5.10.9** *P* **135** *L* **1** *Comment #* 328

Dawe, Piers Agilent

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

Two blank pages

SuggestedRemedy

Remove them

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Cl **45** *SC* **45.5.8** *P* **118** *L* **5** *Comment #* 116

David V James JGG

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

DVJ-116
The title of this subclause is too long, which forces error-prone manual manipulation during the otherwise automatic TOC generation.

SuggestedRemedy

Change the title to:
55.12 Protocol implementation conformance statement (PICS) proforma for Clause 45

Response *Response Status* **C**

REJECT.

No proposed change for the title. The suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45.5.9.2** *P* **118** *L* **40** *Comment #* 573

Booth, Brad Intel

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

Subclause lists 802.3ae-2002 as the referenced specification.

SuggestedRemedy

Change to be 802.3an-200x in both locations.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.5.9.3** *P* **119** *L* **12** *Comment #* 409

McConnell, Mike KeyEye Communicatio

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

refers to wrong subclause

SuggestedRemedy

change subclause reference to 45.2.3

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.5.9.3** *P* **119** *L* **28** *Comment #* 410

McConnell, Mike KeyEye Communicatio

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

Auto Neg missing from table of capabilities

SuggestedRemedy

Add Auto Neg as Optional status with proper subclause

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.5.9.3** *P* **119** *L* **6** *Comment #* 117

David V James JGG

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

DVJ-117
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Support

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **45-3** *P* **87** *L* **46** *Comment #* 260

Dove, Daniel HP ProCurve Networki

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

THP is an undefined acronym. This might create confusion for a reader of the document.

SuggestedRemedy

Define THP (Tomlinson Harashima Precoding) in advance of using it.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

It will go into clause 1. There is a clause 1 comment on this - comment 320 and 321

Cl **45** *SC* **Table 45-8** *P* **88** *L* **20** *Comment #* 622

Grow, Robert Intel

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

Needs a change instruction and an editors note.

SuggestedRemedy

45.2.1.6 10G PMA/PMD control 2 register (Register 1.7)
Change the Table 45-7 as follows:
Editor's Note (to be removed prior to publication): Table 45-7 is also being modified by P802.3an and P802.3ap. If P802.3an is not published prior to or simultaneous with P802.3aq the line for bits 1.7.3:0 value 1001 should be "Reserved". If P802.3ap is not published prior to or simultaneous with P802.3aq bits 1.7.3:0 values 1011 and 1010 should be "Reserved". Other change markings are against P802.3REVam, and may need to be modified based on publication order of current amendment projects, with edit reference changed to latest amendment.

Define bits 1.7.3:0 values for 802.3aq (with underline)
1 0 00 = 10GBASE-KR PMA/PMD type

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **Table 45-1** *P* **84** *L* **8** *Comment #* 620

Grow, Robert Intel

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

Item like this table need a clearer explanation for the publication editor to avoid deletion of changes from other amendments.

SuggestedRemedy

Editor's Note (to be removed prior to publication): Table 45-1 is also being modified by P802.3ap. If P802.3an is not published prior to or simultaneous with P802.3ap, the Reserved Device Addresses shown here that are defined by P802.3ap should be preserved in this table

Insert similar targeted notes also in for Table 45-2, 45-3, etc.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **Table 45-119** *P* **107** *L* **7** *Comment #* 483

Thaler, Pat — Agilent Technologies

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

LD is used here (and LP is used earlier) but they don't appear in the acronym list and don't even appear in parens after the spelled out term.

SuggestedRemedy

Add to acronym list and before the first time they are used independently, use put local device (LD) and link partner (LP) in the text.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Also add XNP as Extended next page.

Cl **45** *SC* **Table 45-12** *P* **90** *L* **11** *Comment #* 625

Grow, Robert — Intel

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

This is Table 45-11 in REVam.

SuggestedRemedy

Correct table number.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **Table 45-122** *P* **110** *L* **47** *Comment #* 680

Law, David — 3Com

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

As discussed in my comment against Figure 28-13, the inclusion of the Message Page bit, with a reference to 28.2.3.4 where 0 = Unformatted Page and 1 = Message Page seems odd in the Extended Next Page definition since by definition it is not a Unformatted or Message Page and is capable of carrying both a Message Code and up to two Unformatted Codes.

The same comment applies to Table 45-123.

SuggestedRemedy

Remove the Message Page bit and merge 7.22.13 with 7.22.14 so that both are reserved bits

Response *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

Pending resolution of comment 597 on clause 28.

Cl **45** *SC* **Table 45-123** *P* **111** *L* **18** *Comment #* 106

David V James — JGG

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

DVJ-106
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Bit(s), R/W

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **Table 45-2** *P* **85** *L* **10** *Comment #* 65

David V James — JGG

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

DVJ-65
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Bit(s), R/W

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45. Suggested remedy is outside the scope of IEEE P802.3an.

Cl **45** *SC* **Table 45-3** *P* **87** *L* **44** *Comment #* 621

Grow, Robert — Intel

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

Why the skip to register number 129? The registers start with 0. Why is 802.3ap starting at a decimal register number (150). Let's get some consistency.

SuggestedRemedy

If a binary number is desired, then 128 is the place to start.

Response *Response Status* **U**

REJECT.

Register 128 was listed as reserved to maintain consistancy with previous register schemes. The first register in a set has consistantly been a control register with the next register being a status. Thus register 128 was reserved should a control register be necessary.

Also comment #561

Cl **45** *SC* **Table 45-50** *P* *L* *Comment #* 254

Szczepanek, Andre — Texas Instruments

Comment Type **E** *Comment Status* **A** *THP45*

In Description column "Link partner setting four" is indicated for all link partner settings

SuggestedRemedy

replace four with corresponding number from the name column

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment 478

Cl **45** *SC* **Table 45-50** *P* **91** *L* **34** *Comment #* 477

Thaler, Pat — Agilent Technologies

Comment Type **E** *Comment Status* **R** *THP45*

All of the bits say "setting four" in the description for the 4 bits for link partner and the 4 bits fo PMA

SuggestedRemedy

Shouldn't Link Partner THP 3 setting say "setting three" and so on for the other bits?
Also 7 of the description lines omit "THP" while the others include it. Please insert it for clarity and consistancy.

Response *Response Status* **C**

REJECT.

See 478

Cl **45** *SC* **Table 45-8** *P* **88** *L* **22** *Comment #* 623

Grow, Robert — Intel

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

This is table 45-7 in REVam and I don't think has changed.

SuggestedRemedy

Correct table number.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* *P* **183** *L* *Comment #* 445

Wael William Diab — Cisco Systems

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

Please delete extra pages like 183 and 184.

SuggestedRemedy

delete extra pages like 183 and 184.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* *P* **194** *L* *Comment #* 449

Wael William Diab — Cisco Systems

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

Please delete extra pages like 194.

SuggestedRemedy

delete extra pages like 194.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **4.3.1** *P* **172** *L* **13** *Comment #* 707

Ungerboeck, Gottfried Broadcom

Comment Type **T** *Comment Status* **A** *THP programmable*

16 fixed "THP settings" (= precoding responses) to meet all link conditions (despite the very loose transmit PSD specification!) are defined. It is suggested to charter Auto-Negotiation with narrowing down this set to 4 fixed THP settings for (a) no precoding and (b,c,d) precoding for short, medium, and long cable length. The final selection among these four THP settings should occur during PMA training. In view of the perceived awkwardness of this variety of fixed THP settings and the selection process, this commenter gives up his earlier position to specify a small set of fixed THP settings.

SuggestedRemedy

Adopt the use of programmable FIR-type precoding. Do not burden Auto-Negotiation with a pre-selection of THP settings. Include in PMA training a mechanism for exchanging precoding coefficients. Revise accordingly the InfoField specified in 55.4.2.4 on page 170. --- The 10GBASE-T working group has to agree on the required maximum length L of the programmable precoding response, define the format and value range of the exchanged coefficients, and determine whether the same programmable precoding response should be used for all four pairs or individually determined responses for each pair are needed. This commenter offers to give a presentation entitled "Decision-point SNR vs. length of precoding response". In this presentation decision-point SNR is determined as a function of L for worst case link conditions. An infinite FFE is assumed and both FFE and finite-length precoding response are jointly optimized to maximize SNR. It is found that L = 32 is needed, rather than L = 16 as assumed for fixed FIR-type precoding responses in Draft 2.0. The presented results further illustrate the benefits of a well shaped transmit PSD with spectral notches at dc and 1/2T in terms of decision-point SNR and constellation expansion.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 473

Cl **55** *SC* **5.6** *P* **182** *L* **33** *Comment #* 708

Ungerboeck, Gottfried Broadcom

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

The section claims to specify the transmit PSD and power level for normal operation with no power backoff. First, is operation with nonzero power backoff not normal? What is "normal"? Second, the given lower and upper PSD masks and the lower and upper limits on transmit power (3.2 and 5.2 dBm) are TOO LOOSE. The PSD masks permit almost arbitrary PSD shapes, including most ridiculous shapes; but strangely disallow deep notches around dc and 1/2T. This specification is unworthy any standard.
The looseness of this specification is further in marked contrast to the definition of a set of fixed "THP settings" (= precoding responses) as in 55.4.3.1.

SuggestedRemedy

The 10GBASE-T working group must agree on a more rigorous specification of PSD shape and the maximum transmit power level. This commenter offers to give a presentation entitled "Study of transmit-front-end solutions", in which the relevant technical issues are addressed. The main conclusions are as follows: (a) a suitably shaped and reliably reproducible transmit PSD can only be achieved by digital filtering and oversampling, (b) contrary to widely held beliefs, an "oversampled solution" does not lead to more severe peak voltage problems at the DAC output than a "baseline solution" employing symbol-spaced DAC and analog filtering only, and (c) an "oversampled solution" with well defined spectral notches at dc and 1/2T yields higher decision-point SNR with significantly smaller constellation expansion than a "baseline solution".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

By voice vote.

PSD masks have been made tighter as per comments 592 and 272.

See response to comment 696

Relevant comments: 272, 592, 672, 692, 696, 708

Cl **55** *SC* **55.1** *P* **137** *L* **12** *Comment #* 329

Dawe, Piers — Agilent

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

Problem with referring to different versions of ISO/IEC 11801. We refer to them by date, while IEC may use edition numbers. ISO/IEC 11801 Edition 2 and ISO/IEC 11801 Edition 2.1 aren't in 1.4 references

SuggestedRemedy

Sort out. Suggest include the edition numbers in 1.4 but use the dates in 55 if possible, as elswhere in 802.3.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Will use publication dates when available. Till then we will use edition numbers.

Cl **55** *SC* **55.1.1** *P* **137** *L* **26** *Comment #* 425

Daines, Kevin — World Wide Packets

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

The list of objectives has inconsistent punctuation (some have periods, other do not).

SuggestedRemedy

Please make consistent. Suggest no periods.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.1.1** *P* **137** *L* **35** *Comment #* 388

Beck, Michael — Alcatel Bell n.v.

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

What exactly is meant by "links of at least 55m to 100m"? Is this an objective that contains a minimum and a maximum reach? Or is it a range of minima, from which a single value must be selected depending on some hidden variable? Similar unclear wording on page 201, line 28.

SuggestedRemedy

Clarify: links of at least 55m and at most 100m, or whatever else was intended by the Task Force.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 503

Cl **55** *SC* **55.1.1** *P* **137** *L* **35** *Comment #* 250

Brown, Kevin — Broadcom

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

Subclause 55.1.1 Objective f) is imprecisely specified. Specifying "at least 55 m to 100 m" does not make sense.

The minimum specified distance should be essentially zero distance. If a PHY that works over "at least 55 m" is compliant, then any distance specification is redundant. "at least 55 m to 100 m" has no meaningful difference from "at least 55 m to 90 m" or "at least 55 m to 110 m", if 55 m is the minimum requirement

SuggestedRemedy

f) Define a single 10Gb/s PHY that would support links of 0.1 m to 55 m on four pair balanced copper cabling.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment 503

Cl **55** *SC* **55.1.1** *P* **137** *L* **35** *Comment #* 503

Baumer, Howard — Broadcom

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

What does "at least 55-100m" mean? Is the min distance objective 55 or 100 or something in between? Or isn't this the same as "at least 55m" since if someone can build a 100m cable that meets the specs then they have met "at least 55m" requirement.

SuggestedRemedy

change "at least 55-100m" to "55m"

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Change item f) in 55.1.1 to

"Define a single 10Gb/s PHY that would support links of up to 100 m on four pair balanced copper cabling as specified in 55.7"

Cl **55** SC **55.1.1** P **137** L **37** Comment # 426

Daines, Kevin — World Wide Packets

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

Not trying to change objectives here, but "MAC Client service Interface" should be "MAC client service interface"

SuggestedRemedy

Change per comment

Response *Response Status* **C**

ACCEPT.

Cl **55** SC **55.1.1** P **137** L **41** Comment # 376

Alan Flatman — LAN Technologies

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

“EMC limits” generally relate to outgoing disturbance, rather than immunity tests. “EMC requirements” would more accurately refer to both outgoing disturbance and immunity tests. This would be consistent with the change made in March 2005 to clause 55.9.5, which now refers to EMC rather than RF emission.

SuggestedRemedy

Change “EMC limits” to “EMC requirements”.

Response *Response Status* **C**

ACCEPT.

Cl **55** SC **55.1.1** P **137** L **42** Comment # 282

Reviriego, Pedro — Agere Systems

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

The draft should include the following objective:

l) Comply with the specifications for the XGMII (Clause 46)

SuggestedRemedy

Include the above objective

Response *Response Status* **C**

REJECT.

Is covered by 55.1.1 items c

Also we don't explicitly call out an optional interface

Cl **55** SC **55.1.1** P **137** L **42** Comment # 331

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A** *pcspma cleanup*

Not a feasible objective!

SuggestedRemedy

Change 'Bit Error Rate' to 'bit error ratio'. Add a full stop at the end of the line while we are here.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Will change to "BER".

Cl **55** SC **55.1.1** P **137** L **42** Comment # 330

Dawe, Piers — Agilent

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

Gratuitous Capital Syndrome

SuggestedRemedy

Change 'Bit Error Rate' to 'bit error rate' - but see another comment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change to "BER"

Cl **55** SC **55.1.2** P **138** L **27** Comment # 283

Reviriego, Pedro — Agere Systems

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

Change 10GBaseT to 10Gb/s

SuggestedRemedy

Include the above change

Response *Response Status* **C**

REJECT.

The text refers to the Medium which should be 10GBASE-T compliant.

Cl **55** *SC* **55.1.2** *P* **138** *L* **31** *Comment #* 124

David V James JGG

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

DVJ-124
Callouts can be ALL CAPS or Some caps, but not both.

SuggestedRemedy

Eliminate mixture by converting ALL CAPS to lower case.

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within IEEE Std. 802.3.

Cl **55** *SC* **55.1.2** *P* **138** *L* **5** *Comment #* 427

Daines, Kevin World Wide Packets

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

I'd hate for the text "connect one Clause 4 Media Access Control (MAC) layer to the medium" to be construed as avoiding or precluding the 4A MAC. Other PHY clauses use different language. See 58.1.2 for an example.

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change text to:
The PHY sub-layers (shown shaded) in Figure 55-1 connect the IEEE 802.3 (CSMA/CD) MAC to the medium.

Cl **55** *SC* **55.1.2** *P* **138** *L* **6** *Comment #* 126

David V James JGG

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

DVJ-126
Misleading capitalization

SuggestedRemedy

Clause 4 Media Access Control (MAC)
==>
Clause 4 Media access control (MAC)

Response *Response Status* **C**

REJECT.

The task force believes that the capitalization used in this instance is consistent with the capitalization used elsewhere in 802.3 and does not merit a change in this specific instance. The use of capitalization for important and significant terms is useful for the purpose of distinguishing this and other similar term from ordinary English usage.

Cl **55** *SC* **55.1.3** *P* **138** *L* **42** *Comment #* 332

Dawe, Piers Agilent

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

No indication of what you mean by hybrid: dictionary definition 'a composite of mixed origin' isn't enough information to understand this use of the word.

SuggestedRemedy

Explain, amplify, use another term, or add a definition to 1.4.

Response *Response Status* **W**

REJECT.

The term "Hybrid" is used to refer to a two wire to four wire conversion device and has been used multiple time in IEEE Std 802.3-2002, Section Two - see page 417

Cl **55** *SC* **55.1.3** *P* **138** *L* **45** *Comment #* 125

David V James JGG

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

DVJ-125
Be consistent with acronyms.

SuggestedRemedy

Double SQuare
==>
double square

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.1.3** *P* **138** *L* **57** *Comment #* 428

Daines, Kevin World Wide Packets

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

Given the current hypenation, the term "MAS-TER-SLAVE" is a little awkward.

SuggestedRemedy

Change to "MASTER-SLAVE" if possible.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 124

Cl **55** *SC* **55.1.3** *P* **138** *L* **60** *Comment #* 429

Daines, Kevin World Wide Packets

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

"MASTER-SLAVE" in the first part of the paragraph suddenly changed to "MASTER/SLAVE".

SuggestedRemedy

Change to "MASTER-SLAVE"

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.1.3** *P* **139** *L* **16** *Comment #* 127

David V James JGG

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

DVJ-127
Callouts can be ALL CAPS or Some caps, but not both.

SuggestedRemedy

Eliminate mixture by converting HYBRID to lower case.

Response *Response Status* **C**

REJECT.

See response to comment 124.

Cl **55** *SC* **55.1.3** *P* **139** *L* **3** *Comment #* 637

Yagil, Ariel Texas Instruments

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

The sentence: "If loop timing is not implemented, the SLAVE PHY clocking is identical to the MASTER PHY clocking" is not clear

SuggestedRemedy

Replace the sentence with: "If loop timing is not implemented, the SLAVE PHY transmit clocking is identical to the MASTER PHY transmit clocking"

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.1.3** *P* **139** *L* **4** *Comment #* 262

Dove, Daniel HP ProCurve Networki

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

Example for Multiport to single-port device provided, but none provided for single-port to single-port or multiport to multiport.

SuggestedRemedy

I would recommend providing all three cases or leave out the example as it is insufficient to address its objective. If I were writing recommendations, I would recommend using auto-negotiation and avoid suggesting otherwise.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Leave out example

Cl **55** *SC* **55.1.3** *P* **140** *L* *Comment #* 638

Yagil, Ariel Texas Instruments

Comment Type **T** *Comment Status* **A** *pcspma variable*

The variable pcs_status is communicated between the PCS and the PMA (see Figures 55-18 and 55-19), but is missing from the "PMA service interface". It is not clear if scr_status and pcs_status are identical.

SuggestedRemedy

Either add pcs_status line from "PCS receive" to "PHY control" and "Link status" in Figures 55-3, 55-4, 55-5 and 55-17, or merge the variables pcs_status and scr_status

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Merge the variables pcs_status and scr_status and call it pcs_status

Cl **55** *SC* **55.1.3** *P* **141** *L* **52** *Comment #* 361

Kim, Yong — Broadcom

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

Objectives list (55.1.1) states "f) Define a single 10Gb/s PHY that would support links of at least 55 m to 100 m on four pair balanced copper cabling as specified in 55.7". This intro (55.1.3) states (or implies) 100 m. Well, which is it? Please make it consistent to the objectives.

From Draft: "The PMA couples messages from the PCS service interface onto the balanced cabling physical medium via the Medium Dependent Interface (MDI) and provides the link management and PHY Control functions. The PMA provides full duplex communications at 800 Msymbols/s over four pairs of balanced cabling up to 100 m in length.",

SuggestedRemedy

Change length designation on line 52 page 141 to be consistent with objective f) on page 137. For example, replace "four pairs of balanced cabling up to 100m in length." with "four pairs of balanced cabling of at least 55m in length".

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See response to comment 503

Cl **55** *SC* **55.1.3.1** *P* **141** *L* **13** *Comment #* 639

Yagil, Ariel — Texas Instruments

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

The sentence: "1723 bits are encoded using a systematic LDPC(1723,2048) encoder, which adds 325 LDPC check bits" is repeated two lines below

SuggestedRemedy

Delete the sentence

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.1.3.1** *P* **141** *L* **13** *Comment #* 253

Szczepanek, Andre — Texas Instruments

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

The sentence
"1723 bits are encoded using a systematic ... adds 325 LDPC check bits" is out of sequence, and is a fragment of the sentence that starts on line 16 that contains exactly the same text.

SuggestedRemedy

remove line 13

Response *Response Status* **C**

ACCEPT.

See response to comment 639

Cl **55** *SC* **55.1.3.1** *P* **141** *L* **44** *Comment #* 640

Yagil, Ariel — Texas Instruments

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

Paragraph 55.2 describes the PCS service interfaces to the management function and PMA, not XGMII

SuggestedRemedy

Change the sentence: "The PCS Service Interfaces to the XGMII and the PMA are abstract message-passing interfaces specified in 55.2." to "The PCS Service Interfaces to the management function and the PMA are abstract message-passing interfaces specified in 55.2."

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.1.3.1** *P* **141** *L* **59** *Comment #* 264

Dove, Daniel — HP ProCurve Networki

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

Tomlinson Harishima Precoder (THP) finally gets defined, but the horse is out of the barn long ago.

SuggestedRemedy

Per my other comment, move this definition up before the first instance of THP.

Response *Response Status* **C**

ACCEPT.

Will put into Clause 1. See resolution to comment 320/321

Cl **55** *SC* **55.1.3.1** *P* **141** *L* **7** *Comment #* 263

Dove, Daniel — HP ProCurve Networki

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

The reference to "normal mode" appears before normal mode is described or defined.

SuggestedRemedy

Move lines 39-41 "In addition...interface." up in front of this paragraph.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.1.3.2** *P* **141** *L* **52** *Comment #* 356

Ali, Ghiasi — Broadcom

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

It is unclear what the length objective for 10GBAS-T 55 m, 100 m, or take your pick 55-100 m

SuggestedRemedy

Ethernet in the premises wiring is the most entrenched standard. Reducing the length from 100 m to something like take a number will cause significant damage to the Ethernet as a standard. Ethernet in the premises wiring means 100m and 10GBASE-T group should not reduce the reach.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See response to 503

Cl **55** *SC* **55.1.3.2** *P* **141** *L* **54** *Comment #* 128

David V James — JGG

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

DVJ-128
Misleading capitalization

SuggestedRemedy

Tomlinson Harashima Precoder
==>
Tomlinson Harashima precoder

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.1.3.2** *P* **142** *L* **2** *Comment #* 256

Marris, Arthur — Cadence

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

Change "Each DAC" to "The DAC"

SuggestedRemedy

Change "Each DAC" to "The DAC"

Response *Response Status* **C**

REJECT.

Cl **55** *SC* **55.1.3.2** *P* **142** *L* **2** *Comment #* 430

Daines, Kevin — World Wide Packets

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

"Each DAC outputs" should be "Each DAC output"

SuggestedRemedy

As per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change to" The DAC outputs"

Cl **55** *SC* **55.1.4** *P* **142** *L* **26** *Comment #* 431

Daines, Kevin — World Wide Packets

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

Change "including" to "including:"

SuggestedRemedy

As per comment

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.1.4** *P* **142** *L* **47** *Comment #* 265

Dove, Daniel — HP ProCurve Networki

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

Basically, I have a problem with the insertion of the word "basic" in this sentence, since it has no value.

SuggestedRemedy

Remove basic from this sentence and do a global search to basically ensure that unneccessary repetition is not used.

Oh... :)

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.1.5** *P* **142** *L* **56** *Comment #* 395

Christopher DiMinico — MC Communications

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

Capitals for 10GBase-T

SuggestedRemedy

Change: From: 10GBase-T To: 10GBASE-T PHY

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.1.5** *P* **142** *L* **56** *Comment #* 432

Daines, Kevin — World Wide Packets

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

"10GBase-T" should be "10GBASE-T"

SuggestedRemedy

As per comment

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.1.5** *P* **142** *L* **56** *Comment #* 389

Beck, Michael — Alcatel Bell n.v.

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

10GBase-T should be written in all-uppercase.

SuggestedRemedy

"All 10GBASE-T PHY implementations..."

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.1.6** *P* **143** *L* **12** *Comment #* 337

Dawe, Piers — Agilent

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

This isn't a standard for test equipment, and specifying tolerances of instruments is tantamount to adding defined bands for disagreement to the specifications: For example, if I apply 1 V +- 1% to a resistor under test with spec of 900-1100 ohm, and measure the current with a 1% ammeter, is a 899 ohm resistor compliant? Is a 901 ohm resistor compliant? It's just a mess. These days GHz class instruments may fake or adjust their impedances anyway; network analysers use calibration by look-up to improve their accuracy and the user may not know what the impedance really is. We should just write down what you want each parameter to truly be, and let the implementer and his test equpiment work out the tolerances guard bands and so on.

SuggestedRemedy

Delete the sentence 'The values of all components in test circuits shall be accurate to within + 1% unless otherwise stated.', and the associated PICS.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.10** *P* **215** *L* **53** *Comment #* 591

Thompson, Geoff — Nortel

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

The guidance to label the: "Data rate capability in Gb/s"
without any indication that units are also required can lead to confusion as the speed label could be the same as that produced by the requirement in 10.8a.

SuggestedRemedy

Change to: "Data rate capability and units thereof."

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.11** *P* **216** *L* **1** *Comment #* 345

Dawe, Piers — Agilent

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

Usually the subclause on delay constraints comes immediately after the subclause about the service interface

SuggestedRemedy

Consider moving this subclause to a more familar position

Response *Response Status* **C**

REJECT.

Not clear what position the commenter is recommending.

Cl **55** *SC* **55.11** *P* **216** *L* **19** *Comment #* 364

Barrass, Hugh — Cisco Systems

Comment Type **T** *Comment Status* **A** *delay - observation*

Editor's note on line 26 records that the delay will vary depending on the relative arrival time of the SFD compared to the LDPC block position.

This must be remedied by making a definitive and observable requirement.

SuggestedRemedy

Change table 55-10

Add a footnote attached to column heading "Max (bit times)"

"The delay between the measurement points shall not exceed the maximum for any frame transferred. In order to verify this a long sequence of random length frames may be used to ensure that SFD events occur in all positions relative to the PCS encoder and block boundaries."

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.11** *P* **216** *L* **19** *Comment #* 209

David V James — JGG

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

DVJ-209
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
right four columns

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within IEEE Std. 802.3.

Cl **55** *SC* **55.11** *P* **216** *L* **19-23** *Comment #* 242

Shimon Muller Sun Microsystems, Inc.

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

See my comment against 44.3.
The delay constraints specified for 10GBASE-T are at least an order of magnitude greater than what would be acceptable for many applications that are intended to be deployed using this technology.
Furthermore, I do not recall any contributions made to the Task Force that justify such a high latency in the PHY.
See my presentation (muller_1_0304.pdf) for latency considerations for the 10GBASE-T PHY

SuggestedRemedy

See my comment against 44.3.

Change the 10GBASE-T entry in Table 44-2 such that the round-trip latency does not exceed 20480 bit times or 40 pause_quanta.

Response *Response Status* **U**

This comment was unable to be resolved by the ballot resolution committee.

PROPOSED ACCEPT IN PRINCIPLE.

Motion: Change the round-trip latency to 8 us.
M: S. Kasturia
S: J. Tellado
Y:
N: by voice
Fails

PROPOSED REJECT.

The current delay parameter does not constrain implementation

Y: 8
N: 18
Fails

Delay related comments are numbered:
236, 242, 369

Proposals:
A) 20,480 bit times or 40 pause_quanta

B) 25,600 bit times or 50 pause_quanta

Motion to reduce latency from number in Draft 2.0 to proposal (A):
Moved by: Shimon Muller
Seconded: Hugh Barrass
Yes: 10
No: 10
Abstain: 15
Motion Fails.

No voters volunteered to change their vote for proposal (B).

Comment is currently unresolved.

Cl **55** *SC* **55.11** *P* **216** *L* **20** *Comment #* 370

Barrass, Hugh Cisco Systems

Comment Type **TR** *Comment Status* **R** *delay - split*

It is not sufficient to specify the latency from XGMII to XGMII. Clearly, any variation in latency for a transmitter will eat into the budget for the connected receiver. If a receiver is qualified using a low latency transmitter and transmitter is qualified using a low latency receiver then the resulting link may not meet the requirement.

Note that this comment assumes the acceptance of the comment requiring a shorter total latency. The latency figures in the remedy may be adjusted to match the currently agreed tota

SuggestedRemedy

Add the word "(informative)" to the first column of the second row of Table 55-10.

Add a row to Table 55-10

XGMII ==> MDI ; SFD coming in on XGMII and exiting the MDI (as a start coded in a 64/65 codeblock) ; 3,100 ; SFD ; S code

Add a row to Table 55-10

MDI ==> XGMII ; Start coded 64/65 codeblock coming in on MDI and exiting the XGMII ; 22,400 ; S code ; SFD

Response *Response Status* **U**

REJECT.

XGMII ==> MDI delay will be added to table 55-10 once comment 242 is resolved.

Cl **55** *SC* **55.11** *P* **216** *L* **20** *Comment #* 369

Barrass, Hugh — Cisco Systems

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

The latency allowed by this clause would make the performance of a 10GBASE-T link unacceptable. The parameter specified would allow the XGMII-XGMII latency to exceed 10uS

The time to transfer a 64byte frame using Gigabit Ethernet is only 512nS; a Gigabit link will achieve higher performance than a lightly loaded 10GBASE-T link for all but the longest frames. It should be a goal of 10GBASE-T to exceed the performance of 1000BASE-T in as many situations as possible.

It is understood that the block size chosen for 10GBASE-T puts a theoretical limit on latency a ~400nS and that practical considerations will need multiple block times to achieve reasonable power and gate count tradeoffs. However, a very loose requirement for latency will create massive interoperability problems as performance will drop far below expectations for certain combinations of PHY implementation.

It is proposed that 8 block times would be a reasonable limit for PHY latency. This is equivalent to the frame transmission time for a 320 byte frame at 1Gbps.

SuggestedRemedy

Change "100,352" to "25,600"

Response *Response Status* **U**

See response to comment 242

Cl **55** *SC* **55.12** *P* **217** *L* **2** *Comment #* 212

David V James — JGG

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

DVJ-212
The title of this subclause is too long, which forces error-prone manual manipulation during the otherwise automatic TOC generation.

SuggestedRemedy

1) Change the title to:
55.12 Protocol implementation conformance statement (PICS) proforma for Clause 55
2) Update the first sentence in the following paragraph:
The supplier of a protocol implementation that is claimed to conform to this clause shall complete the Protocol Implementation Conformance Statement (PICS) proforma listed in the following subclauses.
==>The supplier of a protocol implementation that is claimed to conform to Clause 55, Physical coding sublayer (PCS), physical medium attachment (PMA) sublayer and baseband medium, type 10GBASE-T shall complete the Protocol Implementation Conformance Statement (PICS) proforma listed in the following subclauses.

Response *Response Status* **C**

REJECT.

In the case of a PICS title, the PICS is intended for use as a separate document that is filled out by the implementer. The clause name is useful to the recipients of the completed PICS.

Cl **55** *SC* **55.12.10** *P* **235** *L* **6** *Comment #* 231

David V James — JGG

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

DVJ-231
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Support

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within IEEE Std. 802.3.

Cl **55** *SC* **55.12.11** *P* **235** *L* **33** *Comment #* 232

David V James JGG

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

DVJ-232
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Support

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within IEEE Std. 802.3.

Cl **55** *SC* **55.12.2** *P* **217** *L* **46** *Comment #* 211

David V James JGG

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

DVJ-211
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Support

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within IEEE Std. 802.3.

Cl **55** *SC* **55.12.2** *P* **217** *L* **52** *Comment #* 210

David V James JGG

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

DVJ-210
The bottom line of a table that is continued should be very-thin. This is particularly true when tables have no titles, as its hard to tell what is a continued table.

SuggestedRemedy

Any of:
a) Force a page break before 55.12.4.1
b) Fix you templates
c) Manually fix this problem.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Comment will be resolved with cleanup of PICS tables.

Cl **55** *SC* **55.12.2** *P* **218** *L* **7** *Comment #* 213

David V James JGG

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

DVJ-213
Extraneous blank rown

SuggestedRemedy

Eliminate them.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.12.4** *P* **219** *L* **17** *Comment #* 215

David V James JGG

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

DVJ-215
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Support

Response *Response Status* **C**

REJECT.

See response to comment 124

Cl **55** *SC* **55.12.4** *P* **219** *L* **54** *Comment #* 214

David V James JGG

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

DVJ-214
The bottom line of a table that is continued should be very-thin. This is particularly true when tables have no titles, as its hard to tell what is a continued table.

SuggestedRemedy

Any of:
a) Fix you templates
b) Manually fix this problem.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 210.

Cl **55** *SC* **55.12.4.1** *P* **219** *L* **48** *Comment #* 467

McClellan, Brett Solarflare

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

"In no case shall the scrambler state be initialized to all zeros." This is an untestable requirement. Furthermore, all zeros is a valid initial state.

SuggestedRemedy

Remove the PIC.
Change text in 55.3.6 pg 160 ln1 from:
"The initial seed value for the Master and Slave are left to the implementor. In no case shall the scrambler state be initialized to all zeros."
To:
"The initial seed value for the Master and Slave are left to the implementor."

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.12.4.1** *P* **220** *L* **45** *Comment #* 217

David V James JGG

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

DVJ-217
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Support

Response *Response Status* **C**

REJECT.

See response to comment 124

Cl **55** *SC* **55.12.4.1** *P* **220** *L* **55** *Comment #* 216

David V James JGG

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

DVJ-216
The bottom line of a table that is continued should be very-thin. This is particularly true when tables have no titles, as its hard to tell what is a continued table.

SuggestedRemedy

Any of:
a) Force a page break before 55.12.4.1
b) Fix you templates
c) Manually fix this problem.

Response *Response Status* **C**

REJECT.

This is consistent with the format used for PICS throughout IEEE Std. 802.3.

Cl **55** *SC* **55.12.4.1** *P* **221** *L* **13** *Comment #* 466

McClellan, Brett Solarflare

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

Typo: "self-synchronizer state" should be "self-synchronizing descrambler state"

SuggestedRemedy

Change text to:
"self-synchronizing descrambler state"

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.12.4.2** *P* **221** *L* **32** *Comment #* 218

David V James JGG

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

DVJ-218
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Support

Response *Response Status* **C**

REJECT.

See response to comment 124

Cl **55** *SC* **55.12.5** *P* **222** *L* **54** *Comment #* 219

David V James JGG

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

DVJ-219
The bottom line of a table that is continued should be very-thin. This is particularly true when tables have no titles, as its hard to tell what is a continued table.

SuggestedRemedy

Fix you templates or manually fix this problem.

Response *Response Status* **C**

REJECT.

See response to comment 216.

Cl **55** *SC* **55.12.5** *P* **222** *L* **6** *Comment #* 220

David V James JGG

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

DVJ-220
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Support

Response *Response Status* **C**

REJECT.

See response to comment 124

Cl **55** *SC* **55.12.6** *P* **224** *L* **9** *Comment #* 221

David V James JGG

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

DVJ-221
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Support

Response *Response Status* **C**

REJECT.

See response to comment 124

Cl **55** *SC* **55.12.6.1** *P* **225** *L* **14** *Comment #* 223

David V James JGG

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

DVJ-223
Misleading capitalization

SuggestedRemedy

10GBASE-T Specific Auto-Negotiation Requirements
==>
10GBASE-T specific auto-negotiation requirements

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Subclause merged with management PICS.

Cl **55** *SC* **55.12.6.1** *P* **225** *L* **17** *Comment #* 222

David V James JGG

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

DVJ-222
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Support

Response *Response Status* **C**

REJECT.

See response to comment 124

Cl **55** *SC* **55.12.6.1** *P* **225** *L* **19** *Comment #* 294

Reviriego, Pedro Agere Systems

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

The value comment seems to be void for AN1

SuggestedRemedy

Fill it appropriately

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Cl **55** *SC* **55.12.7** *P* **226** *L* **52** *Comment #* 295

Reviriego, Pedro Agere Systems

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

The test GMII seems to be incorrect

SuggestedRemedy

Change GMII to XGMII

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.12.7** *P* **226** *L* **7** *Comment #* 224

David V James JGG

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

DVJ-224
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Support

Response *Response Status* **C**

REJECT.

See response to comment 124

Cl **55** *SC* **55.12.7** *P* **230** *L* **11** *Comment #* 225

David V James JGG

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

DVJ-225
Wrong font size on:
"Properly receive..."

SuggestedRemedy

Fix it.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

PICS tables were cleaned up due to other comments.

Cl **55** *SC* **55.12.7** *P* **230** *L* **28** *Comment #* 296

Reviriego, Pedro Agere Systems

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

The text 'the four noise source...' is incorrect

The value comment for PME 44 (and also PME 41) is in two font sizes, use one for all comment/values. This same problem occurs in 55.12.8 LKS18 and in 55.12.9 in MDI9.

SuggestedRemedy

Change it to the 'the four noise sources ...'

Review the font size to ensure consitency in sections 55.12.7 through 55.12.9

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Cl **55** *SC* **55.12.8** *P* **231** *L* **8** *Comment #* 226

David V James JGG

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

DVJ-226
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Support

Response *Response Status* **C**

REJECT.

See response to comment 124

Cl **55** *SC* **55.12.9** *P* **233** *L* **27** *Comment #* 399

Christopher DiMinico MC Communications

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

The reference to Category 6 is ANSI/TIA/EIA-568-B.2-1-2002.

SuggestedRemedy

Change: ANSI/TIA/EIA-568-B.2:2002

To: ANSI/TIA/EIA-568-B.2-1-2002

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.12.9** *P* **233** *L* **44** *Comment #* 228

David V James JGG

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

DVJ-228
Wrong font size.

SuggestedRemedy

Apply standard font size to right column.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.12.9** *P* **233** *L* **8** *Comment #* 227

David V James JGG

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

DVJ-227
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Item, Subclause, Status, Support

Response *Response Status* **C**

REJECT.

See response to comment 124

Cl **55** *SC* **55.12.9** *P* **234** *L* **15** *Comment #* 230

David V James JGG

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

DVJ-230
The continuation of the feature cell test in the Value/Comment cell is highly irregular and confusing.
Also, the capitalization in the right column obfuscates even this too subtle usage.

SuggestedRemedy

Decouple these two portions of a sentence, in MDI13.
Also, check and correct throughout.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

PICS to be rewritten with the following guidelines:

Conformance statement should be in the body of the standard. PICS should contain enough information to get to the conformance statement.

Cl **55** *SC* **55.12.9** *P* **234** *L* **23** *Comment #* 229

David V James JGG

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

DVJ-229
What does PME?? mean.

SuggestedRemedy

Correct this.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 230.

Cl **55** *SC* **55.2** *P* **143** *L* **16** *Comment #* 129

David V James JGG

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

DVJ-129
Misleading capitalization

SuggestedRemedy

10GBASE-T Service Primitives and Interfaces
==>
10GBASE-T Service primitives and interfaces

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.2** *P* **143** *L* **23** *Comment #* 130

David V James JGG

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

DVJ-130
Misleading capitalization

SuggestedRemedy

Medium Dependent Interface (MDI)
==>
Medium dependent interface (MDI)

As per 802.3REV acronyms

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.2.2** *P* **140** *L* **27** *Comment #* 333

Dawe, Piers Agilent

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

I think the rest of 802.3 has changed the mix of X.indicate and X.indication to be all X.indication, in line with another international standard.

SuggestedRemedy

Change PMA_UNITDATA.indicate to PMA_UNITDATA.indication, and similar changes.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

C55 used X.indicate 60 times
C28 has four instances of X.indication

X.indication will be used.

Cl **55** *SC* **55.2.2** *P* **140** *L* **28** *Comment #* 334

Dawe, Piers — Agilent

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

If PMA_UNITDATA.indicate (rx_symb_vector) is the function PMA_UNITDATA.indicate of the variable rx_symb_vector, there wouldn't be a space before the '('. See 52.1.1 for other examples.

SuggestedRemedy

Either explain what parts of speech these things are, or remove this and similar spaces.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.2.2** *P* **144** *L* **49** *Comment #* 433

Daines, Kevin — World Wide Packets

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

Shouldn't "PMA_TXMODE.indicate(tx_mode)" be "PMA_TXMODE.indication(tx_mode)"?

SuggestedRemedy

As per comment.

In addition, change each of the other ".indicate" service primitives to ".indication"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #333

Cl **55** *SC* **55.2.2** *P* **145** *L* **35** *Comment #* 131

David V James — JGG

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

DVJ-131
Don't mix ALL CAPS and Some caps conventions in one figure.

SuggestedRemedy

MEDIUM DEPENDENT INTERFACE
==>
Medium dependent interface
(and similar changes for nonspecial words)

Response *Response Status* **C**

REJECT.

See response to 126

Cl **55** *SC* **55.2.2** *P* **145** *L* **37** *Comment #* 641

Yagil, Ariel — Texas Instruments

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

Figure 55-4: according to 55.2, the management function interface is specified in clause 45, not 28

SuggestedRemedy

Change "(Clause 28)" to "(Clause 45)"

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.2.2 Figure 55-4** *P* **145** *L* **41** *Comment #* 434

Daines, Kevin — World Wide Packets

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

Change figure by replacing ".indicate" with ".indication"

SuggestedRemedy

As per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 333

Cl **55** *SC* **55.2.3** *P* **145** *L* **45** *Comment #* 642

Yagil, Ariel — Texas Instruments

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

This is a sub-paragraph of 55.2.2, therefore the numbering shold be 55.2.2.1, not 55.2.3. This applies to all sub-paragraphs related to PMA service interface

SuggestedRemedy

Change numbering of all sub paragraphs between 55.2.3 to 55.2.10.2 (to 55.2.2.1 to 55.2.2.8.2, respectively)

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.2.6.1** *P* **147** *L* **42** *Comment #* 643

Yagil, Ariel — Texas Instruments

Comment Type **T** *Comment Status* **A** *pcspma clarification*

In order to achieve the required BER, rx_symb_vector should include not only the reciever's best estimate of the symbols that were sent by the remote transmitter, but also a reliabilty measure for each symbol

SuggestedRemedy

Change: "A vector of the four 1-D symbols that is the receiver's best estimate of the symbols that were sent by the remote transmitter across the four pairs" to "A vector of the four 1-D symbols that is the receiver's best estimate of the symbols that were sent by the remote transmitter across the four pairs with reliabilty measures for each symbol"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change: "A vector of the four 1-D symbols that is the receiver's best estimate of the symbols that were sent by the remote transmitter across the four pairs" to "A vector of the four 1-D symbols that is the receiver's best estimate of the symbols that were sent by the remote transmitter across the four pairs with reliabilty measures."

Cl **55** *SC* **55.2.6.1** *P* **147** *L* **44** *Comment #* 435

Daines, Kevin — World Wide Packets

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

Hanging indent needs to be fixed.

SuggestedRemedy

As per comment

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3** *P* **149** *L* **51** *Comment #* 371

Barrass, Hugh — Cisco Systems

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

The PCS section is not divided or organized logically. The sections need to be re-ordered and re-numbered.

Note that other comments will assume that this breakdown (or similar) is made.

SuggestedRemedy

Without changing the contents, reorder and renumber the sections as follows:

55.3 Physical Coding Sublayer (PCS)

55.3.1 PCS service interface (XGMII)

55.3.2 PCS functions

55.3.2.1 PCS Reset function

55.3.2.2 PCS Transmit function

55.3.2.2.1 Use of blocks (was 55.3.3)

55.3.2.2.3 65B-LDPC transmission code (was 55.3.4)

55.3.2.2.4 Transmit process (was 55.3.5)

55.3.2.2.5 PCS Scrambler (was 55.3.6)

55.3.2.2.6 CRC8 (was 55.3.7)

55.3.2.2.7 LDPC Encoder (was 55.3.8)

55.3.2.2.8 DSQ128 bit mapping (was 55.3.9)

55.3.2.2.9 DSQ128 to 4D-1DSQ128 (was 55.3.10)

55.3.2.2.10 65B-LDPC Framer (was 55.3.11)

55.3.2.3 PCS Receive function (was 55.3.15)

55.3.2.3.1 Frame and Block synchronization (was 55.3.13)

55.3.2.3.2 PCS Descrambler (was 55.3.14)

55.3.3 Test-pattern generators (was 55.3.12)

55.3.4 PMA Training Side-stream scrambler polynomials (was 55.3.16)

55.3.5 Detailed functions and state diagrams (was 55.3.17)

55.3.6 PCS Management (was 55.3.18)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Exact renumbering may change based on other changes being folded into the generation of Draft 2.1

Cl **55** *SC* **55.3.11** *P* **162** *L* **58** *Comment #* 651

Yagil, Ariel Texas Instruments

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

Change "The 65B-LDPC adapts..." to "The 65B-LDPC framer adapts..."

SuggestedRemedy

Change as suggested

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.12** *P* **163** *L* *Comment #* 652

Yagil, Ariel Texas Instruments

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

Clarify that the test pattern is used in test mode 7

SuggestedRemedy

Add the following sentence at the end of the paragraph: "This test pattern is used in test mode 7 (see Table 55-7)"

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.12** *P* **163** *L* **13** *Comment #* 374

Barrass, Hugh Cisco Systems

Comment Type **TR** *Comment Status* **R** *pcspma testing*

Additional test patterns are required:

It will be prohibitively difficult to test the quality of LDPC implementations in a receiver as it will be exceedingly difficult to ensure the the test channel genuinely produces the worst signal degradation and noise ingress to fully exercise the error correction function in a deterministic manner. Therefore we should define an error inserting test pattern generator that can exercise the LDPC decode on a good quality and quiet link.

Also,we need a mechanism of forcing a parity error in the CRC8 so that the function can be tested in the receiver.

SuggestedRemedy

At the end of clause 55.3.12, add:

The transmit function shall have the ability to inject pseudo random bit errors into the coded bits of a 65BLDPC frame. In order to test the receiver LDPC error correction function, a transmitter and receiver pair shall be connected by a short,high quality link. The SNR margin at the receiver shall be greater than 10dB. The transmitter injects a pseudo random error pattern into the coded bits of the egress 65BLDPC frames equivalent to a BER of 1/100. The receiver shall correct the errors to achieve a resultant BER less than 10^-12. (TBD : does the injected error pattern need to be distributed across the DSQ128 coding?)

The transmit function shall have the ability to inject random false parity codes in the CRC8 function. On a short, high quality link, with a receive SNR margin greater than 10dB, the receiver shall detect but not correct the injected CRC errors (invalidating the XGMII data as defined in 55.3.15)

Response *Response Status* **U**

REJECT.

Commenter to provide a detailed remedy.

Cl **55** *SC* **55.3.12** *P* **163** *L* **13** *Comment #* 465

McClellan, Brett Solarflare

Comment Type **T** *Comment Status* **A** *pcspma testing*

This clause describes the test pattern generator mode, but doesn't define the register setting to enable this mode. The register setting is defined in clause 55.5.2

SuggestedRemedy

Add text:
This mode is further described as Test Mode 7 in 55.5.2.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.15** *P* **163** *L* **31** *Comment #* 372

Barrass, Hugh — Cisco Systems

Comment Type **T** *Comment Status* **A** *pcspma clarification*

The section for PCS receive function is incomplete.

SuggestedRemedy

Rewrite the main section of this subclause as follows:

The PCS Receive function shall conform to the PCS Receive state diagram in Figure 55-16 including compliance with the associated state variables as specified in 55.3.17.

The PCS Receive function accepts received code-groups provided by the PMA Receive function via the parameter rx_symb_vector. The PCS receiver uses knowledge of the encoding rules to correctly align the 65BLDPC frames. The received 65BLDPC frames are decoded with error correction; the CRC 8 and framing is checked; the 64B/65B ordered sets are converted to 64 bit data blocks to obtain the signals RXD<31:0> and RXC<3:0> for transmission to the XGMII. Two XGMII data transfers are decoded from each block. Where the XGMII and PMA sublayer data rates are not synchronized to a 25:64 ratio, the receive process will insert idles, delete idles, or delete sequence ordered sets to adapt between rates

During training mode, PCS Receive checks the received framing and signals the reliable acquisition of the descrambler state by setting the parameter scr_status to OK.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.15** *P* **163** *L* **31** *Comment #* 373

Barrass, Hugh — Cisco Systems

Comment Type **TR** *Comment Status* **A** *pcspma testing*

The PCS receive specification lacks any definitive treatment of the CRC decode function.

Note alsothat the CRC8 function must be independant of the LDPC convergence for the MTTFPA analysis to be valid, therefore the use of the CRC8 parity bits for LDPC convergence must be prohibited.

SuggestedRemedy

Add a subclause under PCS receive function. The new subclause should be between Frame and Block synchronization (was 55.3.13) and PCS Descrambler (was 55.3.14).

CRC8 receive function

The PCS receive function shall check the integrity of the CRC8 parity bits definedin 55.3.7. If the parity check fails, the receiver shall assert RX_ER during the transfer of all the codeblocks contained in the 65BLDPC frame across the XGMII. On receipt of a failed CRC8 parity check, the PCS receiver shall increment the counter lf_fail_CRC8 (see 55.3.17.2.5).

The PCS receive function may decode and check the CRC8 parity bits simultaneously to resolving the LDPC error correction function. The PCS receiver shall not use the CRC8 parity check code to assist the LDPC convergence.

Also, add a corresponding counter in 55.3.17.2.5

lf_fail_CRC8
Count of the number of LDPC frames failing CRC8 parity check within the current 64 LDPC frame window.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Reconcile with the resolution of comment 655
Tie in the error indication with the correct format for XGMII.

Cl **55** *SC* **55.3.15** *P* **163** *L* **35** *Comment #* 154

David V James — JGG

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

DVJ-154
Unneeded hyphen.

SuggestedRemedy

65-bits
==>
65 bits

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.16** *P* **158** *L* **9** *Comment #* 440

Ungerboeck, Gottfried Broadcom

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

Section 55.3.16 and its subsections lack conciseness and rigor of specification. Specifically, the periodic initialization with seed values of the PN generator providing the main PN sequence { Scrn[0] } may be misinterpreted because in Figure 55 13 on page 159 the signals Scrn[x], x=0,1,..32, are not clearly associated with signal lines, but are written above the delay elements with selectable inputs. Further, the role of the auxiliary generating (=generator) polynomial g(x) is not immediately clear. The statement "The associated delays are all large and different …" is not entirely accurate. The four sequences { Syn[1] } = { Scrn[0] }, { Syn[2] } { Syn[3] } are pairwise (i.e., (0,1), (1,2), (2,3)) offset by the same unknown, presumably large delay.

SuggestedRemedy

Follow description given in slide "Unambiguous generation of PMA training sequences" offered for presentation by the commenter .

Response *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

This is a duplicate of comment 439. See comment 439 for response.

Cl **55** *SC* **55.3.16** *P* **158** *L* **9** *Comment #* 439

Ungerboeck, Gottfried Broadcom

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

Section 55.3.16 and its subsections lack conciseness and rigor of specification. Specifically, the periodic initialization with seed values of the PN generator providing the main PN sequence { Scrn[0] } may be misinterpreted because in Figure 55 13 on page 159 the signals Scrn[x], x=0,1,..32, are not clearly associated with signal lines, but are written above the delay elements with selectable inputs. Further, the role of the auxiliary generating (=generator) polynomial g(x) is not immediately clear. The statement "The associated delays are all large and different …" is not entirely accurate. The four sequences { Syn[1] } = { Scrn[0] }, { Syn[2] } { Syn[3] } are pairwise (i.e., (0,1), (1,2), (2,3)) offset by the same unknown, presumably large delay.

SuggestedRemedy

Follow description given in slide "Unambiguous generation of PMA training sequences" offered for presentation by the commenter .

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

After taking out the colors.

This does not enforce periodic initialization.

Cl **55** *SC* **55.3.16** *P* **158** *L* **9** *Comment #* 441

Ungerboeck, Gottfried Broadcom

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

Section 55.3.16 and its subsections lack conciseness and rigor of specification. Specifically, the periodic initialization with seed values of the PN generator providing the main PN sequence { Scrn[0] } may be misinterpreted because in Figure 55 13 on page 159 the signals Scrn[x], x=0,1,..32, are not clearly associated with signal lines, but are written above the delay elements with selectable inputs. Further, the role of the auxiliary generating (=generator) polynomial g(x) is not immediately clear. The statement "The associated delays are all large and different …" is not entirely accurate. The four sequences { Syn[1] } = { Scrn[0] }, { Syn[2] } { Syn[3] } are pairwise (i.e., (0,1), (1,2), (2,3)) offset by the same unknown, presumably large delay.

SuggestedRemedy

Follow description given in slide "Unambiguous generation of PMA training sequences" offered for presentation by the commenter .

Response *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

This is a duplicate of comment 439. See comment 439 for response.

Cl **55** *SC* **55.3.16** *P* **164** *L* **15** *Comment #* 157

David V James JGG

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

DVJ-157
Misleading capitalization

SuggestedRemedy

Serial Data Output
==>
Serial data output

Response *Response Status* **C**

REJECT.

See response to 126

Cl **55** *SC* **55.3.16** *P* **164** *L* **21** *Comment #* 155

David V James JGG

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

DVJ-155
Misleading capitalization

SuggestedRemedy

Scrambled Data Input
==>
Scrambled data input

Response *Response Status* **C**

REJECT.

See response to comment 126

Cl **55** *SC* **55.3.16** *P* **164** *L* **30** *Comment #* 158

David V James JGG

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

DVJ-158
Misleading capitalization

SuggestedRemedy

Serial Data Output
==>
Serial data output

Response *Response Status* **C**

REJECT.

See response to comment 126

Cl **55** *SC* **55.3.16** *P* **164** *L* **32** *Comment #* 159

David V James JGG

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

DVJ-159
Misleading capitalization

SuggestedRemedy

Master and Slave PCS Descramblers
==>
Master and slave PCS descramblers

Response *Response Status* **C**

REJECT.

See response to comment 126

Cl **55** *SC* **55.3.16** *P* **164** *L* **47** *Comment #* 393

Christopher DiMinico MC Communications

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

remove space “re initialize”

SuggestedRemedy

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.16** *P* **164** *L* **48** *Comment #* 160

David V James JGG

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

DVJ-160
Editorial.
Missing hyphen

SuggestedRemedy

==> 33-bit hexadecimal...
and use a nonbreaking hyphen.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.16** *P* **164** *L* **7** *Comment #* 156

David V James JGG

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

DVJ-156
Misleading capitalization

SuggestedRemedy

Scrambled Data Input
==>
Scrambled data input

Response *Response Status* **C**

REJECT.

See response to comment 126

Cl **55** *SC* **55.3.16** *P* **165** *L* **9** *Comment #* 594

Tellado, Jose — Teranetics

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

The (re)initialization of the PMA scrambler is not clear. If the seed[32:0] is inserted at time n=0, it will appear at Scr_n[0] at n=1, since there is a delay of T

SuggestedRemedy

Make it clear that the seed value is reset at time n=0 at the output Scr_n[0] for n=0.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to 439

Cl **55** *SC* **55.3.16.2** *P* **166** *L* **21** *Comment #* 285

Reviriego, Pedro — Agere Systems

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

When printed in paper 'IFn,' can be confused for 'Ifw'

SuggestedRemedy

Put a space between 'IFn' and ',' to avoid confusion

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.16.2** *P* **166** *L* **40** *Comment #* 286

Reviriego, Pedro — Agere Systems

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

The text 'three settings of THP and Power Backoff and ...' is not very clear

SuggestedRemedy

Change to:

'settings of THP and Power Backoff and ...'

The specific of those settings are then fully detailed in the corresponding section of the draft.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.17.2.2** *P* **167** *L* **55** *Comment #* 287

Reviriego, Pedro — Agere Systems

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

The value TRUE is not aligned with the above text.

SuggestedRemedy

Align the text

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.17.2.2** *P* **168** *L* **10** *Comment #* 655

Yagil, Ariel — Texas Instruments

Comment Type **T** *Comment Status* **A** *crc8*

Specification of valid LDPC frame is not clear (it is mentioned in the PCS introduction in 55.3.2.2)

SuggestedRemedy

Add the following sentence to the definition of lf_valid:
"LDPC frame if valid if:
a. All parity check of coded bits are satisfied.
b. CRC8 field is valid"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add the following sentence to the definition of lf_valid:
"LDPC frame is valid if:
a. All parity checks of the coded bits are satisfied.
b. CRC8 check is satisfied"

Cl **55** *SC* **55.3.17.2.4** *P* **168** *L* **36** *Comment #* 653

Yagil, Ariel — Texas Instruments

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

The DECODE function specified in this text is not consistent with the DECODE function used in Figure 55-16. In the text, the argument of this function is a vector of 256 (soft) values of rx_symb_vector. The fnction returns 50 72-bit rx_raw vector. In the Figure, the function's argument is 65-bit rx_coded vector and the function returns a single 72-bit rx_raw vector

SuggestedRemedy

Change the text according to the Figure:
"DECODE(rx_coded<64:0>)
In the PCS Receive process, this function takes as its argument 65-bit rx_coded<64:0> from the LDPC decoder and decodes the 65B-LDPC bit vector returning a vector rx_raw<71:0> which is sent to the XGMII. The DECODE function shall decode the block based on code specified in 55.3.4"

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.17.2.4** *P* **168** *L* **40** *Comment #* 255

Szczepanek, Andre — Texas Instruments

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

bad reference :
"The DECODE function shall decode the block as specified in 55.3.16".
55.3.16 is the side-stream scrambler clause.

SuggestedRemedy

"The DECODE function shall decode the block as specified in 55.3.15"

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.17.2.4** *P* **168** *L* **44** *Comment #* 654

Yagil, Ariel — Texas Instruments

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

The ENCODE function specified in this text is not consistent with the ENCODE function used in Figure 55-15. In the text, the fnction returns 256 values of tx_symb_vector. In the Figure, the function returns a 65-bit rx_coded vector

SuggestedRemedy

Change the text according to the Figure:
"ENCODE(tx_raw<71:0>)
Encodes the 72-bit vector received from the XGMII, returning 65-bit vector tx_coded. The ENCODE function shall encode the block as specified in 55.3.4."

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.17.2.4** *P* **168** *L* **52** *Comment #* 657

Yagil, Ariel — Texas Instruments

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

The term "sync header" is used instead of "data/ctrl header" in teh definitions of C,S,T & D.

SuggestedRemedy

Change the four occurrences of "sync header" to "data/ctrl header"

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.17.2.4** *P* **169** *L* **7** *Comment #* 658

Yagil, Ariel — Texas Instruments

Comment Type **T** *Comment Status* **A** *pcspma cleanup*

There are no 10GBASE-R control codes specified in Table 55-1

SuggestedRemedy

Change "10GBASE-R" to "10GBASE-T"

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.17.2.5** *P* **169** *L* **53** *Comment #* 660

Yagil, Ariel — Texas Instruments

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

The counters lf_cnt and lf_invalid_cnt are never used in the state machines (or elsewhere)

SuggestedRemedy

Eliminate these counters

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.17.2.5** *P* **169** *L* **7** *Comment #* 659

Yagil, Ariel Texas Instruments

Comment Type **T** *Comment Status* **R** *pcspma control*

It is not clear if the reserved 10GBASE-T control codes in Table 55-1 should be considered as valid or non valid

SuggestedRemedy

Add the following sentence: "The reserved 10GBASE-T control codes in Table 55-1 shall be considered as valid'

Response *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

The information is already present in the text.

Cl **55** *SC* **55.3.17.2.5** *P* **170** *L* **12** *Comment #* 661

Yagil, Ariel Texas Instruments

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

The aliases PUDI and PUDR are never used

SuggestedRemedy

Eliminate these aliases

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.18.1** *P* **170** *L* **44** *Comment #* 662

Yagil, Ariel Texas Instruments

Comment Type **T** *Comment Status* **A** *pcspma messages*

PCS_status is used only for PCS management but also as a message to the PMA (see Figures 55-18 and 55-19)

SuggestedRemedy

Add PCS_status also to the list of messages in 55.3.17.3.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.18.2** *P* **171** *L* **30** *Comment #* 664

Yagil, Ariel Texas Instruments

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

In Figure 55-14, the label near the transition between state START_TIMER and LFER_TEST_LF ("lfer_test_lf") is not a condition and does not add any information

SuggestedRemedy

change the label from "lfer_test_lf" to "UCT"

Response *Response Status* **C**

REJECT.

The condition is lfer_test_lf==TRUE, i.e. a new LDPC frame is available for testing

Cl **55** *SC* **55.3.18.2** *P* **171** *L* **6** *Comment #* 663

Yagil, Ariel Texas Instruments

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

It seems that the value of lfer_count is always identical to lfer_cnt

SuggestedRemedy

Clarify that lfer_count and lfer_cnt are identical (or clarify the difference). Consider renaming lfer_count to lfer_cnt.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change lfer_count to lfer_cnt.

Cl **55** *SC* **55.3.18.2** *P* **172** *L* *Comment #* 665

Yagil, Ariel Texas Instruments

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

Figure 55-15 describe only a portion of the PHY transmit state machine: the 64B/65B encoder (ENCODE function). It does not include functions such as the aggregation of 50 65B blocks, LDPC encode, effect of tx_mode signal etc. Note the the figure is based on 10GBASE-R spec in which (unlike 10GBASE-T) the ENCODE function is most of the functionality of the PCS transmit process

SuggestedRemedy

Either extend the state machine to cover more PCS functionality, or clarify that the the figure cover only the 64B/65B encoding

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Clarify that the figure covers only the 64B/65B encoding.

Cl **55** *SC* **55.3.18.2** *P* **173** *L* *Comment #* 666

Yagil, Ariel — Texas Instruments

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

Figure 55-16 describe only a portion of the PHY receive state machine: the 64B/65B decoder (DECODE function). It does not include functions such as the aggregation of 50 65B blocks, LDPC decode, CRC8 check etc. Note the the figure is based on 10GBASE-R spec in which (unlike 10GBASE-T) the DECODE function is most of the functionality of the PCS receive process

SuggestedRemedy

Either extend the state machine to cover more PCS functionality, or clarify that the the figure cover only the 64B/65B decoding

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Clarify that the figure covers only the 64B/65B decoding.

Cl **55** *SC* **55.3.18.3** *P* **174** *L* **5** *Comment #* 685

Law, David — 3Com

Comment Type **T** *Comment Status* **A** *pcspma testing*

The text states that 'the PCS shall transmit a continuous stream of 65B-LDPC encoded 1DSQ128 symbols to the PMA sublayer,' therefore it seems any stream of 65B-LDPC encoded 1DSQ128 symbols is acceptable and it doesn't have to bear any relation to that data being presented on the transmit path of the XGMII.

SuggestedRemedy

If this is correct then no change is require, but if not change to specify what is required to be transmitted.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The receive data presented from the PMA to the PCS is ignored, so the transmit data presented from the PCS to the PMA does not need to be related to the XGMII data.

Hence no text will be added.

Cl **55** *SC* **55.3.2** *P* **150** *L* **35** *Comment #* 132

David V James — JGG

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

DVJ-132
Callouts can be ALL CAPS or Some caps, but not both.

SuggestedRemedy

Eliminate mixture by converting ALL CAPS to lower case.

Response *Response Status* **C**

REJECT.

See response to comment 124

Cl **55** *SC* **55.3.2 Figure 55-5** *P* **150** *L* **47** *Comment #* 436

Daines, Kevin — World Wide Packets

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

Change figure by replacing ".indicate" with ".indication"

SuggestedRemedy

As per comment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #333

Cl **55** *SC* **55.3.2.2** *P* **151** *L* **19** *Comment #* 644

Yagil, Ariel — Texas Instruments

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

The sentence "...is processed by a Low Density Parity Check (LDPC) and then..." shold be changes to "...is processed by a Low Density Parity Check (LDPC) encoder and then..."

SuggestedRemedy

Change as above

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.2.2** *P* **151** *L* **19** *Comment #* 134

David V James JGG

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

DVJ-134
Be consistent with acronyms.

SuggestedRemedy

Low Density Parity Check (LDPC)
==>
low density parity check (LDPC)

Response *Response Status* **C**

REJECT.

See response to comment 126

Cl **55** *SC* **55.3.2.2** *P* **151** *L* **20** *Comment #* 133

David V James JGG

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

DVJ-133
Be consistent with acronyms.

SuggestedRemedy

DSQ (Double Square)
==>
double square (DSQ)

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.2.2** *P* **151** *L* **24** *Comment #* 645

Yagil, Ariel Texas Instruments

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

The two paragraphs starting at line 24 describe the PCS recieve function. Therefore, they belong to 55.3.15

SuggestedRemedy

Move the paragraphs to 55.3.15

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Exact change will depend on other changes being folded into Draft 2.1

Cl **55** *SC* **55.3.2.2** *P* **151** *L* **29** *Comment #* 646

Yagil, Ariel Texas Instruments

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

The sentence: "When the PCS Synchronization process is synchronized to the PMA Training 1 bit pattern on pair A every 256 PAM2 symbols which is aligned with the PCS PHY frame boundary, block_lock is asserted" is not clear

SuggestedRemedy

Replace with the following sentence: "PMA Training sequence includes 1 bit pattern on pair A every 256 PAM2 symbols, which is aligned with the PCS PHY frame boundary. When the PCS Synchronization process is synchronized to this pattern, block_lock is asserted."

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.2.2** *P* **151** *L* **59** *Comment #* 647

Yagil, Ariel Texas Instruments

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

InfoField is not only used for indicating the reciever status to the link partner, but also to make requests for remote transmitter settings.

SuggestedRemedy

Add at the end of the paragraph " and makes requests for remote transmitter settings. See 55.4.2.4"

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.4.1** *P* **152** *L* **37** *Comment #* 392

Beck, Michael Alcatel Bell n.v.

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

The Task Force seems to have chosen the name "64B/65B" for the encapsulation mode used by the 10GBASE-T PCS. This name could cause some confusion, because:
-the name "64B/65B" was used in early drafts of the 802.3ah "Ethernet in the First Mile" standard to designate the PCS now known as "64/65-octet encapsulation";
-a different bitwise coding scheme called "64B/65B" is already defined as part of the GFP-T encapsulation in ITU-T Recommendation G.7041/Y.1303.

SuggestedRemedy

Abandon the naming "64B/65B". As the name "64B/65B" is not used very often in the draft, it may be possible to paraphrase the occurrences, thus avoiding the need for a new name.

Response *Response Status* **C**

REJECT.

There is no other equally convenient replacement and this does not exist in any published 802.3 standard and memories of an early draft of EFM will fade away.

Cl **55** SC **55.3.4.1** P **152** L **46** Comment # 135

David V James JGG

Comment Type **T** *Comment Status* **R** *pcspma clarification*

DVJ-135
This bit-swap for a bit-swap definition is highly confusing.

SuggestedRemedy

from left to right as 01111000.
==>
from right-to-left as 00011110.

Response *Response Status* **C**

REJECT.

The change will not make it any clearer and the text in Draft 2.0 is consistent with the 802.3 standard.

Cl **55** SC **55.3.4.2** P **153** L **39** Comment # 350

Dawe, Piers Agilent

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

'unc' not a word

SuggestedRemedy

Change to 'uncoded'

Response *Response Status* **C**

ACCEPT.

Cl **55** SC **55.3.4.2** P **153** L **42** Comment # 593

Tellado, Jose Teranetics

Comment Type **T** *Comment Status* **A** *pcspma cleanup*

The indeces for the 512 DSQ128 should span 0 to 511

SuggestedRemedy

Change the indices 252, 253, 254 and 255 to
508, 509, 510, 511

Response *Response Status* **C**

ACCEPT.

Cl **55** SC **55.3.4.2** P **155** L Comment # 443

Wael William Diab Cisco Systems

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

Please remove any color from Figure 55-8.

SuggestedRemedy

Ensure that the figure is drawn in Frame without color.

Response *Response Status* **C**

ACCEPT.

Cl **55** SC **55.3.4.2** P **155** L **1** Comment # 266

Dove, Daniel HP ProCurve Networki

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

Funky colors are not necessarily improving the information value of this illustration.

SuggestedRemedy

Is there a better way to do this without the coloring?

Response *Response Status* **C**

ACCEPT.

Colors will be removed

Cl **55** SC **55.3.4.2** P **155** L **10** Comment # 137

David V James JGG

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

DVJ-137
Not supposed to use color in IEEE docs.

SuggestedRemedy

Change illustration to black and white. Also, eliminate cross-hatching in favor of shading.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.4.2** *P* **155** *L* **30** *Comment #* 136

David V James JGG

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

DVJ-136
Misleading capitalization

SuggestedRemedy

PCS Detailed Transmit Bit Ordering
==>
PCS detailed transmit bit ordering

Response *Response Status* **C**

REJECT.

See response to comment 126

Cl **55** *SC* **55.3.4.2** *P* **155** *L* **7** *Comment #* 352

Dawe, Piers Agilent

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

Gratuitous color - would trigger unnecessary expense if printed copies were still made, orange and blue are not distinguishable on a black-aand-white printer. Orange in diagram doesn't match orange square in key.

SuggestedRemedy

Remove the cyan and grey shading. Can you use white, light grey, dark grey and black (with white lettering) for the other shadings?

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.4.2** *P* **155** *L* **7** *Comment #* 353

Dawe, Piers Agilent

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

Scram. Not the right word, gratuitous capitals.

SuggestedRemedy

Change to 'Self-synchronous scrambler'.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.4.2 Figure 55-8** *P* **155** *L* **32** *Comment #* 437

Daines, Kevin World Wide Packets

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

I don't believe color is permitted in IEEE 802.3 standards.

SuggestedRemedy

Remove color.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.4.3** *P* **155** *L* **59** *Comment #* 351

Dawe, Piers Agilent

Comment Type **ER** *Comment Status* **A** *hex notation*

In the sentence 'Hexadecimal numbers are shown in normal hexadecimal.', 'normal' seems to be a matter of personal preference. As far as I know, this notation is C. It's not the notation I learnt as a schoolboy.

SuggestedRemedy

Preferably, change to 'Hexadecimal numbers are shown with the least significant digit on the right'; remove the several '0x's from the draft, use a combination of subscript 16 and a footnote to table 55-9 to remove confusion with decimal numbers. Or if that's too much, change this sentence to 'Hexadecimal numbers are shown prepended with '0x', and with the least significant digit on the right (see 1.2.5)'.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

We will consistently use 0x …

Cl **55** *SC* **55.3.4.4** *P* **156** *L* *Comment #* 648

Yagil, Ariel Texas Instruments

Comment Type **T** *Comment Status* **A** *pcspma cleanup*

In Figre 55-9 the term "Data/Ctrl header" should be used instead of "Data/Ctrl bit" fro consistency with the text (e.g. the first sentence of 55.3.4.3)

SuggestedRemedy

Change "bit" to "header"

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.4.4** *P* **156** *L* **19** *Comment #* 138

David V James JGG

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

DVJ-138
Misleading capitalization

SuggestedRemedy

Input Data==>
Input data

Response *Response Status* **C**

REJECT.

See response to comment 126

Cl **55** *SC* **55.3.4.4** *P* **156** *L* **20** *Comment #* 139

David V James JGG

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

DVJ-139
Misleading capitalization

SuggestedRemedy

Block Payload
==>
Block payload

Response *Response Status* **C**

REJECT.

See response to comment 126

Cl **55** *SC* **55.3.4.4** *P* **156** *L* **23** *Comment #* 141

David V James JGG

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

DVJ-141
Misleading capitalization

SuggestedRemedy

Bit Position:
==>
Bit position:

Response *Response Status* **C**

REJECT.

See response to comment 126

Cl **55** *SC* **55.3.4.4** *P* **156** *L* **24** *Comment #* 140

David V James JGG

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

DVJ-140
Misleading capitalization

SuggestedRemedy

Data Block Format:
==>
Data block format

Response *Response Status* **C**

REJECT.

See response to comment 126

Cl **55** *SC* **55.3.4.4** *P* **156** *L* **25** *Comment #* 144

David V James JGG

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

DVJ-144
Nonstandard table lines.

SuggestedRemedy

Thin on the outside.
Very-thin on the inside.

Response *Response Status* **C**

REJECT.

Format is used to provide distinction between specific sections of the table. This format has been used in IEEE Std. 802.3ae.

Cl **55** *SC* **55.3.4.4** *P* **156** *L* **26** *Comment #* 142

David V James JGG

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

DVJ-142
Misleading capitalization

SuggestedRemedy

Control Block Formats:
==>
Control block formats

Response *Response Status* **C**

REJECT.

See response to comment 126

Cl **55** *SC* **55.3.4.4** *P* **156** *L* **28** *Comment #* 145

David V James JGG

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

DVJ-145
This document uses both lower-case and upper-case hex codes. Must use only one.

SuggestedRemedy

I prefer to use upper case, as in 0x2D.
Whatever you do, add a notation clause so that this is done consistently in the future.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Will be done consistently for Clause 55 in 802.3an. Will use uppercase.

Cl **55** *SC* **55.3.4.4** *P* **156** *L* **49** *Comment #* 143

David V James JGG

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

DVJ-143
Misleading capitalization

SuggestedRemedy

64B/65B Block Formats
==>
64B/65B Block formats

Response *Response Status* **C**

REJECT.

See response to comment 126

Cl **55** *SC* **55.3.4.6** *P* **157** *L* **21** *Comment #* 284

Reviriego, Pedro Agere Systems

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

Clarify point e)

SuggestedRemedy

e) The block contains the payload of an invalid PHY frame.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Include the first 64/65B block of the next PHY frame to account for minor self-sync scrambler error propagation

Cl **55** *SC* **55.3.4.7** *P* **157** *L* **26** *Comment #* 575

Booth, Brad Intel

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

Paragraph is split across pages.

SuggestedRemedy

Change Table 55-1 anchor so it doesn't split the paragraph.

Also applies to 55.5.2.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.4.7** *P* **158** *L* **13** *Comment #* 151

David V James JGG

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

DVJ-151
Nonstandard table lines.

SuggestedRemedy

Thin on the outside.
Very-thin on the inside.

Response *Response Status* **C**

REJECT.

See response to comment 144.

Cl **55** *SC* **55.3.4.7** *P* **158** *L* **9** *Comment #* 150

David V James JGG

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

DVJ-150
Misleading capitalization

SuggestedRemedy

8B/10B Code
==>
8B/10B code

Response *Response Status* **C**

REJECT.

See response to comment 126

Cl **55** *SC* **55.3.4.7** *P* **158** *L* **9** *Comment #* 148

David V James JGG

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

DVJ-148
Misleading capitalization

SuggestedRemedy

10GBASE-T Control Code
==>
10GBASE-T control code

Response *Response Status* **C**

REJECT.

See response to comment 126

Cl **55** *SC* **55.3.4.7** *P* **158** *L* **9** *Comment #* 149

David V James JGG

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

DVJ-149
Misleading capitalization

SuggestedRemedy

10GBASE-T O Code
==>
10GBASE-T O code

Response *Response Status* **C**

REJECT.

See response to comment 126

Cl **55** *SC* **55.3.4.7** *P* **158** *L* **9** *Comment #* 147

David V James JGG

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

DVJ-147
Misleading capitalization

SuggestedRemedy

XGMII Control Code
==>
XGMII control code

Response *Response Status* **C**

REJECT.

See response to comment 126

Cl **55** *SC* **55.3.4.7** *P* **158** *L* **9** *Comment #* 146

David V James JGG

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

DVJ-146
Misleading capitalization

SuggestedRemedy

Control Character
==>
Control character

Response *Response Status* **C**

REJECT.

See response to comment 126

Cl **55** *SC* **55.3.6** *P* **159** *L* **53** *Comment #* 267

Dove, Daniel HP ProCurve Networki

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

The use of a self-synchronizing scrambler has its value, but it also allows propagation of errors.

SuggestedRemedy

Change to a stream cypher or direct me to the analysis that shows the propagation of errors is acceptable.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Will direct commenter to the analysis: plot on slide 3 in powell_1_0105.pdf.

Cl **55** *SC* **55.3.7** *P* **160** *L* **44** *Comment #* 656

Yagil, Ariel Texas Instruments

Comment Type **T** *Comment Status* **R** *aux bit*

It is not completely clear if the Aux bit participates in CRC8. The text implies that it is not. However, since since Aux bit is an uncoded bit, I believe it should participate (although the aux bit has currently no use and is a-priori known, this may change in futre drafts)

SuggestedRemedy

Change the first sentence to: "The aggregated 50 65B blocks and the Aux bit shall be used to calculate..."

Response *Response Status* **C**

REJECT.

If the Aux bit is used in the future, it will have its own protection scheme.

Cl **55** *SC* **55.3.7** *P* **160** *L* **47** *Comment #* 576

Booth, Brad — Intel

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

Insert equation number.

SuggestedRemedy

As per comment. Also applies to equations in 55.3.16 and 55.3.16.1

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.7** *P* **161** *L* **11** *Comment #* 153

David V James — JGG

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

DVJ-153
Misleading capitalization

SuggestedRemedy

CRC8 Output
==>
CRC8 output

Response *Response Status* **C**

REJECT.

See response to comment 126

Cl **55** *SC* **55.3.7** *P* **161** *L* **12** *Comment #* 152

David V James — JGG

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

DVJ-152
Misleading capitalization

SuggestedRemedy

Serial Data Input
==>
Serial data input
or
serial data input

Response *Response Status* **C**

REJECT.

See response to comment 126

Cl **55** *SC* **55.3.8** *P* **161** *L* *Comment #* 650

Yagil, Ariel — Texas Instruments

Comment Type **T** *Comment Status* **A** *pcspma clarification*

There is no text specifying exactly how the 3259 bits are divided into coded and uncoded bits. This is only implied in Figure 55-8

SuggestedRemedy

Add text or equations that specify the partitioning into coded and uncoded bits.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The text in 55.3.9, page 161, line 50-52 specifies the partition. Additional explanation can be provided

---

Cl **55** *SC* **55.3.8** *P* **161** *L* **22** *Comment #* 649

Yagil, Ariel — Texas Instruments

Comment Type **T** *Comment Status* **A** *aux bit*

Aux bit value is never specified

SuggestedRemedy

Specify to set Aux bit value to zero

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See 596.

Cl **55** *SC* **55.3.8** *P* **161** *L* **22** *Comment #* 596

Tellado, Jose — Teranetics

Comment Type **T** *Comment Status* **A** *aux bit*

Aux bit is unused

SuggestedRemedy

Set to zero

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Set to zero and ignore on receive.

Cl **55** *SC* **55.3.8** *P* **161** *L* **26** *Comment #* 365

Barrass, Hugh — Cisco Systems

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

It is a bad idea to put the references for the matrix generator in this position and in Annex 55A

Following the example of other complex annexes (such as 61B), it is better to make a normative annex with all of the matrix generator information.

Note that this comment must be taken in conjunction with the following comment to insert the information in Annex 55A.

SuggestedRemedy

Replace the following:

"The file http://www.ieee802.org/3/an/private/gen_802.3an.txt contains a representation of G. gen_802.3an.txt contains 1723 rows, one for each row of G. Each row has numbers ranging from 0 to 2047 separated by spaces. Each number represents the column index of the “1” entries in the specific row. All other entries of G are “0”. G can also be constructed from P, which is available in PDF format online at https://www.ieee802.org/3/an/private/???.pdf. Annex 55A is an informative annex that describes how G was obtained from a sparse parity check matrix."

With:

"The definition and origin of G and P are described in Annex 55A."

Remove the editor's note on line 34

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.3.9** *P* **161** *L* *Comment #* 387

Juan M. Jover — Phyten Technologies, I

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

I disagree with the appropriatness of the 128 DSQ line code for this problem.

Issues:

a) Total noise budget is too low.

b) Unprotected bits by the LDPC code present problems with noise events as described in Rao_1_1104.pdf, slide 23.

SuggestedRemedy

Change line code.

Response *Response Status* **U**

REJECT.

This has previously been discussed multiple times and the task force continues to support the DSQ128 line code.

Passes by voice vote.

Cl **55** *SC* **55.3.9** *P* **162** *L* **4** *Comment #* 390

Beck, Michael — Alcatel Bell n.v.

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

Most of this page consists of bit mapping rules, formatted as text paragraphs. Format these rules either as equations (indented paragraphs, variables in italics, equation number flush-right) or as code (fixed-width font), whichever is deemed appropriate.

SuggestedRemedy

Format the rules either as equations (indented paragraphs, variables in italics, equation number flush-right) or as code (fixed-width font), whichever is deemed appropriate.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Cl **55** *SC* **55.4** *P* **3** *L* **58** *Comment #* 322

Dawe, Piers — Agilent

Comment Type **TR** *Comment Status* **A** *pcspma clarification*

The draft seems to say that a Tomlinson-Harashima precoder is used but I didn't find any information or specification for it in the draft.

SuggestedRemedy

Add the necessary information, specifications and/or references.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The THP operation is described in 55.4.3.1, equation 55-3 and the text on lines 15-17.

A definition of the THP acronym will be included in clause 1.

Cl **55** *SC* **55.4.1 Figure 55-17** *P* **174** *L* **56** *Comment #* 438

Daines, Kevin — World Wide Packets

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

Change figure by replacing ".indicate" with ".indication"

SuggestedRemedy

As per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #333

Cl **55** *SC* **55.4.2.2** *P* **175** *L* **42** *Comment #* 667

Yagil, Ariel — Texas Instruments

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

The sentence: "If loop timing is not implemented, the SLAVE PHY clocking is identical to the MASTER PHY clocking." is not clear.

SuggestedRemedy

Replace sentence with: If loop timing is not implemented, the SLAVE PHY transmit clocking is identical to the MASTER PHY transmit clocking.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Exact change will depend on other changes being folded into Draft 2.1

Cl **55** *SC* **55.4.2.3** *P* *L* *Comment #* 252

Szczepanek, Andre — Texas Instruments

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

55.7.2.6 provides a specification for the maximum skew between any two duplex channels that is equivalent to 8UI. Where is this inter-lane skew removed ?. There is no mention of channel alignment in either the PMA or PCS sections of the document.
In XAUI this is a PCS function, however the PCS-PMA interface implies deskewed data. So by implication it is a PMA function. However the PMA receive section does not mention deskew or channel alignment as one of its functions, or how it should be achieved.
I have classed this "editorial" as 1000Base-T does not indicate where channel alignment occurs either.

SuggestedRemedy

Add the requirement to align channels to the general requirements text in 55.4.2.3

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add text to 55.4.2.3 saying
"The delay skew is removed by computing the relative received delay of the four known transmit patterns described in 55.3.16"

Cl **55** *SC* **55.4.2.3** *P* **175** *L* **57** *Comment #* 668

Yagil, Ariel — Texas Instruments

Comment Type **T** *Comment Status* **A** *pcspma clarification*

The meaning of "equivalent LFER" in the sentence "The PMA shall translate the signals received on pairs BI_DA, BI_DB, BI_DC, and BI_DB into the PMA_UNITDATA.indicate parameter rx_symb_vector with equivalent LFER of less than 3.2*10-9 over a channel meeting the requirements of 55.7." is not clear. Note that the above LFER is achieved after LDPC decoding, which is done in the PCS.

SuggestedRemedy

Change the sentence to: "The PMA shall translate the signals received on pairs BI_DA, BI_DB, BI_DC, and BI_DB into the PMA_UNITDATA.indicate parameter rx_symb_vector. The quality of these symbols shall allow LFER of less than 3.2*10-9 after LDPC decoding, over a channel meeting the requirements of 55.7."

Response *Response Status* **C**

ACCEPT.

Cl **55** SC **55.4.2.3** P **176** L **9** Comment # 403

Barrass, Hugh — Cisco Systems

Comment Type **T** *Comment Status* **A** *pair swaps*

The objectives in 55.1.4 include:

Ability to automatically detect and correct for pair swapping and unexpected crossover connections.
Ability to automatically detect and correct for incorrect polarity in the connections.
Ability to automatically correct for differential delay variations across the wire-pairs.

These should be captured in this section.

SuggestedRemedy

Add the following paragraph:

The receiver uses the sequence of symbols during the training sequence to detect and correc for pair swaps and unexpected crossovers. The receiver pairs BI_DA, BI_DB, BI_DC and BI_DD might be connected to any arbitrary manner to the corresponding transmit pairs. The receiver also detects and corrects for polarity mismatches on any pairs and corrects for differential delay variations across the wire-pairs.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The receiver uses the sequence of symbols during the training sequence to detect and correc for pair swaps and crossovers. The receiver pairs BI_DA, BI_DB, BI_DC and BI_DD might be connected to any arbitrary manner to the corresponding transmit pairs. The receiver also detects and corrects for polarity mismatches on any pairs and corrects for differential delay variations across the wire-pairs.

Also remove "unexpected" in 55.1.4

Cl **55** SC **55.4.2.4** P **176** L Comment # 669

Yagil, Ariel — Texas Instruments

Comment Type **T** *Comment Status* **A** *info field*

Specification of the usage and fields of the InfoField is not clear. For example, it is not clear if in the Message Field more than1 bit is allowed to be 1. Relations with Figure 55-18 are not. For example, are PBOintM/S and THPinitS/M equal to the requested PBO and THP by the remote device?

SuggestedRemedy

Clarify the specification of the fields of InfoField and their relation to Figure 55-18

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

With modifications to keep it consistent with changes due to other approved comments.

Cl **55** SC **55.4.2.4** P **176** L **31** Comment # 472

McClellan, Brett — Solarflare

Comment Type **T** *Comment Status* **A** *info field*

In the current Info Field definition there is no defined way to denote that the current values for "Next transmitter setting" and "Requested remote transmitter setting" are not yet valid.

SuggestedRemedy

Change the unused bits (bit 7) in the those bytes to denote a "Valid" setting.

Response *Response Status* **C**

ACCEPT.

Cl **55** SC **55.4.2.4** P **176** L **46** Comment # 468

McClellan, Brett — Solarflare

Comment Type **T** *Comment Status* **A** *info field*

The CRC16 described in this section does not have an implementation diagram.
To avoid confusion, it should also be noted that the bits in the diagram are transmitted MSB first.

SuggestedRemedy

Add a CRC implementation diagram similar to Fig 55-11.
Additionally, there should be a note: "The CRC16 bits shown in Fig 55-xx are transmitted MSE first."
"After 10 octets have been processed, the switch is disconnected (setting CRCout) and the 16 values stored in the delay elements are transmitted in the order illustrated, first S15, followed by S14, and so on until the final value S0.

Response *Response Status* **C**

ACCEPT.

Cl **55** SC **55.4.2.4** P **176** L **51** Comment # 688

Powell, Scott — Broadcom

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

Power backoff levels in text do not match power backoff levels in table 55 2.

SuggestedRemedy

Either change text to match table or just reference table 55 2 for levels.

Response *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **55** *SC* **55.4.2.4** *P* **181** *L* **30** *Comment #* 595

Tellado, Jose — Teranetics

Comment Type **TR** *Comment Status* **R** *phy control*

The PHY control state diagram, Figure 55-18 does not allow the Master to select the THP_s setting that is best for the Master rx design and noise/xtalk. Moreover during 'PMA training Init S' the Master rx does not know what THPinitS the Slave has selected.

SuggestedRemedy

Allow the Master to select the THP_s with IF_M (i.e. THP_s <= THP IF_M)
Since the Master will pick the desired THP_s, during PMA Training Init S the Slave should use the same THP_incr the Master is using to symplify the Master rx Training Init training.

Response *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

Because of programmable THP decision see comment 473

Cl **55** *SC* **55.4.3.1** *P* **172** *L* **12** *Comment #* 14002

Reviriego, Pedro — Agere Systems

Comment Type **TR** *Comment Status* **A** *thp programmable*

The draft specifies a fixed set of both IIR and FIR THP responses. It has been shown by a number of contributors that fixing the precoder response results in a significant perfomance loss for some channel configurations.

It also benefits some specific receiver configurations, which is unfair.

We propose to maintain the present fixed coefficients scheme and, in addition, to include the option to program the precoder from the receiver.

The receiver could use alternative pre-calculated coefficients or it could dynamically calculate the coefficients.

SuggestedRemedy

Adopt a programmable solution as per presentation Kota_1_0305.pdf

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Resubmitted from D1.4 by Editor.

See comment #473

Cl **55** *SC* **55.4.3.1** *P* **172** *L* **15** *Comment #* 14004

Sailesh Rao — Phyten Technologies, I

Comment Type **TR** *Comment Status* **R** *thp bypass*

There is no need for a THP Bypass mode during normal operation in the standard.
1. The THP Bypass mode is not needed for noise margin purposes for 0m operation.
2. If a THP Bypass mode is made available during normal operation, then implementers who are building PHYs based on just the THP Bypass mode will gain a competitive advantage if the specified THP coefficients are all unusable. At present, in Draft D1.3, the THP filters specified are all unusable if 1000BASE-T Alien FEXT/NEXT are the dominant noise sources in the cable plant.

SuggestedRemedy

Delete the THP Bypass mode and free up the address space for useful purposes.

Response *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

See response to 473 that approves a programmable precode.

This comment was resubmitted from D1.4 by the editor.

Cl **55** *SC* **55.4.3.1** *P* **172** *L* **39** *Comment #* 14003

Vareljian, Albert — KeyEye Communicatio

Comment Type **T** *Comment Status* **A** *thp refine D1.4*

Coefficient entries in the THP sets A(1), A(2) and A(3) represent 7-bit values, whereas the 802.3an TF adopted requirement is 8-bit.

SuggestedRemedy

Replace coefficient entries in the THP sets A(1), A(2) and A(3) with 8-bit representation as follows:

A(1) = [1.78125 1.390625 0.515625 -0.203125 -0.65625 -0.875 -0.90625 -0.796875 0.609375 -0.359375 -0.140625 -0.03125 0 0 0 0]

A(2) = [1.265625 0.375 -0.4375 -0.78125 -0.765625 -0.5 -0.140625 0 0 0 0 0 0 0 0 0]

A(3) = [0.59375 -0.375 -0.625 -0.515625 -0.25 0.09375 0.078125 0 0 0 0 0 0 0 0 0]

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.4.3.1** *P* **178** *L* *Comment #* 671

Yagil, Ariel — Texas Instruments

Comment Type **TR** *Comment Status* **A** *thp programmable*

I believe that a mode with THP coefficients programmed by the remote device should be mandatory for the following reasons:
1. In my opinion, the coverage of the measured channels used by the TF is not sufficient to guarantee that any complaint channel will provide sufficient SNR margin with a set of 3 fixed THP coefficients.
2. The high tolerance of the transmit PSD (>6dB amplitude tolerance, no phase requirements) also contributes to the uncertainty of the overall channel
3. Programmable THP would reduce the risk. It would also allow more freedom in the design of the reciever analog front end.

SuggestedRemedy

Add programmable THP mode

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #473

Cl **55** *SC* **55.4.3.1** *P* **178** *L* **1** *Comment #* 473

McClellan, Brett — Solarflare

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

Previous contributions have shown that programmable THP coefficients provide SNR improvements over the fixed THP sets
We are proposing mandatory support for a programmable 16-tap THP.
This will require an exchange of 16 coefficients per cable pair with up to 8-bits per coefficient.
See presentation.

SuggestedRemedy

Change text to reflect the programmable THP proposal.

Response *Response Status* **C**

ACCEPT.

Both proposals were reviewed. In a straw poll mcclellan_1_0505.pdf had higher support.

Motion to adopt mcclellan_1_0505.pdf as the programmable THP solution
Moved by: Pedro Reivirgo
Seconded by: George Zimmerman
Yes: 28
No: 4
Abstain: 13

Motion passes.

Cl **55** *SC* **55.4.3.1** *P* **178** *L* **20** *Comment #* 452

Healey, Adam — Agere Systems

Comment Type **TR** *Comment Status* **A** *thp programmable*

The THP as currently specified will result in major interoperability problems that will jeopardize the success of 10GBaseT.

- First, two alternative precoders structures IIR or FIR are supported by the standard thus requiring for each PHY interoperability with a remote PHY that implements IIR or FIR.

- The proposed coefficients for IIR include a zero at Fs/2 to support TIS. But the FIR set does not include that zero. This will lead to interoperability issues for PHYs that implement TIS.

- It has been shown by a number of contributors that fixing the precoder response results in a significant perfomance loss for some channel configurations. It also benefits some specific receiver configurations, which is unfair.

SuggestedRemedy

Remove the IIR precoders from the standard.

Adopt programmable THP during startup using the Info Fields as per kota_1_0305.pdf

The coefficients for the FIR will be exchanged during startup using the Info Fields. The PHY Control state machine will also be changed so that independent settings for THP are allowed at both ends of the link.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #473

This response does not address the IIR part of the suggested remedy. For the rest see comment #473

Cl **55** *SC* **55.4.3.1** *P* **178** *L* **20** *Comment #* 701

Powell, Scott — Broadcom

Comment Type **TR** *Comment Status* **A** *thp programmable*

Loosely constrained transmit PSD mask makes predetermined fixed set of precoding functions impractical.

SuggestedRemedy

Add requirement for transmitters to support programmable precoder with FIR precoding polynomial. See ungerboeck_1_0505.pdf for details.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See comment #473

Cl **55** *SC* **55.4.3.1** *P* **178** *L* **2060** *Comment #* 298

Reviriego, Pedro — Agere Systems

Comment Type **T** *Comment Status* **A** *thp programmable*

The THP as currently specified will result in major interoperability problems that will jeopardize the success of 10GBaseT.

- First, two alternative precoders structures IIR or FIR are supported by the standard thus requiring for each PHY interoperability with a remote PHY that implements IIR or FIR.
- The proposed coefficients for IIR include a zero at Fs/2 to support TIS. But the FIR set does not include that zero. This will lead to interoperability issues for PHYs that implement TIS.
- It has been shown by a number of contributors that fixing the precoder response results in a significant perfomance loss for some channel configurations. It also benefits some specific receiver configurations, which is unfair.

SuggestedRemedy

Remove the IIR precoders from the standard.

Adopt programmable THP during startup using the Info Fields as per kota_1_0305.pdf

The coefficients for the FIR will be exchanged during startup using the Info Fields.
The PHY Control state machine will also be changed so that independent settings for THP are allowed at both ends of the link.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #473

This response does not cover the IIR part of the suggested remedy. For the rest, see response to comment 473

Cl **55** *SC* **55.4.3.1** *P* **178** *L* **20-60** *Comment #* 385

Robert Brink — Agere Systems

Comment Type **TR** *Comment Status* **A** *thp programmable*

The THP as currently specified will result in major interoperability problems that will jeopardize the success of 10GBaseT.

- First, two alternative precoders structures IIR or FIR are supported by the standard thus requiring for each PHY interoperability with a remote PHY that implements IIR or FIR.
- The proposed coefficients for IIR include a zero at Fs/2 to support TIS. But the FIR set does not include that zero. This will lead to interoperability issues for PHYs that implement TIS.
- It has been shown by a number of contributors that fixing the precoder response results in a significant perfomance loss for some channel configurations. It also benefits some specific receiver configurations, which is unfair.

SuggestedRemedy

Remove the IIR precoders from the standard.

Adopt programmable THP during startup using the Info Fields as per kota_1_0305.pdf

The coefficients for the FIR will be exchanged during startup using the Info Fields.
The PHY Control state machine will also be changed so that independent settings for THP are allowed at both ends of the link.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #473

This response does not cover the IIR part of the suggested remedy. For the rest, see response to comment 473

Cl **55** *SC* **55.4.3.1** *P* **178** *L* **24** *Comment #* 384

Sailesh Rao — Phyten Technologies, I

Comment Type **TR** *Comment Status* **R** *thp bypass*

There is no need for a THP Bypass mode during normal operation in the standard.
1. The THP Bypass mode is not needed for noise margin purposes for 0m operation.
2. If a THP Bypass mode is made available during normal operation, then implementers who are building PHYs based on just the THP Bypass mode will gain a competitive advantage if the specified THP coefficients are all unusable. At present, in Draft D2.0, the THP filters specified are all unusable if 1000BASE-T Alien FEXT/NEXT are the dominant noise sources in the cable plant.

SuggestedRemedy

Delete the THP Bypass mode and free up the address space for useful purposes.

Response *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

See response to 473 that approves a programmable precode.

Cl **55** *SC* **55.4.3.1** *P* **178** *L* **58** *Comment #* 300

Puneet, Agarwal — Braodcom

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

It is not clear why you need the power backoff. What is the goal and the expected performance? What are we trying to prevent here: interference with other cables, power saving, something else??

SuggestedRemedy

Please state the problem being addressed, how this map into the need for power backoff and how well does the proposed method satisfies these requirements. Essentially specify the objective(s), the requirements derived from these objects and how the proposed backoff scheme satisfies these requirements

Response *Response Status* **C**

REJECT.

Power backoff was discussed in task force and there are presentations:
zimmerman_2_0305.pdf

also look at presentations in prior task force meeting for more information.

Cl **55** *SC* **55.4.3.1** *P* **178** *L* **59** *Comment #* 542

Zimmerman, George — Solarflare Communicati

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

Text does not capture the full range of required supported transmit powers agreed to earlier. (0 to 14 dB)

SuggestedRemedy

Insert "The transmitter shall be capable of up to at least 14 dB of power backoff in 2 dB steps' in line 1 page 179, after "as shown in Table 55-2".

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.4.3.1** *P* **179** *L* **1** *Comment #* 674

Telang, Vivek — Broadcom Corp.

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

Much of the received signal power will be comprised of return loss from the local transmitter. Does the "received signal power" of table 55 2 assume the echo, NEXT, and FEXT have beer subtracted prior to measuring the level ? If so, does this imply some sort of blind algorithm is necessary to perform the cancellation since power backoff is set prior to receiving valid data ?

SuggestedRemedy

Replace "received power" with a more appropriate metric for power backoff, such as decision point SNR, or simply leave it as a function of estimated cable length.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #357

Cl **55** *SC* **55.4.3.1** *P* **179** *L* **1** *Comment #* 689

Powell, Scott — Broadcom

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

Sentence unclear: "The estimation of the received signal power (dBm) at the MDI, must be computed assuming the remote TX is at nominal power." What is meant by the "nominal power" of the remote TX when it will be variable according to the same power backoff schedule referenced to the "nominal power" of the local TX ?

SuggestedRemedy

Define "nominal power" and clarify how TX and RX power levels are resolved.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Nominal power should be defined clearly. Nominal power refers to power without any PBO and is specified in C55.5.3.4 ("with no PBO, the tx power shall be in the range 3.2dBm and 5.2dBm")

Editor to add some descriptive text without shalls to clarify.

Cl **55** *SC* **55.4.3.1** *P* **179** *L* **1** *Comment #* 357

Ali, Ghiasi — Broadcom

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

Power backoff scheme is unclear. It appears that the power of the remote TX can vary depending on it's own received power which is the function of the local TX. However the power of the local TX can vary depending on it's own RX power which is a function of the remote TX

SuggestedRemedy

It is not clear how one uses the received power can used to deterministically set power backoff levels

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Add text that states that the received signal power at MDI should be the estimate of received power from remote TX (after accounting for local TX power).

Cl **55** *SC* **55.4.3.1** *P* **179** *L* **13** *Comment #* 541

Zimmerman, George — Solarflare Communicati

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

Two editorial/transcription errors in power backoff table:
line length (m) (reference) column was not updated per the agreement at the last meeting - see zimmerman_2_0305.pdf. received MDI power numbers are unchanged.

Also, power backoff column should be positive values, not negative

SuggestedRemedy

"Length (m) (Reference)" Column should read as in zimmerman_2_0305.pdf, slide 8, as agreed:
0-25
25-35
45-55
55-65
65-75
75-85
>85

"Minimum Power Backoff (dB)" Column should read:
10
10
8
6
4
2
0
0

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.4.3.1** *P* **179** *L* **8** *Comment #* 694

Powell, Scott — Broadcom

Comment Type **TR** *Comment Status* **R** *powerbackoff EMI*

(Resubmission of comment 23 from last meeting deferred by task force) Power backoff schedule designed without consideration of susceptibility to external interference. Accepted resolution to comment 23 last meeting: "The power backoff levels chosen are subject to further study for EMI susceptibility."

SuggestedRemedy

Sufficient analysis/data should be presented to the task force to permit the addition of the following statement in the standard "back off levels are chosen to allow sufficient margin to comply with common local and national codes for EMI susceptibility."

Response *Response Status* **C**

REJECT.

EMI data and analysis is welcome. Editor has already included editor's note.

Provide add a more specific remedy.

Cl **55** *SC* **55.4.3.1** *P* **179** *L* **9** *Comment #* 162

David V James — JGG

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

DVJ-162
Misleading capitalization

SuggestedRemedy

Minimum Power Backoff
==>
Minimum power backoff

Response *Response Status* **C**

REJECT.

See response to comment 126

Cl **55** *SC* **55.4.3.1** *P* **179** *L* **9** *Comment #* 161

David V James — JGG

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

DVJ-161
Misleading capitalization

SuggestedRemedy

Length(m) (Reference)
==>
Length(m) (reference)

Response *Response Status* **C**

REJECT.

See response to comment 126

Cl **55** *SC* **55.4.4** *P* **179** *L* **49** *Comment #* 268

Dove, Daniel — HP ProCurve Networki

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

#Crossref# appears in the text

SuggestedRemedy

Fix it.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This clean up will be done later. The #Crossref# is there explicitly to enable IEEE editorial staff to spot it and fix it.

Cl **55** *SC* **55.4.4** *P* **179** *L* **50** *Comment #* 404

Barrass, Hugh — Cisco Systems

Comment Type **T** *Comment Status* **A** *pair swaps*

This clause is incomplete according to the objectives in 55.1.4

SuggestedRemedy

Append to the final sentence "noting that the function is mandatory"

Add a second paragraph:

Having established MDI/MDI-X configuration, the receiver shall detect and correct for pair swaps; unexpected crossovers and polarity swaps. The receiver pairs BI_DA, BI_DB, BI_DC and BI_DD might be connected to any arbitrary manner to the corresponding transmit pairs with arbitrary polarity. The receiver shall correct for differential delay variations of up to 50nS across the wire-pairs.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Append to the final sentence "noting that the function is mandatory"

Add a second paragraph:

Having established MDI/MDI-X configuration, the receiver shall detect and correct for pair swaps; crossovers and polarity swaps. The receiver pairs BI_DA, BI_DB, BI_DC and BI_DD might be connected in any arbitrary manner to the corresponding transmit pairs with arbitrary polarity. The receiver shall correct for differential delay variations of up to 50nS across the wire-pairs.

Check if any of the shalls are covered in other places and remove redundant shalls introduced by this comment.

Cl **55** *SC* **55.4.5.1** *P* **180** *L* **8** *Comment #* 698

Powell, Scott — Broadcom

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

Values for power backoff are not consistent with table 55 2.

SuggestedRemedy

Reference table 55 2 rather than list values.

Response *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **55** *SC* **55.4.5.1** *P* **181** *L* *Comment #* 670

Yagil, Ariel — Texas Instruments

Comment Type **T** *Comment Status* **A** *phy control*

Figure 55-18 is not clear. For example:
1. The variable THPm and THPs are not defined
2. The values PBO_incr, THP_incr, PBOinit, PBOinitS, THPinitS, PBOinitM and THPinitM are not defined
3. It is not clear what happens if the MASTER does not recieve IFs when in PMA Training Init M state. In this case there is no value for transition_count, and the device is stuck in this state
4. The text to the right of PMA Training Init M state is not clear
5. Failure of PCS status it seems that startup is not reinitiated when pcs_status or scr_status become not ok.

SuggestedRemedy

Clarify the state diagram

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See responses 469, 470

Cl **55** *SC* **55.4.5.2** *P* **180** *L* **45** *Comment #* 699

Powell, Scott — Broadcom

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

PBO values in text on line 45 and in figure 55 18 do not coincide with table 55 2.

SuggestedRemedy

Reference PBO variable value (ie: 1 to 8) rather than actual dB backoff level.

Response *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **55** *SC* **55.4.5.2** *P* **180** *L* **46** *Comment #* 469

McClellan, Brett Solarflare

Comment Type **T** *Comment Status* **A** *phy control*

In the PMA Training Init M state, the master must transition to the next PBO setting even if the slave responds with a training pattern but the master has not yet decoded the IF_s. I propose that the "maxincr_timer" be changed such that it does not timeout when the master detects a response (training pattern) from the slave.

SuggestedRemedy

Change text to:
The timer shall not expire while PBO = -6 or when the master has detected a training pattern transmitted by the slave.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add the following text:

or when the master has detected a training pattern transmitted by the slave.

Cl **55** *SC* **55.4.6** *P* **181** *L* **1** *Comment #* 470

McClellan, Brett Solarflare

Comment Type **T** *Comment Status* **A** *phy control*

In the PMA Training Init M & S states, both the master and slave are waiting for a transition announcement from the other device before going to the PMA Training Update M & S states. Furthermore, "transition_count" has no defined min/max values. In the worst case, one device can announce a transition change with a counter value of 0.
I propose that the master initiates the transition count with "trans_to_Training_Update" flag and a minimum counter value of 2^9 (10ms) and maximum of 2^12 - 1, and that the slave responds prior to the counter reaching 2^64 (1ms) with the same flag and a count value matching the master. Then both PHY's will transition simultaneously to PMA Training Update.

SuggestedRemedy

Add text to the "transition_count" definition on page 180.
"The master initiates the transition count with "trans_to_Training_Update" flag and a minimum counter value of 2^9 (10ms) and maximum of 2^12 - 1.
The slave responds prior to the counter reaching 2^64 (1ms) with the same flag and a count value matching the master. Then both PHY's will transition simultaneously to PMA Training Update.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

With 2^64 replaced with 2^6

Cl **55** *SC* **55.4.6.1** *P* **181** *L* **1** *Comment #* 700

Powell, Scott Broadcom

Comment Type **TR** *Comment Status* **A** *phy control*

Further definition required for an interoperable start-up procedure.

SuggestedRemedy

Further definition has been submitted in a supporting presentation (powell_1_0505.pdf).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Current start-up is incomplete: powell_1_0505.pdf and mcclelan_1_0505.pdf must be considered to enhance the phy control state machine and description

Cl **55** *SC* **55.4.6.1** *P* **181** *L* **25** *Comment #* 471

McClellan, Brett Solarflare

Comment Type **T** *Comment Status* **A** *phy control*

According to the current state machine in "PMA Training Init S", the master may end up transmitting with PBO = -6 for a long line, but the slave is allowed to respond with any PBO setting (including PBO=-14).This would require the master to train and reliably decode the Info Fields from the slave in the presence of a 8dB larger Echo and NEXT vs the far end signal. There needs to be a limitation on the PBO setting used by the slave at this point.
I propose that the slave respond with the exact same PBO used by the master (PBO_m).
The master and slave may both request an adjustment to the PBO settings in the transition to "PMA Training Update".

Additionally, at this same point the slave may choose to respond to PBO setting from the master that does not have sufficient margin for both the master and slave to reliably train and decode the Info Fields.

SuggestedRemedy

Change text in "PMA Training Init S" to:
"PBO_s <= PBO_m"

Add an informative note that the slave should respond to a PBO setting from the master that provides sufficient margin for reliable decoding Info Field for both the master and slave.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accept suggested remedy with naming change where you include PBO_incr and THP_incr under a common TX_incr

Cl **55** *SC* **55.4.6.1** *P* **181** *L* **6** *Comment #* 453

Healey, Adam — Agere Systems

Comment Type **TR** *Comment Status* **A** *thp programmable*

The Phy Control in figure 55-18 assumes:

- Fix THP precoders
- Same THP settings for both the local and the remote PHY

Fixing the precoders has serious drawback as stated in a separate comment.

As the noise enviroment can be different at both ends of the link and so can be the PHYs and therefore the receivers using the same settings at both ends can result in significant performance loss.

SuggestedRemedy

Adopt programmable THP as per kota_1_0305.pdf

This includes a change in the PHY Control state machine so that independent settings for THP are allowed at both ends of the link.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #473

Cl **55** *SC* **55.4.6.1** *P* **181** *L* **6** *Comment #* 299

Reviriego, Pedro — Agere Systems

Comment Type **T** *Comment Status* **A** *thp programmable*

The Phy control in figure 55-18 assumes:

- Fix THP precoders
- Same THP settings for both the local and the remote PHY

Fixing the precoders has serious drawback as stated in a previous comment

As the noise enviroment can be different at both ends of the link and so can be the PHYs and therefore the receivers using the same settings at both ends can result in significant performance loss.

SuggestedRemedy

Adopt programmable THP as per kota_1_0305.pdf

This includes a change in the PHY Control state machine so that independent settings for THP are allowed at both ends of the link.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #473

Cl **55** *SC* **55.4.6.1** *P* **181** *L* **6-60** *Comment #* 386

Robert Brink — Agere Systems

Comment Type **TR** *Comment Status* **A** *thp programmable*

The Phy control in figure 55-18 assumes:

- Fix THP precoders
- Same THP settings for both the local and the remote PHY

Fixing the precoders has serious drawback as stated in a previous comment

As the noise enviroment can be different at both ends of the link and so can be the PHYs and therefore the receivers using the same settings at both ends can result in significant performance loss.

SuggestedRemedy

Adopt programmable THP as per kota_1_0305.pdf

This includes a change in the PHY Control state machine so that independent settings for THP are allowed at both ends of the link.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #473

Cl **55** *SC* **55.4.6.2** *P* **182** *L* **10** *Comment #* 163

David V James — JGG

Comment Type **T** *Comment Status* **A** *statemachine notation*

DVJ-163
State machines in the base document sometimes use underscores, sometimes not.

SuggestedRemedy

Use underscores in the state names, so that they can be more easily parsed when used elsewhere.
Do this everywhere.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Will do this in Clause 55.

Cl **55** *SC* **55.4.6.2** *P* **183** *L* **1** *Comment #* 577

Booth, Brad Intel

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

Remove empty pages.

SuggestedRemedy

As per comment.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.4.6.2** *P* **183** *L* **1** *Comment #* 335

Dawe, Piers Agilent

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

Two blank pages

SuggestedRemedy

Remove them

Response *Response Status* **C**

ACCEPT.

This is an artifact of editing and will be cleaned up in the end.

Cl **55** *SC* **55.5** *P* **175-194** *L* *Comment #* 288

Reviriego, Pedro Agere Systems

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

The header for this section is Draft 1.4

SuggestedRemedy

change test to 'Draft 2.0'

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Will change to Draft 2.1

Cl **55** *SC* **55.5.2** *P* **185** *L* **26** *Comment #* 396

Christopher DiMinico MC Communications

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

The note is not in context as it precedes the usage of Fs. Avoid introducing a subclause with a note.

SuggestedRemedy

Delete Note: Fs equals 800 MHz ± 50ppm. Later in the text, when a specific tolerance on the symbol rate is not specified, it is assumed to be this.

Change: From:When test mode 4 is enabled, the PHY shall transmit, with the THP turned off, transmitted symbols, timed from an Fs clock in the MASTER timing mode, defined by the bits 7.9.12:10 and Table 55–4.

To: When test mode 4 is enabled, the PHY shall transmit, with the THP turned off, transmitted symbols, timed from a transmit clock (as specified in 55.5.3.5) in the MASTER timing mode, defined by the bits 7.9.12:10 and Table 55–4.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.5.2** *P* **186** *L* **23** *Comment #* 489

Chris, Pagnanelli Solarflare Communicati

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

In Table 55-3, use of the word "mandatory" in the description of test mode 7 may be misinterpreted as meaning only test mode 7 is mandatory.

SuggestedRemedy

Delete the word "mandatory" from the text describing test mode 7 in Table 55-3 (table row 9, table column 4).

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.5.2** *P* **186** *L* **27** *Comment #* 490

Chris, Pagnanelli — Solarflare Communicati

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

The description of test mode 1 incorrectly states that the PHY shall transmit the PMA training pattern from all four transmitters. The SLAVE jitter test requires that, in test mode 1, the PHY transmit the PMA training pattern on transmitters A, B, and C, and transmit silence on pair D (see subclause 55.5.3.3).

Also, in the description of test mode 1, identifying the PMA training pattern as "PRBS 33" may be misinterpreted as meaning a training pattern different from the training pattern defined in subclause 55.3.16.2 with respect to the Sync Bit being on or off.

SuggestedRemedy

Change the description of test mode 1 to read: "When test mode 1 is enabled, the PHY shall transmit the PMA training pattern, as defined in clause 55.3.16.2, continually on pairs A, B, and C. The PHY shall transmit silence on pair D."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

As per response to comment 540, it is no longer necessary to transmit silence on pair D.

Cl **55** *SC* **55.5.2** *P* **186** *L* **27** *Comment #* 540

Zimmerman, George — Solarflare Communicati

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

It is unclear what signal a SLAVE PHY in test mode 3 is loop timing from, and, the text states that test mode 1 puts signal on all 4 pairs, in conflict with figure 55-22.

SuggestedRemedy

Clarify figure 55-22 to include deletion of signal on pair D, (preferred) or redefine test mode 1 on line 28 to indicate that a PMA shall transmit only on pairs A, B, and C.

Specifically call out that a SLAVE PHY in test mode 3 is used with a MASTER in test mode 1. Reference figure 55-22 here.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Follow suggestion marked (preferred) in suggested remedy which is " Clarify figure 55-22 …"

Cl **55** *SC* **55.5.2** *P* **186** *L* **6** *Comment #* 464

McClellan, Brett — Solarflare

Comment Type **E** *Comment Status* **A** *pmaelec - register*

Typo: 1.132.9.13 should be 1.132.13

SuggestedRemedy

Change text to:
1.132.13

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.5.2** *P* **186** *L* **9** *Comment #* 164

David V James — JGG

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

DVJ-164
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
1.132.15m 1.132.14, 1.132..13

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 124

Cl **55** *SC* **55.5.2** *P* **187** *L* **25** *Comment #* 491

Chris, Pagnanelli — Solarflare Communicati

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

The description of the peak to peak levels does not specify the relative amplitudes of the two sine waves generated for the dual tone transmitter linearity test.

SuggestedRemedy

Change the text to read: "The peak to peak levels used in this test, for both single and dual frequency tones, shall correspond to the +/- 16 symbol levels. For dual frequency tones, the relative amplitudes of each tone shall be equal."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the text to read: "The peak to peak levels used in this test, for both single and dual frequency tones, shall correspond to the +/- 16 symbol levels. For dual frequency tones, the relative amplitudes of each tone shall be within 0.5dB of each other."

Cl **55** *SC* **55.5.2** *P* **187** *L* **3** *Comment #* 526

Zimmerman, George Solarflare Communicati

Comment Type **E** *Comment Status* **A** *pmaelec - register*

Typo: the register referenced is 7.9 whereas it should be 1.132

SuggestedRemedy

Change reference from register 7.9 to 1.132

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.5.2** *P* **187** *L* **9** *Comment #* 673

Sandeep, Gupta Teranetics

Comment Type **T** *Comment Status* **A** *pmaelec twotone*

Table 55-4: Two tone testing better than single tone testing for several reasons, so modify the table for just two-tone testing down to low frequencies

SuggestedRemedy

Change the table 55-4 with the single tone entries deleted and the two tone frequencies to be the following 6 pairs for the 6 digital words as given in the table

800e6/1024 * [(13, 17), (47, 53), (101, 103), (179, 181), (277, 281), (397, 401)]

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the table 55-4 with the single tone entries deleted and the two tone frequencies to be the following 5 pairs for the 5 digital words as given in the table

800e6/1024 * [(47, 53), (101, 103), (179, 181), (277, 281), (397, 401)]

Make adjustment to 55.6 and clause 45 for the impact to the management bits

---

Cl **55** *SC* **55.5.2** *P* **187** *L* **9** *Comment #* 165

David V James JGG

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

DVJ-165
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
1.132.12, 1.132.11, 1.132.10

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 124

Cl **55** *SC* **55.5.2** *P* **189** *L* **4** *Comment #* 493

Chris, Pagnanelli Solarflare Communicati

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

Tolerances are not specified for the center frequency and noise bandwidth of the bandpass filter shown in Figure 55-22. Tolerances of +/-200 kHz result in jitter measurement errors of less than +/- 0.25 ps.

SuggestedRemedy

Add text to Figure 55-22 indicating that the BPF center frequency (Fc) is 200 MHz +/- 200 kHz and the BPF noise bandwidth (Bn) is 2 MHz +/- 200kHz.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.5.2.1** *P* **188** *L* **10** *Comment #* 169

David V James JGG

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

DVJ-169
Misleading capitalization

SuggestedRemedy

Transmitter Under Test
==>
Transmitter under test

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.5.2.1** *P* **188** *L* **15** *Comment #* 168

David V James JGG

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

DVJ-168
Misleading capitalization

SuggestedRemedy

High Impedance Differential Probe,
==>
High impedance differential probe

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.5.2.1** *P* **188** *L* **18** *Comment #* 166

David V James JGG

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

DVJ-166
Misleading capitalization

SuggestedRemedy

Digital Oscilloscope or Data Acquistion Module
==>Digital oscilloscope or data acquistion module

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.5.2.1** *P* **188** *L* **23** *Comment #* 167

David V James JGG

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

DVJ-167
Misleading capitalization

SuggestedRemedy

Transmitter test fixture 1 for Transmitter droop measurement
==>
Transmitter test fixture 1 for transmitter droop measurement

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.5.2.1** *P* **188** *L* **30** *Comment #* 173

David V James JGG

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

DVJ-173
Inconsistent figure fonts.

SuggestedRemedy

Use 8-point Arial.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Helvetica may be used in place of Arial to be consistent with IEEE Std. 802.3.

Cl **55** *SC* **55.5.2.1** *P* **188** *L* **32** *Comment #* 171

David V James JGG

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

DVJ-171
Misleading capitalization

SuggestedRemedy

Spectrum Analyzer
==>
Spectrum analyzer

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.5.2.1** *P* **188** *L* **32** *Comment #* 170

David V James JGG

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

DVJ-170
Misleading capitalization

SuggestedRemedy

Transmitter Under Test
==>
Transmitter under test

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.5.2.1** *P* **188** *L* **7** *Comment #* 492

Chris, Pagnanelli Solarflare Communicati

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

The electrical characteristics of the high impedance probe shown in Figure 55-20 are not properly defined.

SuggestedRemedy

Add text to Figure 55-20 indicating that the high impedance probe shall have resistance > 10 kohm and capacitance < 1 pF.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add text to Figure 55-20 indicating that the high impedance probe shall have resistance > 10 kohm and capacitance < 1 pF over the frequency range of 1MHz to 400MHz.

Cl **55** *SC* **55.5.2.1** *P* **188** *L* **8** *Comment #* 172

David V James JGG

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

DVJ-172
Inconsistent figure fonts.

SuggestedRemedy

Use 8-point Arial.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 173.

Cl **55** *SC* **55.5.2.1** *P* **189** *L* *Comment #* 446

Wael William Diab Cisco Systems

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

Please remove any color from Figure 55-22.

SuggestedRemedy

Ensure that the figure is drawn in Frame without color.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.5.2.1** *P* **189** *L* **13** *Comment #* 175

David V James JGG

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

DVJ-175
Misleading capitalization

SuggestedRemedy

Transceiver under test (Configured to transmit 200 MHz signal)
==>
Transceiver under test (configured to transmit 200 MHz signal)

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.5.2.1** *P* **189** *L* **21** *Comment #* 176

David V James JGG

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

DVJ-176
Misleading capitalization

SuggestedRemedy

Bandlimited Jitter Analyzer
==>
Bandlimited jitter analyzer

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.5.2.1** *P* **189** *L* **6** *Comment #* 177

David V James JGG

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

DVJ-177
Inconsistent figure fonts.

SuggestedRemedy

Use 8-point Arial.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 173.

Cl **55** *SC* **55.5.2.1** *P* **189** *L* **6** *Comment #* 174

David V James JGG

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

DVJ-174
Misleading capitalization

SuggestedRemedy

Transceiver in Test
==>
Transceiver in test

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.5.3.1** *P* **189** *L* **38** *Comment #* 269

Dove, Daniel HP ProCurve Networki

Comment Type **TR** *Comment Status* **A** *pmaelec droop*

To be honest, I can not figure out what this says. It is not clear.

SuggestedRemedy

Please reword this so it is understandable, or provide an illustration with the text to improve readability.

Specifically, I have trouble with the part "over a period of .08uS measured after a settling time of 10nS after the zero crossing shall be less than 10% of the intitial value."

Why use .08uS in one part, and 10nS in the other? Why not use 80nS and 10nS?

Are you saying that relative to the zero crossing in time, the difference between the voltage at 10nS and the voltage at 90nS shall be within 10% of each other?

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to 494

Dan's interpretation is correct. Discuss need for adding illustration. Rational for starting 10ns after zero crossing is to make the measurement repeatable - there can be errors in measurement if you try to measure starting much closer to the transition.

Relevant comments: 269, 494

Cl **55** *SC* **55.5.3.1** *P* **189** *L* **39** *Comment #* 494

Chris, Pagnanelli Solarflare Communicati

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

The description of the droop test is worded in a way that makes the location of the initial and final measurement points confusing.

SuggestedRemedy

Change text to read: "With the transmitter in test mode 6 and using the transmitter test fixture 1, the magnitude of both the positive and negative droop shall be less than 10%, measured with respect to an initial value at 0.01 usec after the zero crossing and a final value at 0.09 usec after the zero crossing."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change text to read: "With the transmitter in test mode 6 and using the transmitter test fixture 1, the magnitude of both the positive and negative droop shall be less than 10%, measured with respect to an initial value at 10 ns after the zero crossing and a final value at 90 ns after the zero crossing.

Relevant comments: 269, 494

Cl **55** *SC* **55.5.3.1** *P* **189** *L* **40** *Comment #* 336

Dawe, Piers Agilent

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

Use proper abbreviations

SuggestedRemedy

Change 'usec' to 'us' here, 'msec' to 'ms' in 55.5.3.3 (twice).

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.5.3.2** *P* **189** *L* **50** *Comment #* 475

Thaler, Pat — Agilent Technologies

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

SFDR is not in the acronyms list and is not defined

SuggestedRemedy

Define SFDR and, if appropriate, add to acronym list.

Response *Response Status* **C**

ACCEPT.

SFDR stands for spurious free dynamic range

Will be added to the acronyms list in clause 1.5.

Cl **55** *SC* **55.5.3.2** *P* **189** *L* **54** *Comment #* 270

Dove, Daniel — HP ProCurve Networki

Comment Type **ER** *Comment Status* **A** *pmaelec sfdr*

SFDR.. what does this stand for? "Simply Fabulous Data Rate"?

SuggestedRemedy

Please define all acronyms prior to using them.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

SFDR stands for spurious free dynamic range

Cl **55** *SC* **55.5.3.2** *P* **190** *L* *Comment #* 579

Babanezhad, Joseph — Plato Networks

Comment Type **TR** *Comment Status* **R** *pmaelec - linearity*

In section 55.5.3.2 (page 190) Eq. (55-7) currently would require lower linearity with increasing frequency. With two tone test and because of nonlinearity we can have intermodulation terms that fall in lower frequencies.

SuggestedRemedy

For those cases the linearity requirement should be specified not based on the two tone frequency but the frequency of the resulting intermodulation term.

Response *Response Status* **U**

REJECT.

Need to develop consensus on clear definition.

In favor of proposed response as per text below:
Yes: 9
Opposed: 5
Motion fails

Replace line 8 and 9 on page 190 with text below:

where SFDR is in dB and f is the frequency of the two tones or all the resulting spurs, in MHz in the range of 1 to 400MHz.

Relevant comments: 495, 579

Accept in principle the following remedy:
In favor: 8
opposed: 11

Replace SFDR for two tone on page 190 with text below:
The intermodulation products (IMD) of the transmitter, for dual tone inputs, producing output with peak to peak transmit amplitude, shall meet the requirement that:
Signal level - IMD >= (2.5+ min(52, 58-20xlog10(f/25) (55-7)
where f is the frequency of the IMD product in MHz in the frequency range of 1 to 400MHz and the signal level and IMD are in dB.

Reject the comment:
In favor of rejecting: 23
Opposed: 0

Cl **55** *SC* **55.5.3.2** *P* **190** *L* **8** *Comment #* 495

Chris, Pagnanelli — Solarflare Communicati

Comment Type **T** *Comment Status* **R** *pmaelec - linearity*

Two-tone SFDR is not precisely defined.

SuggestedRemedy

Change text starting on line 8 of page 190 to read "where f is in MHz (maximum frequency of the two tones) and SFDR is the ratio in dB of the minimum RMS value of either input tone to the RMS value of the worst intermodulation product in the frequency range of 1 to 400 MHz."

Response *Response Status* **C**

REJECT.

In favor of accepting comment:
Yes: 7
Opposed: 3
Motion fails.

Relevant comments: 495, 579

In favor of accepting in principle the following text:
Yes: 15
No: 8

Motion fails

Change text starting on line 8 of page 190 to read "where f is in MHz (maximum frequency of the two tones) and SFDR is the ratio in dB of the minimum RMS value of either input tone to the RMS value of the worst spurious frequency component in the frequency range of 1 to 400 MHz."

Proposal to reject comment:
See response to comment 579.

Cl **55** *SC* **55.5.3.3** *P* **190** *L* **17** *Comment #* 271

Dove, Daniel — HP ProCurve Networki

Comment Type **TR** *Comment Status* **A** *pmaelec jitter*

"the transmitter output shall..."

SuggestedRemedy

Change the word "shall" to "will" as it is not necessary to define it this strictly in the text. Also change the "shall" on line 28 and do a global review of the term "shall" to make sure you are not unnecessarily using the term.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Make specific changes identified from "shall" to "is" or appropriate tense of the word and review usage of "shall" globally.

Cl **55** *SC* **55.5.3.3** *P* **190** *L* **30** *Comment #* 496

Chris, Pagnanelli — Solarflare Communicati

Comment Type **T** *Comment Status* **A** *pmaelec - jitter*

Absolute RMS jitter is not precisely defined.

SuggestedRemedy

Add the following text at the end of subclause 55.5.3.3: "Absolute RMS jitter over an integration time interval of 1 msec +/- 10%, shall be defined as the root mean square period difference from the average period (T-Tavg), accumulated over a sample size of 200,000 +/- 20,000:

jitter = sqrt{sum[(T-Tavg)^2]/SampleSize}."

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.5.3.4** *P* **190** *L* **32** *Comment #* 497

Chris, Pagnanelli — Solarflare Communicati

Comment Type **T** *Comment Status* **A** *psd - lf*

The 5 MHz lower frequency of the lower PSD mask is not consistent with the intent of the transmitter droop requirement of subclause 55.5.3.1. The 5 MHz lower frequency allows use of a digital high pass filter during normal operation that causes excessive transmitter droop. This filter can be bypassed during droop testing.

SuggestedRemedy

Change the lower frequency of the lower PSD mask from 5 MHz to 1 MHz.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add an editors note to indicate that the lower frequency limit of the lower PSD needs further study based on changes to THP.

Cl **55** *SC* **55.5.3.4** *P* **190** *L* **41** *Comment #* 592

Tellado, Jose — Teranetics

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

Upper PSD mask is too high (integrates to almost 8dBm of tx power)

SuggestedRemedy

Reduce upper PSD limit but at least 1dB at low frequencies and more between 200-600MHz to reduce the amount of worst case ANEXT

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In favor: 29
Opposed: 0

Starting above 70MHz reduce upper PSD limit by 1 dB across the frequency range up to where it intersects with the -116 dBm/Hz line and appropriately adjust equation 55-8.

Relevant comments: 272, 592, 672, 692, 696, 708

Cl **55** *SC* **55.5.3.4** *P* **190** *L* **46** *Comment #* 696

Powell, Scott — Broadcom

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

(Resubmission of comment 37 from last meeting deferred by task force.) The transmit PSD mask is defined too loosely. Accepted resolution: "The zero excess bandwidth concept should be discussed by the task force."

SuggestedRemedy

Transmit PSD mask should specify a zero at 400MHz. See presentation ungerboeck_1_0505.pdf to lead discussion.

Response *Response Status* **U**

REJECT.

The task force discussed this issue and decided not to specify the zero at 400MHz.

The null is not necessary for interoperability and will overly constrain implementation.

Relevant comments: 272, 592, 672, 692, 696, 708

Cl **55** *SC* **55.5.3.4** *P* **190** *L* **46** *Comment #* 690

Powell, Scott — Broadcom

Comment Type **TR** *Comment Status* **A** *psd - lf*

Transmitter PSD mask does not indicate known zero at DC and permits arbitrary energy between DC and 1MHz.

SuggestedRemedy

Specify lower PSD mask for frequencies less than 5MHz. Suggestion: Upper PSD(0) <-116dbm, Upper PSD(dc<f<5MHz) <-78dBm

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Modify the frequency range on line 41, page 190 from:

$1 \le f \le 150$

To:

$0 < f \le 150$

And the MDI is AC coupled.

Cl **55** *SC* **55.5.3.4** *P* **191** *L* *Comment #* 447

Wael William Diab — Cisco Systems

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

Please remove any color from Figure 55-23.

SuggestedRemedy

Ensure that the figure is drawn in Frame without color.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.5.3.4** *P* **191** *L* *Comment #* 672

Yagil, Ariel — Texas Instruments

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

Tx PSD tolerance (>6dB) is to high and may create interoperability issues. It is desired that it would be possible to implement the transmitter such that the peak to peak voltage at the DAC will not be greater than 2V (the required ptp voltage of 100BASE-T and 1GBASE-T. Therefore, I believe that the Tx PSD tolerance should be reduced to its lower range.

SuggestedRemedy

Change Tx PSD limits to the lower 2-3dB of teh current limits

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See resolution to comment 592

Relevant comments: 272, 592, 672, 692, 696, 708

Cl **55** *SC* **55.5.3.4** *P* **191** *L* **1** *Comment #* 691

Powell, Scott — Broadcom

Comment Type **TR** *Comment Status* **R** *psd ripple*

Transmitter PSD mask permits a 6dB ripple up to 50MHz an ~8dB ripple up to 200MHz, and > 8dB ripple from 200 to 400MHz. Equalization and precoding requirements differ for a smooth spectrum vs a spectrum with ripples.

SuggestedRemedy

Add a TBD ripple specification to the PSD mask.

Response *Response Status* **U**

REJECT.

Request commenter to provide specific remedy.

Cl **55** *SC* **55.5.3.4** *P* **191** *L* **1** *Comment #* 692

Powell, Scott — Broadcom

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

Analysis has not been presented to indicate a fixed set of TH precoders can properly equalize a channel with the large variation of transmit filtering permitted by the spectral mask of figure 55 23.

SuggestedRemedy

Show analysis to validate fixed precoders can be used in an environment with such a loosely defined transmit PSD -or- tighten PSD mask -or- abandon fixed precoders in favor of a programmable precoder (see ungerboeck_1_0505.pdf).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Adopt programmable precoder.
See comment 592
See comment 272

Relevant comments: 272, 592, 672, 692, 696, 708

Cl **55** *SC* **55.5.3.4** *P* **191** *L* **20** *Comment #* 272

Dove, Daniel HP ProCurve Networki

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

The range of allowable PSD seems extraordinarily wide open. from -86dBm to -77dBm at 0Hz and getting wider. Why?

SuggestedRemedy

Either tighten up the spec or provide a pointer to the analysis that this is reasonable and will still meet system functional/BER requirements.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Shift the lower PSD mask up 1dB.

Also see comment 592.

Motion to shift lower PSD mask up 2dB across its frequency range:

In favor: 15
Opposed :7
Motion fails.

Motion to shift lower PSD mask up 1dB across its frequency range:
In favor: 23
Opposed: 4
Motion passes.

See resolution to comment 592

The range actually is -84 to -78 at low frequencies.

The output power constraint imposes a tighter requirement than PSD

Relevant comments: 272, 592, 672, 692, 696, 708

Cl **55** *SC* **55.5.3.4** *P* **191** *L* **35** *Comment #* 178

David V James JGG

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

DVJ-178
Inconsistent figure fonts.

SuggestedRemedy

Use 8-point Arial.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 173.

Cl **55** *SC* **55.5.3.5** *P* **191** *L* **49** *Comment #* 273

Dove, Daniel HP ProCurve Networki

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

This sentence is highly redundant with 55.5.2's Note.

SuggestedRemedy

Remove the note or accept the redundance.

Response *Response Status* **C**

ACCEPT.

Removed note.

Cl **55** *SC* **55.5.3.5** *P* **191** *L* **49** *Comment #* 397

Christopher DiMinico MC Communications

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

Specify the transmit clock not the symbol.

The symbol transmission rate on each pair of the master PHY shall be Fs which is 800MHz ± 50ppm.

SuggestedRemedy

Change: From: The symbol transmission rate on each pair of the master PHY shall be Fs which is 800MHz ± 50ppm.

To: The symbol transmission rate on each pair of the master PHY shall be 800MHz ± 50ppm

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.5.4.1** *P* **192** *L* **1** *Comment #* 498

Chris, Pagnanelli Solarflare Communicati

Comment Type **T** *Comment Status* **A** *pmaelec - ber*

LDPC frame error rate cannot be impartially verified at the MAC interface using commercial Ethernet link analyzers. The receiver requirements specified in subclauses 55.5.4.1, 55.5.4.3 and 55.5.4.4 are based on LDPC frame error rate. LDPC frame error rate can be replaced with Ethernet frame error rate if the Ethernet frame size is large enough to prevent an LDPC frame from spanning more than 1 Ethernet frame, and if the current assumption of 1 bit error per 1 frame error is maintained.

SuggestedRemedy

In subclauses 55.5.4.1, 55.5.4.3, and 55.5.4.4, change the text specifying an "LDPC frame error rate less than 3.2e-9" to text specifying an "Ethernet frame error rate less than 6.4e-9 for 800 octet frames."

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.5.4.2** *P* **192** *L* **11** *Comment #* 499

Chris, Pagnanelli — Solarflare Communicati

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

The term "properly receive" is not precisely defined as it relates to the receiver frequency tolerance requirement.

SuggestedRemedy

Change text to read: "The receive feature shall properly receive incoming data, per the requirements of 55.5.4.1, with a symbol rate within the range 800MHz +/- 50ppm."

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.5.4.3** *P* **192** *L* **14** *Comment #* 693

Powell, Scott — Broadcom

Comment Type **TR** *Comment Status* **R** *pmaelec - impulse*

Data has been presented to the task force indicating the presence of impulsive noise in actua installations (see reflector post from Dan Dove 7/22/04). There is no test to cover impulsive noise or required performance in the presence of impulsive noise specified.

SuggestedRemedy

Specify tolerable impulsive noise levels, and operational requirements in the presence of impulsive noise. Include validation test.

Response *Response Status* **U**

REJECT.

There are two tests included for external noise. Sub-clause 55.8.3.4 covers impulse noise anc sub-clause 55.5.4.3 covers RF noise. Each defines a validation test and the operational requirements for the test.

Cl **55** *SC* **55.5.4.3** *P* **192** *L* **14** *Comment #* 500

Chris, Pagnanelli — Solarflare Communicati

Comment Type **T** *Comment Status* **A** *pmaelec - cmnr*

The common-mode voltage rejection requirement does not accurately reflect the superior conducted EMI immunity of Class E, Class F, and Augmented Category 6 cabling compared to Category 5e cabling. Also, the common-mode voltage is incorrectly specified as <= 2 V peak to peak instead of >= 2 V peak to peak in two places.

SuggestedRemedy

Change the common-mode voltage requirement to reflect actual cable susceptibility performance as determined by measurement.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 354

Relevant comments: 274, 354, 363, 421, 500, 702

Cl **55** *SC* **55.5.4.3** *P* **192** *L* **20** *Comment #* 363

Walter Hurwitz — Broadcom

Comment Type **TR** *Comment Status* **A** *pmaelec - cmnr*

The common mode noise rejection test is not clear

SuggestedRemedy

Specify where the common mode voltage is to be measured. Is the noise signal a single tone swept frequency of wideband noise? Clearly specify if a 10GBASE-T PHY is required to pass the test referenced in 40.6.1.3.3 or note that it is only a recommendation. Alternatively, specify that the internationally recognized test procedures and levels for noise immunity shall be used by referencing EN61000-4-6 and EN61000-4-3 for the test method and CISPR 24 (or EN55024) for required legal levels.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See response to comment 354

Relevant comments: 274, 354, 363, 421, 500, 702

Cl **55** *SC* **55.5.4.3** *P* **192** *L* **21** *Comment #* 421

Cobb, Terry — Systimax

Comment Type **T** *Comment Status* **A** *pmaelec - cmnr*

The correct operating voltage and frequency should be defined. Also, there is no international standard that requires this level of performance, and this does not have anything to do with interoperability.

SuggestedRemedy

Change last paragraph to read:

The common-mode noise can be simulated using the cable clamp test defined in Sec 40.6.1.3.3. A 6 dBm sine wave signal from 80 MHz to 1000 MHz can be used to simulate an external electromagnetic field. Operation of the transceiver during the test is determined by the manufacture.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 354

Relevant comments: 274, 354, 363, 421, 500, 702

Cl **55** *SC* **55.5.4.3** *P* **192** *L* **21** *Comment #* 394

Christopher DiMinico — MC Communications

Comment Type **E** *Comment Status* **A** *pmaelec - check*

Use symbols (e.g., ≤).

SuggestedRemedy

Change: From: The transceiver shall maintain an LDPC frame error rate less than 3.2x10-9, while being subject to a common mode voltage <= 2 V peak to peak for f ε (1, 80] MHz, and <= 2*80/f V peak to peak for f ε (80,500) MHz

To: The transceiver shall maintain an LDPC frame error rate less than 3.2x10-9, while being subject to a common mode voltage ≤ 2 V peak to peak for (f :1 ≤f ≤ 80) MHz, and ≤(2*80/f) Vpp for (f :80 < f ≤ 500) MHz.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change text to: The transceiver shall maintain an LDPC frame error rate less than 3.2x10-9, while being subject to a common mode voltage ≤ 2 V peak to peak for 1 ≤f ≤ 80 MHz, and ≤(2*80/f) Vpp for 80 < f ≤ 500 MHz.

Cl **55** *SC* **55.5.4.3** *P* **192** *L* **21** *Comment #* 274

Dove, Daniel — HP ProCurve Networki

Comment Type **TR** *Comment Status* **A** *pmaelec - cmnr*

What kind of common-mode voltage? This is too vague.

SuggestedRemedy

Insert the word "sinusoidal" before "common mode voltage" and I will be satisfied.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Relevant comments: 274, 354, 363, 421, 500, 702

See response to comment 354

Will insert the word "sinusoidal" before "common mode voltage"

Cl **55** *SC* **55.5.4.3** *P* **192** *L* **21** *Comment #* 702

Powell, Scott — Broadcom

Comment Type **TR** *Comment Status* **A** *pmaelec - cmnr*

Common-mode test methodology, setup, and equipment needs further definition. Referenced cable clamp only valid up to 250MHz. Goals for this test are not clear.

SuggestedRemedy

Clearly indicate how noise is to be added and measured. Is the cable clamp required ? If so, how is compliance validated beyond 250MHz ? Is the noise wideband ? Specify which noise immunity standards a PHY which passes this test is expected to satisfy.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 354

Relevant comments: 274, 354, 363, 421, 500, 702

Cl **55** *SC* **55.5.4.3** *P* **192** *L* **25** *Comment #* 354

Ali, Abaye — Broadcom

Comment Type **T** *Comment Status* **A** *pmaelec - cmn*

The cable clamp of 40.6.1.3.3 is only validated for proper operation up to 250MHz (see 40B.1). This section requires valid operation up to 500MHz.

SuggestedRemedy

Expand compliance test of annex 40B to wider frequency or add additional annex

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Relevant comments: 274, 354, 363, 421, 500, 702

See presentation and resolution tcobb; CHANGE WORDING TO "The common-mode noise can be simulated using the cable clamp test defined in 40.6.1.3.3. A 6 dBm sine wave signal from 80 MHz to 1000 MHz can be used to simulate an external electromagnetic field. Operational requirements of the transceiver during the test are determined by the manufacturer. A system integrating a 10GBASE-T PHY may perform this test.

Cl **55** *SC* **55.5.4.4** *P* **192** *L* **21** *Comment #* 339

Dawe, Piers — Agilent

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

Gauss was a person.

SuggestedRemedy

Change 'gaussian' to 'Gaussian'.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.5.4.4** *P* **192** *L* **2737** *Comment #* 289

Reviriego, Pedro — Agere Systems

Comment Type **T** *Comment Status* **R** *pmaelec - 1Galien*

The alien crosstalk noise rejection does not cover the case of a 1G ANEXt noise source whicl will we the most common noise source for some time.

SuggestedRemedy

Include a test that injects a 1G alien crosstalk source. The procedure may be similar to that used in 40.6.1.3.4 with the appropriate noise level.

Response *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

The present test is more severe than one that would be define to cover 1G disturbers.

Cl **55** *SC* **55.5.4.4** *P* **192** *L* **33** *Comment #* 275

Dove, Daniel — HP ProCurve Networki

Comment Type **TR** *Comment Status* **A** *pmaelec - alien*

Is the word "shall" appropriate here? If so, I think the location is not appropriate.

SuggestedRemedy

Remove the word "shall" and replace with "should".

Define the coupler more clearly. Simply saying it does not significantly alter the link segment characteristics is a bit too fuzzy.

Also, I question if a flat response is realistic. Typically, noise sources on UTP have a frequency dependent gain function consistent with the balance characteristics of UTP cable.

Perhaps a better approach would be to define a 1000T spectrum run through a 1st order high pass filter?

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

1) replace "shall" with "should"

2) Coupler definition needs to be clarified

3) See jones_1_0305.pdf and zimmerman_2_0105.pdf for justification for using a flat noise source. This noise represents the sum of different noise sources - some high pass some low pass, which add up close to a flat spectrum. The decision to use flat was approved by the group - see resolution on comment 46 in comments_2_0105.pdf and resolution on comment 58 in comments_2_0305.pdf

Cl **55** *SC* **55.5.4.4** *P* **192** *L* **39** *Comment #* 448

Wael William Diab — Cisco Systems

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

The Editor's note contains technical information that is relevant to the text. Either this is informative or normative but the way it is captured as an editor's note is confusing. Is the intent that this would be deleted at publication.

SuggestedRemedy

If the intent of the alien noise sources model description is to be removed at publication please state that. Otherwise, please incoporate the comment into the text as normative or informative , whichever is appropriate.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Text of note will be incorporated into the text.

Cl **55** *SC* **55.5.4.4** *P* **193** *L* **3** *Comment #* 179

David V James — JGG

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

DVJ-179
Misleading capitalization

SuggestedRemedy

Link Segment
==>
Link segment

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.6** *P* **195** *L* **1** *Comment #* 578

Booth, Brad — Intel

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

55.6 should follow into the previous text and not start on a new page with a blank page in between.

SuggestedRemedy

As per comment. Also applies to 55.7 and 55.8. Most likely applies throughout the Clause 55, but should be corrected.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.6** *P* **195-200** *L* *Comment #* 290

Reviriego, Pedro — Agere Systems

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

The header is 'Draft 2.02.0'

SuggestedRemedy

Change to 'Draft 2.0'

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Will change to Draft 2.1 in next draft

Cl **55** *SC* **55.6.1.1** *P* **195** *L* **29** *Comment #* 340

Dawe, Piers — Agilent

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

Gratuitous capitals

SuggestedRemedy

Change 'Registers' to 'registers', at foot of table change 'Read Only' to 'Read only' or 'read only', and so on.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Tables will be made consistent throughout clause.

Cl **55** *SC* **55.6.1.1** *P* **195** *L* **30** *Comment #* 180

David V James — JGG

Comment Type **E** *Comment Status* **R** *small values centered*

DVJ-180
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Register, Bit, Type

Response *Response Status* **C**

REJECT.

Format is consistent with conventions used within Clause 45.

Cl **55** *SC* **55.6.1.2** *P* **196** *L* **25** *Comment #* 181

David V James JGG

Comment Type **E** *Comment Status* **A** *small values centered*

DVJ-181
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
Bit

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 180.

Cl **55** *SC* **55.6.1.2** *P* **196** *L* **5060** *Comment #* 291

Reviriego, Pedro Agere Systems

Comment Type **T** *Comment Status* **R** *not done*

The Bits U23, U22 and U21 have not been updated to reflect the changes in section 55.4.3.1.

SuggestedRemedy

Remove those bits as they are no longer needed.

Response *Response Status* **C**

REJECT.

Cl **55** *SC* **55.6.2** *P* **199** *L* **13** *Comment #* 341

Dawe, Piers Agilent

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

This is the first mention of 'SEED value' (part in capitals). I found 'Seed Bits' in table 55-6, 'MASTER-SLAVE seed bits' in Table 45-124, and 'MASTER-SLAVE seed value bits' in 45.2.7.10.5. I don't believe that capitalisation should carry meaning (too subtle for us readers!), but this variety of phrases for the same thing makes it hard to discern what's going on.

SuggestedRemedy

Remove the gratuitous capitals, decide on a name for these things, and use it consistently throughout.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Will be more consistent throughout clause.

Cl **55** *SC* **55.6.2** *P* **199** *L* **26** *Comment #* 343

Dawe, Piers Agilent

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

Not clear what this means: 'otherwise, it is assumed to have passed this condition'. What is 'it'? The first noun here is 'arbitration'. What is 'this condition'? What is the effect of assuming that it has passed? Sentence lacks its full stop.

SuggestedRemedy

Rewrite this note.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Original note copied from Clause 40. To be rewritten as:

MASTER-SLAVE arbitration only occurs if 10GBASE-T or 1000BASE-T is selected as the highest common denominator.

Cl **55** *SC* **55.6.2** *P* **199** *L* **26** *Comment #* 342

Dawe, Piers Agilent

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

This sentence 'The rationale for the hierarchy illustrated in Table 55–7 is straightforward.' is obviously copied from another clause where it made more sense. Here, some of the choices in the table are just arbitrary - not much 'rationale'. All the sentence does now is patronise the reader.

SuggestedRemedy

Remove this sentence.

Response *Response Status* **C**

ACCEPT.

The original text and context was copied from Clause 40.

Cl **55** *SC* **55.7** *P* *L* *Comment #* 14001

Bennett, Michael LBNL

Comment Type **T** *Comment Status* **A** *D1.4 cabling*

Clause 55 includes alien crosstalk and extended frequency performance for the 10GBASE-T link segment. As with 1000BASE-T, the link segment specification of 55.7 must be supplemented with an Annex addressing the additional cabling considerations for 10GBASE-T to facilitate the end-user deployment.

SuggestedRemedy

Include in 802.3 an Annex to Clause 55 addressing additional cabling design guidelines for 10GBASE-T; "Annex 55B - Additional cabling design guidelines for 10GBASE-T".

Boilerplate Proposal:
Annex 55B: Additional cabling design guidelines:

This annex provides additional cabling guidelines for 10GBASE-T deployment on balanced copper cabling systems as specified in 55.7.
These guidelines are intended to supplement those in Clause 55.

The 10GBASE-T PHY is designed to operate four pairs of balanced cabling, as specified in ISO/IEC 11801 Edition 2 with appropriate augmentation as specified in 55.7. It is recommended that the guidelines (proposed) in ANSI/TIA TSB 155 and ANSI/TIA 568-B.2-10 and ISO/IEC 11801 Edition 2.1 be considered before the installation of 10GBASE-T equipment for any cabling system.

55B.1 Alien crosstalk - coupling between link segments
55B.1.1 Cabling Topologies
+++point-to-point
+++asymmetrical
+++connector co-location
55B.1.2 Bundled or hybrid cables
55B.1.3 Field Testing
55B.1.4 Mitigation
+++patch cord
+++cabling unbundling
+++connector adjacency

55B.2 Link segment - extrapolated frequency performance
55B.2.1 Mitigation
+++cross-connect versus interconnect
55B.2.1 Field testing

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 442

Accept ANNEX 55X proposal/outline addressing additional cabling considerations for 10GBASE-T. Assign Link Segment editor as editor for ANNEX.

This comment was resubmitted from D1.4 by the editor.

This will be an informative annex and can be added during working group ballot.

Cl **55** *SC* **55.7** *P* *L* *Comment #* 521

Baumer, Howard Broadcom

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

There appears to be a desire for a length dependent or a variable set of link segment sharacteristics. This dependency is very confusing and unclear as to its intent and specification. Several possible intents for the link segment specifications could be:

1) one set of link segment specifications that any and all compliant link segments must meet?
2) Two sets of link segment specifications that a link segment gets to choose from to meet, one equivalent to 55m length and the other to 100m
3) an infinit set of link segment specifications that a link segment can choose from to meet where one end is equivalent to 55m and the other to 100m and anything inbetween.
4) one set of link segment specifications that any and all compliant link segments must meet where the NEXT, ELFEXT, ANEXT, AELFEXT specifications are dependet upon the measured insertion loss of the link segment.

It is also unclear as to whether the link segment specifications are tied to a measured length or not. If they are tied to a measured length how is that length measured?

SuggestedRemedy

Clearly state what the intent of the link segment specification is. One possible clearification of intent is:

Any compliant link segment shall meet the specified insertion loss of Eq 55-10.
A give link segment's NEXT, ELFEXT, ANEXT AELFEXT limits are set by its measured insertion loss. Put in a sub-clasue that describes how that insertion loss is to be measured and how each dependent specification is calculated from that measured insertion loss.

This is a hugh rewrite of 54.7 and as such the whole sub-clause should then be left open for comments on the next recirculation ballot.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See response to comment 251.

Additionally:

Agree in principle that the subclause 55.7.3 "Coupling parameters between link segments" alien cross talk specifications (PSAELFEXT and PSANEXT) need to be clearer in regard to the 10GBASE-T cabling types and distances and the usage of insertion loss scaling. Recommended remedy: (1). In 55.7.3 (or where appropriate), provide a table of supported cabling types and distances with references to applicable cabling standards. This table will not include the calculated 10GBASE-T PSAELFEXT or PSANEXT which has resulted in much of the confusion between the minimum requirements for 10GBASE-T operation over the referenced cabling type and distance and the performance limits of the cabling.

Cl **55** *SC* **55.7** *P* **201** *L* *Comment #* 704

Dieter Schicketanz Independent cabling co

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

For cabling under higher noise environment there are misleading issues. In 55.7.3.1.2 PSANEXT loss to insertion loss ratio it is explained how to perform a calculation. It is not said clearly that all related channles should then be shorter than the one used for calculation. The same happens to 55.7.3.2.2 PSAELFEXT.

SuggestedRemedy

Response *Response Status* **C**

REJECT.

Please provide detailed recommendation

Cl **55** *SC* **55.7** *P* **201** *L* *Comment #* 703

Dieter Schicketanz Independent cabling co

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

It is mentioned that the clause 55.7 does not specify cabling but the link requirements for 10GBASET-T operation (See note under Table 55.8). Cabling may be specified better. In some cases the requirement are more stringent than in ISO/IEC 11801 and may not be specified as in clause 55.7. They all refer to the low frequency range around 1-4 MHz. This frequency range is not so relevant to the system and it is proposed to correct this. There are two possibilities:
1- Add at the beginning of Clause 55.7 that all low frequency exemptions, plateaus etc. of ISO/IEC 11801 apply. E.G. add in 55.7.1 after b)
c) All low frequency rules of 11801 apply

2- Add all this foot notes in the relevant clauses(I hope I got all of them):
3- 55.7.2.1 Insertion loss: values less then 4 dB are for information only
4- 55.7.2.3 Return loss: values less then 3 dB are for information only
5- 55.7.2.4.1 NEXT values for information If channel values are less than 4 dB
6- 55.7.2.4.2 PSNEXT identical
7- 55.7.2 ELFEXT and PSELFEXT larger than 70 dB for information only.
8- 55.7.2.3 PS ANEXT and PSAELFEXT are not specified at the moment in ISO/IEC, but a plateau is being discussed and was already shown in a presentation two meetings ago (Zimmerman et AL). A starting value could be 65 dB.

SuggestedRemedy

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to 244

Cl **55** *SC* **55.7** *P* **201** *L* **33** *Comment #* 416

Vaden, Sterling Superior Modular Prod

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

replace is with are the subject is "requirements"

"segments are specified"

SuggestedRemedy

"segments are specified"

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.7** *P* **201** *L* **35** *Comment #* 417

Vaden, Sterling — Superior Modular Prod

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

Load impedances of 100 Ohm add "differential, or odd mode and 50 Ohm common, or even mode on all duplex channels of the link segment at the near end and far end."

This is to more accurately specify the terminations under test conditions.

SuggestedRemedy

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Delete Page 201 line 34 and 35. "Link segment testing shall be conducted using source and load impedances of 100 Ω."

Comments #417,#504,#377:

Two requests for change:1. add a tolerance to 100 Ω and characterize it as differential: The proposed tolerance(s): (+/- 1%) or (+/-10%) or (100 ohm with a tolerance of 20 dB)2. add common mode Issue(s) for discussion: (1)Is the Link Segment test a field test or a laboratory test? If it's a field test; we need to be consistent with the source and load specifications of the field test standards. If it's a lab test; we need to be consistent with the source and load specifications of the cabling standardsfor each specified parameter. (2)Do we need to specify the source and load impedances here (line 35) if all of the specifications below thisinclude a specification for the source and load impedances?(3)Other issues:? "

Recommended remedy: delete Page 201 line 34 and
35. "Link segment testing shall be conducted using source and load impedances of 100 Ω."

This requirement is not sufficient to address link testing and given that link testing is addressed in both the cabling standards and the field test standards that we reference it is no necessary.

We already acknowledge that the nominal impedance is 100 Ω
by reference to ISO/IEC 11801 Page 201, line 14 and 15.

"55.7.1 Cabling system characteristics
The cabling system used to support 10GBASE-T requires 4 pairs of
ISO/IEC 11801 Class E or Class F balanced
cabling with a nominal impedance of 100 Ω."

Cl **55** *SC* **55.7** *P* **201** *L* **60** *Comment #* 418

Vaden, Sterling — Superior Modular Prod

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

add "differential, or odd mode and 50 Ohm common, or even mode on all duplex channels of the link segment at the near end and far end."

This is to more accurately specify the terminations under test conditions.

SuggestedRemedy

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to 417

Link testing shall be done as per IEC61935-1or ISO/IEC 11801 or TR42 TSB 155 etc.

Also delete lines 59 and 60 on page 201 starting with "The insertion loss …"

Cl **55** *SC* **55.7** *P* **201** *L* **Multi** *Comment #* 241

Shimon Muller — Sun Microsystems, Inc.

Comment Type **TR** *Comment Status* **A** *cabling -cat5*

This sub-clause does not mention Cat-5e cabling, which is the vast majority of the installed cabling today. In my opinion, no compelling technical case has been made in the Task Force as to why 10GBASE-T would not work over this type of cabling at ANY link distance. It is also my opinion, that without support for at least some portion of the installed cabling infrastructure, this technology will take a very long time to achieve widespread adoption in the marketplace.

SuggestedRemedy

Add text that describes how Cat-5e cabling is supported, as appropriate.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Approved by voice vote.

Insert the following text as a second sentence in 55.7.1:
Operation on other classes of cable may be supported if the link segment meets the requirements of 55.7.

Cl **55** *SC* **55.7** *P* **206** *L* *Comment #* 705

Dieter Schicketanz Independent cabling co

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

Under Table 55-8 in 55.7.3.1.2 there is a note saying that
Note: For simulating PHY performance to estimate system margin, the PS ANEXT constant average (average of the four pairs) is increased by 2.5 dB to account for an averaging of the PS ANEXT over frequency.
This note is not under Table 55-9. Why is there a difference?
Either this note results in a limit or it is an editorial note for system performance, and does not belong to the section 55.7

SuggestedRemedy

Response *Response Status* **C**

REJECT.

For PS ANEXT modeling purposes an allocation of 2.5 dB is allowed to account for an averaging of the
PS ANEXT over frequency (peak-to-average).

For the PS AELFEXT the peak-to-average difference does not apply (i.e., small variation over frequency).

The note results in a modeling limit.

Cl **55** *SC* **55.7** *P* **206** *L* *Comment #* 706

Dieter Schicketanz Independent cabling co

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

In
55.7.3.1.2 (PSANEXT) and
55.7.3.2.2 (PSAELFEXT)
anchor values at 100 MHz for 55 m channels under higher noise environments are presented as 15 dB higher as at 100 m (PSAFEXT calculated out of PSAELFEXT, As PSAELFEXT is already a S/N).
A calculation is presented to scale this to other length and noise levels using the insertion loss at 250 MHz.
If the presented formulas are plotted it can be seen that the S/N at 250 MHz stays equal for all length but at 100 MHz it decreases with decreasing length. At 55m it is 5 dB and at 20m 10dB less then at 100m.
(The Graphs can be provided)

To solve this it is proposed to increase the noise level at 100 MHz and 55m only by 10dB.
Then only frequencies below 100 MHz will show an increased S/N. Now at 250 MHz there will be more margin, so maybe a specialist can calculate how much additional noise can be tolerated. Probably a value of 11to12 is sufficient.
When the value is settled the formulas and Tables need to be adjusted editorially.

SuggestedRemedy

Response *Response Status* **C**

REJECT.

Please provide detailed recommendation.

Cl **55** *SC* **55.7** *P* **208** *L* **17** *Comment #* 458

Mei, Richard SYSTIMAX Solutions

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

PSAELFEXT is calculated based on IL and PSAFEXT. For a 100-meter channel, PSAFEXT value is close to the noise floor at high frequency. From the PHY point of view, it is negligible

SuggestedRemedy

Please find the contribution rmei_0505.pdf

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 687

Cl **55** *SC* **55.7 Eqn: 55-29** *P* **208** *L* **17** *Comment #* 686

Paul Kish — Belden CDT

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

The PS AELFEXT requirement at low frequencies (less than 8 MHz) and at high frequencies (greater than 300 MHz) is very sensitive to the noise floor of the test setup for pair-to-pair alien crosstalk measurements. In practice 90 dB is a reasonable value for the noise floor of individual pair-to-pair AFEXT measurements. For a worst case scenario with 24 disturbers (bundled configuration with six cables around a victim cable, the combined noise from all disturbers is 76.2 dB. At high frequencies, this gives a significant error (see table below) because the requirement is very close to the noise floor.

Noise (pr-pr) 90

	PS AELFEXT	IL	PS AFEXT	PS Noise	+ PS Noise	Difference
1	77.00	2.19	79.19	76.20	74.43	4.76
2	70.98	2.96	73.93	76.20	71.91	2.02
4	64.96	4.09	69.05	76.20	68.28	0.77
8	58.94	5.73	64.67	76.20	64.37	0.30
10	57.00	6.40	63.40	76.20	63.18	0.22
100	37.00	20.77	57.77	76.20	57.71	0.06
200	30.98	29.97	60.95	76.20	60.83	0.13
300	27.46	37.28	64.74	76.20	64.44	0.30
400	24.96	43.61	68.57	76.20	67.88	0.69
500	23.02	49.31	72.33	76.20	70.84	1.49

SuggestedRemedy

1) Add a measurement precaution that the noise floor needs to be (10 + 10log(n))better than the specified PS AFEXT requiremment.
2) If this isn't practical, provide a formula for correcting the alien PS AFEXT measurements.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to 687

Cl **55** *SC* **55.7 Eqn: 55-30** *P* **208** *L* **26** *Comment #* 687

Paul Kish — Belden CDT

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

The PS AELFEXT_avg requirement at low frequencies (less than 8 MHz) and at high frequencies (greater than 300 MHz) is very sensitive to the noise floor of the test setup for pair-to-pair alien crosstalk measurements. In practice 90 dB is a reasonable value for the noise floor of individual pair-to-pair AFEXT measurements. For a worst case scenario with 24 disturbers (bundled configuration with six cables around a victim cable, the combined noise from all disturbers is 76.2 dB. At high frequencies, this gives a significant error (see table below) because the requirement is very close to the noise floor.

Noise (pr-pr) 90

	PS AELFEXT_avg	IL	PS AFEXT	PS Noise	+ PS Noise	Difference
1	81.00	2.19	83.19	76.20	75.41	7.78
2	74.98	2.96	77.93	76.20	73.97	3.97
4	68.96	4.09	73.05	76.20	71.33	1.71
8	62.94	5.73	68.67	76.20	67.96	0.71
10	61.00	6.40	67.40	76.20	66.86	0.54
100	41.00	20.77	61.77	76.20	61.62	0.15
200	34.98	29.97	64.95	76.20	64.64	0.31
300	31.46	37.28	68.74	76.20	68.02	0.72
400	28.96	43.61	72.57	76.20	71.00	1.56
500	27.02	49.31	76.33	76.20	73.25	3.08

SuggestedRemedy

1) Add a measurement precaution that the noise floor needs to be (10 + 10log(n))better than the specified PS AFEXT requiremment.
2) If this isn't practical, provide a formula for correcting the alien PS AFEXT measurements.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Provide the following guidance to ISO/IEC and TR 42 relative to the measurement noise floor issue:
A cap of 67 dB(TBD) PS AFEXT is imposed. At frequencies where 67 dB(TBD) or greater measured values occurs the PS AFEXT measurements are extended by extrapolating utilizing a 20 Log relationship for PS AELFEXT calculations.

Same thing will apply to PS ANEXT using a different slope.

Yes: 13
No: 1

Cl **55** *SC* **55.7.1** *P* **201** *L* **21** *Comment #* 583

Thompson, Geoff — Nortel

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

The statement:
"10GBASE-T uses a star topology with Class E or Class F balanced cabling used to connect PHY entities."
is technically incorrect. 10GBASE-T like all higher speed Ethernet media (except PON) uses a point-to-point topology. The elements (e.g. MACs and a switch) that bind it into a star have nothing to do with 10GBASE-T.

SuggestedRemedy

Change text to read: "10GBASE-T uses a point-to-point topology with Class E or Class F balanced cabling used to connect PHY entities."

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.7.2** *P* **201** *L* **28** *Comment #* 243

Muth, Jim — Broadcom

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

"At least 55m to 100m of Class E" is too ambiguous for a specification. Additionally, other parts of section 55.7 imply cable class and length are not sufficient parameters to guarantee 10G operation.

SuggestedRemedy

Replace first sentence of 55.7.2 with "A 10GBASE-T link segment consisting of at least 55m of Class E or at least 100m of Class F which also meets the additional transmission parameters of this subclause will provide a reliable medium."

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See Comment resolution to #251

Cl **55** *SC* **55.7.2** *P* **201** *L* **28** *Comment #* 251

Brown, Kevin — Broadcom

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

The first sentence in not technically accurate. "At least 55 meters" of cable is not required to provide a reliable medium. Any distance less than 55 meters should provide a reliable medium.

SuggestedRemedy

A 10GBASE-T link segment consisting of at least 0.1 meters to at most 55 meters of Class E, or at least 0.1 meters to at most 100 meters of Class F which meet the transmission parameters of this subclause will provide a reliable medium.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Recommended remedy:

Rewrite first sentence in 55.7.2 and provide a table of supported cabling types and distances with references to applicable cabling standards.

Cl **55** *SC* **55.7.2** *P* **201** *L* **28** *Comment #* 525

Zimmerman, George — Solarflare Communicati

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

Wording "A 10GBASE-T link segment consisting of at least 55 to 100 meters ..." implies the minimum distance is 55m.

SuggestedRemedy

Change wording to "A 10GBASE-T link segment consisting of UP TO at least 55 to 100m..." (change shown in CAPS).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment resolution to #251

Cl **55** *SC* **55.7.2** *P* **201** *L* **28** *Comment #* 420

Kasturia, Sanjay — Teranetics

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

The text:
A 10GBASE-T link segment consisting of at least 55 to 100 meters of Class E or up to 100 meters of Class F which meets the transmission parameters of this subclause will provide a reliable medium.

is unclear to a number of readers. Clarify what medium the 55m refers to and what medium the 100m refers to.

SuggestedRemedy

Change text to:
A 10GBASE-T link segment consisting of up to 100 meters of balanced 4-pair structured cabling which meets the transmission parameters of this subclause will provide a reliable medium.

Add an informative note saying:
100 meters of CAT 6A or CAT 7 is expected to meet the requirements of 55.7. 100 meters of other structured cabling may not meet the requirements and should be qualified by testing or analysis. Lengths shorter than 100 meters of other structured cabling may meet the requirements for 55.7.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment resolution to #251

Change "10GBASE-T link segment" to "link segment" throughout 55.7.

Cl **55** *SC* **55.7.2** *P* **201** *L* **35** *Comment #* 377

Alan Flatman — LAN Technologies

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

Link segment testing appears to be mandatory, according to the way this sentence is constructed. I don't think that this is the intention however we did agree to recommend testing (George Eisler comment as I recall). Also, the impedance requires a tolerance.

SuggestedRemedy

Change the sentence to read "Link segment testing is recommended and shall be conducted using source and load impedances of 100 ohm + 1%."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to 417

Cl **55** *SC* **55.7.2** *P* **201** *L* **35** *Comment #* 504

Baumer, Howard — Broadcom

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

There is no tollerance specified with the load impedance.

SuggestedRemedy

Change: ".. of 100 ohm" to ".. of 100 ohm +/- 10%" or ".. of 100 ohm with a tollerance of 20dB'

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See response to 417

Cl **55** *SC* **55.7.2** *P* **201** *L* **37** *Comment #* 362

Kim, Yong — Broadcom

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

May be a naive concern, but nevertheless a concern. The two paragraphs in 55.7.2 below indicates to me that we do not have realistic 10GBase-T segment model (or installed Class E and F cableing data) to evaluate the specification (or implimentation). Also, the note says IF available, then WILL reference, and MAY replace the reference in the draft. How could we vote on this?

"The link segment transmission parameters of insertion loss and ELFEXT loss specified are ISO/IEC 11801 Class E specifications extended by extrapolating the formulas to a frequency up to 500 MHz with appropriate adjustments for length when applicable. The link segment transmission parameters of NEXT loss, MDNEXT loss and Return Loss specified are ISO/IEC 11801 Class E specifications extended beyond 250 MHz by utilizing the equations referenced in TIA/EIA TSB-155 D1.3.
Editor's note: ISO/IEC TR-24750: Assessment of installed Class E and Class F cabling beyond their maximum specified frequencies, should be available before 802.3an is approved. In which case, 802.3an will reference both and may replace the above reference to TIA/EIA TSB-155."

SuggestedRemedy

Please provide reasonable evidence of agreement among the technical experts that the adopted extrapolation plus Table 55-8 provide a segment requirement that allows interoperable specification. Between the clause text and the note, I am not getting that impression.

Please re-draft the note, since the note is dictating future changes to the draft in auto-pilot (unless you meant it).

Response *Response Status* **W**

REJECT.

The 10GBASE-T task group has validated the implementation with "realistic" measurements and models for both Class E and Class F. In the formulation of other Ethernet standards we have referenced standards in development. This Comment does not include specific suggested remedy.

Cl **55** *SC* **55.7.2** *P* **201** *L* **37** *Comment #* 584

Thompson, Geoff — Nortel

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

The text:
"The link segment transmission parameters of insertion loss and ELFEXT loss specified are ISO/IEC 11801 Class E specifications extended by extrapolating the formulas to a frequency up to 500 MHz with appropriate adjustments for length when applicable."
...is not acceptable. We are not a cabling standards group and not an appropriate forum for whether such extrapolations are appropriate or justified.

SuggestedRemedy

Change text to stay within the boundaries of performance laid out by established standards appropriate for reference by an international standard. Delay approval until such approved reference is available.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Change text to: The link segment transmission parameters of insertion loss and ELFEXT loss specified are ISO/IEC 11801 Class E specifications extended by extrapolating the formulas to a frequency up to 500 MHz with appropriate adjustments for length when applicable as specified in ISO/IEC TR-24750 and TIA/EIA TSB-155.

There is no international standard available nor is there a guarantee that there will be one. Reference to guides has been done in the past and ultimately an international standard did result from the guide that we referenced.

We have published standards in the past with references to drafts.

In favor of response: 20
Opposed to response: 3

Cl **55** *SC* **55.7.2.1** *P* **201** *L* **58** *Comment #* 378

Alan Flatman — LAN Technologies

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

Reference is made to “attenuation” rather than “insertion loss”.

SuggestedRemedy

Change “attenuation” to “insertion loss”.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.7.2.1** *P* **201** *L* **60** *Comment #* 505

Baumer, Howard — Broadcom

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

Frequency domain specifications are defined with respect to a reference impedeance.

SuggestedRemedy

Replace "terminated in" with "referenced to".

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See response to 418

Cl **55** *SC* **55.7.2.1** *P* **202** *L* **1** *Comment #* 585

Thompson, Geoff — Nortel

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

Comma needed at the end of line 1

SuggestedRemedy

Insert comma (or reverse the clauses).

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.7.2.2** *P* **202** *L* **7** *Comment #* 506

Baumer, Howard — Broadcom

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

The characteristic impeadence of the cabling should be a requirement. The statement: ".., is 100 ohm .." makes this informative.

SuggestedRemedy

Change ".., is 100 ohm .." to ".., shall be 100 ohms .."

Response *Response Status* **C**

REJECT.

The characteristic impedance of the cabling is not a requirement (link segment return loss is specified)

Cl **55** *SC* **55.7.2.3** *P* **202** *L* **12** *Comment #* 507

Baumer, Howard — Broadcom

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

The equation reference could be confusing as no specificly referenced equatio number is use

SuggestedRemedy

replace ".. the following equation" with ".. equation 55.11" with the appropriate link to equation 55.11

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.7.2.4.1** *P* **202** *L* **44** *Comment #* 244

Koeman, Henriecus — Fluke Networks

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

ISO/IEC and TIA cabling standards include a maximum value (65 dB for PP NEXT), mainly to assure reliable measurements. Without this change, supporting cabling standards are not in full agreement with IEEE 802.3an 10GBASE-T.

SuggestedRemedy

Add the same maximum value as in relevant cabling standards, following equation 55-12:

"65 dB max".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add Text: Calculations that result in NEXT loss values greater than 65 dB shall revert to a requirement of 65 dB minimum or more general text that addresses caps in the cabling standards and preferably provide references rather than do it every place.

Cl **55** *SC* **55.7.2.4.1** *P* **202** *L* **47** *Comment #* 508

Baumer, Howard — Broadcom

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

The wording from lines 47-56 does't seem to explicitly tie the frequency ranges to the specification. The "where"s should be replaced with "for"s and the two equations tied together with an "and".

SuggestedRemedy

replace "where f is the frequency" with "for" on line 47
replace the sentence on line 49 with "and"
and on line 56 replace "where f is the frequency" with "for".

Response *Response Status* **W**

REJECT.

Consistent with 1000BASE-T equation format

Cl **55** *SC* **55.7.2.4.2** *P* **203** *L* **13** *Comment #* 276

Dove, Daniel — HP ProCurve Networki

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

I noticed the fonts are different on some equations than on others

SuggestedRemedy

Use a consistent font on all equations, tables, etc.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Fonts are smaller on some equations to make them fit.

Cl **55** *SC* **55.7.2.4.2** *P* **203** *L* **13** *Comment #* 245

Koeman, Henriecus — Fluke Networks

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

ISO/IEC and TIA cabling standards include a maximum value (62 dB for PS NEXT), mainly to assure reliable measurements. Without this change, supporting cabling standards are not in full agreement with IEEE 802.3an 10GBASE-T.

SuggestedRemedy

Add the same maximum value as in relevant cabling standards, following equation 55-14.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to 244.

Cl **55** *SC* **55.7.2.4.2** *P* **203** *L* **16** *Comment #* 509

Baumer, Howard — Broadcom

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

The wording from lines 16-22 does't seem to explicitly tie the frequency ranges to the specification. The "where"s should be replaced with "for"s and the two equations tied together with an "and".

SuggestedRemedy

replace "where f is the frequency" with "for" on line 16
add "and" between line 16 and eq. 55-15
and on line 22 replace "where f is the frequency" with "for".

Response *Response Status* **W**

REJECT.

1000BASE-T equation format

Cl **55** *SC* **55.7.2.4.2** *P* **203** *L* **2** *Comment #* 182

David V James JGG

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

DVJ-182
Misleading capitalization

SuggestedRemedy

Multiple Disturber Near-End Crosstalk (MDNEXT) loss
==>
Multiple disturber near-end crosstalk (MDNEXT) loss

Response *Response Status* **C**

REJECT.

See response to comment 126

Cl **55** *SC* **55.7.2.4.3** *P* **203** *L* **24** *Comment #* 183

David V James JGG

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

DVJ-183
Misleading capitalization

SuggestedRemedy

Multiple-Disturber Power Sum Near-End Crosstalk (PS NEXT) loss
==>
Multiple-disturber power sum near-end crosstalk (PS NEXT) loss

Response *Response Status* **C**

REJECT.

See response to comment 126.

Cl **55** *SC* **55.7.2.4.3** *P* **203** *L* **27** *Comment #* 510

Baumer, Howard Broadcom

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

Is this means for calculating PSNEXT loss a recommendation or a requiremet? If it is a requiremet then "shall" needs to be used instead of "is".

SuggestedRemedy

Relpace "is" with "shall"

Response *Response Status* **C**

REJECT.

This is an informative statement about the power sum NEXT. The requirement is on MDNEXT

Cl **55** *SC* **55.7.2.4.3** *P* **203** *L* **44** *Comment #* 511

Baumer, Howard Broadcom

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

"n" is not specified and is therefore open ended, specify what "n" should be.

SuggestedRemedy

Specify n=3

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.7.2.4.4** *P* **203** *L* **42** *Comment #* 184

David V James JGG

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

DVJ-184
Misleading capitalization

SuggestedRemedy

Equal Level Far-End Crosstalk (ELFEXT) loss
==>
Equal level far-end crosstalk (ELFEXT) loss

Response *Response Status* **C**

REJECT.

See response to comment 126.

Cl **55** *SC* **55.7.2.4.4** *P* **203** *L* **45** *Comment #* 185

David V James JGG

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

DVJ-185
Misleading capitalization

SuggestedRemedy

Far-End Crosstalk
==>
Far-end crosstalk

Response *Response Status* **C**

REJECT.

See response to comment 126.

Cl **55** *SC* **55.7.2.4.5** *P* **204** *L* **38** *Comment #* 186

David V James JGG

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

DVJ-186
Misleading capitalization

SuggestedRemedy

Multiple Disturber Equal Level Far-End Crosstalk (MDELFEXT) loss
==>
Multiple disturber equal level far-end crosstalk (MDELFEXT) loss

Response *Response Status* **C**

REJECT.

See response to comment 126.

Cl **55** *SC* **55.7.2.4.6** *P* **205** *L* **16** *Comment #* 512

Baumer, Howard Broadcom

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

"n" is not specified and is therefore open ended, specify what "n" should be.

SuggestedRemedy

Specify n=3

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.7.2.4.6** *P* **205** *L* **2** *Comment #* 187

David V James JGG

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

DVJ-187
Misleading capitalization

SuggestedRemedy

Multiple-Disturber Power Sum Equal Level Far-End Crosstalk (PS ELFEXT) loss
==>
Multiple-disturber power sum equal level far-end crosstalk (PS ELFEXT) loss

Response *Response Status* **C**

REJECT.

See response to comment 126.

Cl **55** *SC* **55.7.2.5** *P* **205** *L* **20** *Comment #* 513

Baumer, Howard Broadcom

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

Incnsistant use of frequency range for multiple specifications. Cable specs use a frequency range from 1Mhz - 500MHz, whereas the delay specs use 2MHz - 500Hz

SuggestedRemedy

Use 1MHz - 500MHz for all specifications

Response *Response Status* **C**

REJECT.

Not necessary to specify delay to 1 MHz. 2 MHz minimum is consistent with cabling specifications

Cl **55** *SC* **55.7.2.6** *P* **205** *L* **26** *Comment #* 514

Baumer, Howard Broadcom

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

Incnsistant use of frequency range for multiple specifications. Cable specs use a frequency range from 1Mhz - 500MHz, whereas the delay specs use 2MHz - 500Hz

SuggestedRemedy

Use 1MHz - 500MHz for all specifications

Response *Response Status* **C**

REJECT.

See response to 513

Cl **55** *SC* **55.7.3** *P* **205** *L* **31** *Comment #* 277

Dove, Daniel HP ProCurve Networki

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

This paragraph has a few editorial problems.

It says the "loss is limited" but isn't it the ANEXT and AFEXT that are limited? (symantic) and on line 36 you should change ..."(MDANEXT) and multiple" to "(MDANEXT) loss and multiple' and change "is specified" to "are specified".

SuggestedRemedy

Please make suggested changes.

Response *Response Status* **C**

ACCEPT.

Change "is specified" to "are specified" on line 36.

Cl **55** *SC* **55.7.3** *P* **205** *L* **31** *Comment #* 278

Dove, Daniel HP ProCurve Networki

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

Coupling Parameters between link segments...

I have a hard time with the whole concept of defining this because it is not something that customers can readily measure, control, or predict.

I believe it is essential to define a standard that *works* in the general sense with the cable systems that are measureable and controllable.

As I understand it, if a customer has cable installed and measures AFEXT, MDAFEXT, ANEXT or MDANEXT and concludes that their cable does not meet specifications, there is nc readily available method for resolving the problem. They would be instructed to re-configure their cable plant, cross their fingers, and hope it passed the test when re-tested.

SuggestedRemedy

Define the solution in a way that allows customers to define their cable solution, have it installed, measured, and certified to work with 10GBASE-T such that when they purchase anc install equipment, it works.

For example, there is no need to specify ANEXT for Category 7 cables. (Class F)

If this means reducing the length of UTP supported, to a point that 9x% (pick a number) of the cable guarantees operation, fine. If it means removing UTP from the list of supported cables and mandating a foil/shield on the cable to ensure ANEXT is below tolerable limits, please do this.

It is just not fair to a customer to put them into a wild-goose expedition to get their cabling to support a new technology.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See responses to comment 251 and 442

Cl **55** *SC* **55.7.3** *P* **205** *L* **34** *Comment #* 586

Thompson, Geoff Nortel

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

The text: "...crosstalk noise.To ensure..."
is missing a space.

SuggestedRemedy

Change to: "...crosstalk noise. To ensure..."

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.7.3** *P* **205** *L* **35** *Comment #* 515

Baumer, Howard Broadcom

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

"MDANEXT" is seperated across lines

SuggestedRemedy

Fix it such that "MDANEXT" is kept together

Response *Response Status* **C**

REJECT.

See response to comment 124

Cl **55** *SC* **55.7.3.1** *P* **205** *L* **37** *Comment #* 188

David V James JGG

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

DVJ-188
Misleading capitalization

SuggestedRemedy

Multiple Disturber Alien Near-End Crosstalk (MDANEXT) loss
==>
Multiple disturber alien near-end crosstalk (MDANEXT) loss

Response *Response Status* **C**

REJECT.

See response to comment 126.

Cl **55** *SC* **55.7.3.1** *P* **205** *L* **40** *Comment #* 189

David V James JGG

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

DVJ-189
Misleading capitalization

SuggestedRemedy

Near-End Crosstalk (NEXT) loss
==>
Near-end crosstalk (NEXT) loss

Response *Response Status* **C**

REJECT.

See response to comment 126.

Cl **55** *SC* **55.7.3.1** *P* **206** *L* **15** *Comment #* 697

Powell, Scott — Broadcom

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

Equation (55 24) does not specify length dependence of ANEXT.

SuggestedRemedy

Include well-known equation for length dependence of ANEXT (see ungerboeck_1_0305.pdf) or add sentence indicating that the given equation applies to all cable lengths.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Will add sentence indicating that the given equation applies to all cable length.

Cl **55** *SC* **55.7.3.1.1** *P* **205** *L* **14** *Comment #* 246

Koeman, Henriecus — Fluke Networks

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

Depending on the number of disturber links measured, there is a need to raise the lower end of the test frequency range.
Assuming a 100 dB measurement floor for each PS AXtalk measurement, for each doubling of the number of disturber links, the measurement floor declines by 3 dB. At 1 MHz, the pass/fail limit may be at 82 dB for Class E cabling and 82 dB for Augmented Class E cabling. Just the measurement floor without any PS AXtalk reaches the pass/fail limit with 64 disturber measurements. Likely one needs at least a 10 - 12 dB measurement floor above the stated pass/fail limit. Assuming a maximum 64 disturber link measurement, this translates into a lower 10 MHz test frequency. Without this change, verification of performance at low frequencies becomes practically impossible.

SuggestedRemedy

Change the lower frequency of the PS ANEXT requirement to 10 MHz in equation 55.24.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to 687

Cl **55** *SC* **55.7.3.1.1** *P* **205** *L* **45** *Comment #* 190

David V James — JGG

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

DVJ-190
Misleading capitalization

SuggestedRemedy

Multiple-Disturber Power Sum Near-End Crosstalk (PS ANEXT) loss
==>
Multiple-disturber power sum near-end crosstalk (PS ANEXT) loss

Response *Response Status* **C**

REJECT.

See response to comment 126.

Cl **55** *SC* **55.7.3.1.1** *P* **205** *L* **49** *Comment #* 516

Baumer, Howard — Broadcom

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

MDANEXT specification is structered differently than MDNEXT and MDELFEXT. For consistacy sake structure this section the same a the MDNEXT and MDELFEXT sections.

SuggestedRemedy

Change the structure of the MDANEXT specification section such that it is the same as the MDNEXT and MDELFEXT section having the same sub-clauses, same / similar titles, etc.

Response *Response Status* **W**

REJECT.

The same structure was applied to the sections mentioned whenever possible. Alien Crosstalk includes the insertion loss scaling and insertion loss ratio requirements.

Cl **55** *SC* **55.7.3.1.1** *P* **206** *L* **19** *Comment #* 518

Baumer, Howard — Broadcom

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

"intercept" is the value at 0 not at f=100MHz

SuggestedRemedy

Replace "intercept" with "value"

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.7.3.1.1** *P* **206** *L* **27** *Comment #* 247

Koeman, Henriecus — Fluke Networks

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

Refer to previous comment. Without this change, verification of performance at low frequencies becomes practically impossible.

SuggestedRemedy

Change the lower frequency of the PS ANEXT requirement to 10 MHz in equation 55.25.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to 687

Cl **55** *SC* **55.7.3.1.1** *P* **206** *L* **32** *Comment #* 519

Baumer, Howard — Broadcom

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

"intercept" is the value at 0 not at f=100MHz

SuggestedRemedy

Replace "intercept" with "value"

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.7.3.1.1** *P* **206** *L* **8** *Comment #* 517

Baumer, Howard — Broadcom

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

"n" is not specified and is therefore open ended, specify what "n" should be.

SuggestedRemedy

Specify "n".

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Will clarify: n is the number of pair-to-pair combinations between adjacent link segments (see ANNEX 55X)

Cl **55** *SC* **55.7.3.1.2** *P* **207** *L* **14** *Comment #* 588

Thompson, Geoff — Nortel

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

The text has an extra leading period.

SuggestedRemedy

Change: ".Table 55–8 lists the calculated..."

To: "Table 55–8 lists the calculated..."

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.7.3.1.2** *P* **207** *L* **15** *Comment #* 191

David V James — JGG

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

DVJ-191
Misleading capitalization

SuggestedRemedy

Cabling types, distance and PS ANEXT Constants
==>
Cabling types, distance and PS ANEXT constants

Response *Response Status* **C**

REJECT.

See response to comment 126.

Cl **55** *SC* **55.7.3.1.2** *P* **207** *L* **18** *Comment #* 192

David V James — JGG

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

DVJ-192
Misleading capitalization

SuggestedRemedy

Insertion Loss at 250 MHz
==>
Insertion loss at 250 MHz

Response *Response Status* **C**

REJECT.

See response to comment 126.

Cl **55** *SC* **55.7.3.1.2** *P* **207** *L* **21** *Comment #* 195

David V James JGG

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

DVJ-195
Nonstandard table lines.

SuggestedRemedy

Thin on the outside.
Very-thin on the inside.

Response *Response Status* **C**

REJECT.

Suggested remedy does not indicate which lines of the table are in error.

Cl **55** *SC* **55.7.3.1.2** *P* **207** *L* **22** *Comment #* 196

David V James JGG

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

DVJ-196
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
right three columns

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 124

Cl **55** *SC* **55.7.3.1.2 Table 55-8** *P* **207** *L* **29** *Comment #* 587

Thompson, Geoff Nortel

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

Invalid references
same basic comment as my #2 (comment 584)

SuggestedRemedy

See my #2

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment 584

In favor of proposed response: 20
Opposed : 3

Cl **55** *SC* **55.7.3.2** *P* **207** *L* **43** *Comment #* 193

David V James JGG

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

DVJ-193
Misleading capitalization

SuggestedRemedy

Multiple Disturber Alien Far-End Crosstalk (MDAFEXT) loss
==>
Multiple disturber alien far-end crosstalk (MDAFEXT) loss

Response *Response Status* **C**

REJECT.

See response to comment 126.

Cl **55** *SC* **55.7.3.2.1** *P* **207** *L* **51** *Comment #* 194

David V James JGG

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

DVJ-194
Misleading capitalization

SuggestedRemedy

Multiple-Disturber Power Sum Alien Equal Level Far-End Crosstalk (PS AELFEXT) loss
==>
Multiple-disturber power sum alien equal level far-end crosstalk (PS AELFEXT) loss

Response *Response Status* **C**

REJECT.

See response to comment 126.

Cl **55** SC **55.7.3.2.1** P **208** L **18** Comment # 248

Koeman, Henriecus Fluke Networks

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

Similar considerations as for PS ANEXT apply to PS AELFEXT. Instead, PS AFEXT is the important and measured parameter. For example at 1 MHz, the PSAELFEXT limit is 77.9 dB and the IL is 2.2 dB, for a PSAFEXT of 80.1 dB. At 10 MHz, the PSAELFEXT limit is 57.9 dB and the IL is 6.3 dB, for a PSAFEXT of 64.2 dB. The lower frequency limit for pass/fail must be raised above 1 MHz, but possibly not as much as for PSANEXT. For consistency with PSANEXT requirements, the same 10 MHz lower frequency is recommended. Without this change, verification of performance at low frequencies becomes practically impossible.

SuggestedRemedy

Change the lower frequency of the PS AELFEXT requirement to 10 MHz in equation 55.29.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to 687

Cl **55** SC **55.7.3.2.1** P **208** L **26** Comment # 249

Koeman, Henriecus Fluke Networks

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

See previous comments. Without this change, verification of performance at low frequencies becomes practically impossible.

SuggestedRemedy

Change the lower frequency of the PS AELFEXT requirement to 10 MHz in equation 55.30.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to 687

Cl **55** SC **55.7.3.2.1** P **208** L **9** Comment # 197

David V James JGG

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

DVJ-197
Nonstandard math. EL(f)i looks like a product of two numbers.

SuggestedRemedy

EL(f)i
==>
ELi(f)
OR
EL(f,i)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change to ELi(f)

Cl **55** SC **55.7.3.2.2** P **209** L **10** Comment # 201

David V James JGG

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

DVJ-201
Extraneous period.

SuggestedRemedy

.Table
==>
Table

Response *Response Status* **C**

ACCEPT.

See comment 391

Cl **55** SC **55.7.3.2.2** P **209** L **10** Comment # 391

Beck, Michael Alcatel Bell n.v.

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

This line starts with a period.

SuggestedRemedy

Remove period.

Response *Response Status* **C**

ACCEPT.
Same as comment 201

Cl **55** *SC* **55.7.3.2.2** *P* **209** *L* **10** *Comment #* 589

Thompson, Geoff Nortel

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

The text has an extra leading period.

SuggestedRemedy

Change: ".Table 55–9 lists the calculated..."

To: "Table 55–9 lists the calculated..."

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.7.3.2.2** *P* **209** *L* **10** *Comment #* 528

Zimmerman, George Solarflare Communicati

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

Typo: AELFEXT_consants

SuggestedRemedy

change to AELFEXT_constants

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.7.3.2.2** *P* **209** *L* **12** *Comment #* 198

David V James JGG

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

DVJ-198
Misleading capitalization

SuggestedRemedy

Cabling types, distances and PS AELFEXT Constants
==>
Cabling types, distances and PS AELFEXT constants

Response *Response Status* **C**

REJECT.

See response to comment 126

Cl **55** *SC* **55.7.3.2.2** *P* **209** *L* **15** *Comment #* 199

David V James JGG

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

DVJ-199
Misleading capitalization

SuggestedRemedy

Insertion Loss at 250 MHz
==>
Insertion loss at 250 MHz

Response *Response Status* **C**

REJECT.

See response to comment 126.

Cl **55** *SC* **55.7.3.2.2** *P* **209** *L* **18** *Comment #* 202

David V James JGG

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

DVJ-202
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
right three columns

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 180

Cl **55** *SC* **55.7.4** *P* **209** *L* **41** *Comment #* 419

Kasturia, Sanjay — Teranetics

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

55.7.2 specifies the cabling parameters for a viable 10GBASE-T link segment.
55.7.3 specified the coupling parameters covering coupling between link segments. 55.7.4 specifies the noise environment. I think the noise environment should come after 55.7.2 so that 55.7.2 and the new 55.7.3 will completely specify the operating channel for a PHY.

What is now 55.7.3 (Coupling parameters) will now become 55.7.4 and should provide detailed justification of the noise environment.

SuggestedRemedy

Move 'Noise environment' from after 55.7.3 to before 55.7.3. Include in it the net effect of all the noise due the coupling between links.

Response *Response Status* **C**

REJECT.

The 55.7.4 subclause characterizes the total noise environment including 55.7.3. It should follow 55.7.3 and provide total noise budget.

Cl **55** *SC* **55.7.4** *P* **209** *L* **41** *Comment #* 520

Baumer, Howard — Broadcom

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

This section does not appear to add to the specification as it is purely informative to help a potential vendor implement a transceiver.

SuggestedRemedy

This is more suited to be included as an Informative Annex.

Response *Response Status* **W**

REJECT.

The subclause characterizes the total noise environment. Follows subclause headings structure from 1000BASE-T.

Cl **55** *SC* **55.7.4** *P* **209** *L* **53** *Comment #* 200

David V James — JGG

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

DVJ-200
Misleading capitalization

SuggestedRemedy

Near-End Crosstalk
==>
Near-end crosstalk

Response *Response Status* **C**

REJECT.

See response to comment 126.

Cl **55** *SC* **55.7.4** *P* **210** *L* **5** *Comment #* 203

David V James — JGG

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

DVJ-203
Misleading capitalization

SuggestedRemedy

Far-End Crosstalk
==>
Far-end crosstalk

Response *Response Status* **C**

REJECT.

See response to comment 126.

Cl **55** *SC* **55.7.4** *P* **210** *L* **8** *Comment #* 204

David V James — JGG

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

DVJ-204
Misleading capitalization

SuggestedRemedy

Inter-Symbol Interference
==>
Inter-symbol interference

Response *Response Status* **C**

REJECT.

See response to comment 126.

Cl **55** *SC* **55.8.1** *P* **211** *L* **39** *Comment #* 205

David V James JGG

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

DVJ-205
Small values are supposed to be centered.

SuggestedRemedy

Center the following columns:
All columns

Response *Response Status* **C**

REJECT.

See response to comment 180

Cl **55** *SC* **55.8.1** *P* **211** *L* **9** *Comment #* 532

Zimmerman, George Solarflare Communicati

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

Typo in reference: IEC 60603-7: 1995 should be IEC 60603-7: 1996

SuggestedRemedy

Correct to IEC 60603-7: 1996 on page 211 line 9
Correct to IEC 60603-7: 1996 on page 233 line 8

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.8.2** *P* **211** *L* **57** *Comment #* 590

Thompson, Geoff Nortel

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

I don't understand this clause and especially the note. Is the intent to require automatic implementation of the cross-over function without regard to whether or a straight or cross-over cable is used? Ifso the wording does not indicate this. If not, then I don't understand the intent.
The absolute requirement (for that is how it is stated) for the jack to be marked with an "X" means that the same jack can not be used in multiple speed implementations.

SuggestedRemedy

I'm not sure. Once I know the intent perhaps I can help work out the wording.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Remove 55.8.2 and the editors note. The subclause does not add additional requirements to the 10GBASE-T PHY other than marking of an X for having the automatic crossover, which will be mandatory on all 10GBASE-T PHY's, so this will not be needed. For multiple speed implementations the requirements for those PHY's will be followed.

Cl **55** *SC* **55.8.2** *P* **212** *L* **16** *Comment #* 450

Wael William Diab Cisco Systems

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

The Editor's note contains technical information that is relevant to the text. Either this is informative or normative but the way it is captured as an editor's note is confusing. Is the intent that this would be deleted at publication?

SuggestedRemedy

If the intent is that the editor's note will be removed at publication please state that. Otherwise please incoporate the comment into the text as normative or informative , whichever is appropriate. In this case I think the mandatory language would be explicit with a shall that is associated with a PICS entry.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove note as per comment 590.

Cl **55** *SC* **55.8.2** *P* **212** *L* **6** *Comment #* 523

Zimmerman, George Solarflare Communicati

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

Recommendation to implement the crossover in the PHY local to the multiport device is not compatible with mandatory MDI crossover, considering the crossover is determined before the autonegotiation process.

SuggestedRemedy

Remove recommendation to implement crossover in the PHY local to the multiport devices

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove note as per comment 590.

Cl **55** *SC* **55.8.3** *P* **212** *L* **23** *Comment #* 533

Zimmerman, George Solarflare Communicati

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

Reference to ANSI/TIA/EIA-568-B:2:2002 should be reference to ...B2-1:2002

SuggestedRemedy

Correct reference as above.

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.8.3** *P* **212** *L* **23** *Comment #* 398

Christopher DiMinico MC Communications

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

The reference to Category 6 is ANSI/TIA/EIA-568-B.2-1-2002.

SuggestedRemedy

Change: ANSI/TIA/EIA-568-B.2:2002

To: ANSI/TIA/EIA-568-B.2-1-2002

Response *Response Status* **C**

ACCEPT.

Cl **55** *SC* **55.8.3.1** *P* **204** *L* **38** *Comment #* 14005

Powell, Scott Broadcom

Comment Type **T** *Comment Status* **A** *mdi - rl*

Not necessary to specify RL to 500MHz with a 400MHz signal.

SuggestedRemedy

Change upper limit from 500MHz to 400MHz to ease transformer/connector implementation.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Related comments : 695, 14005

Relax the return loss specification above 400MHz; make no substantive change to the requirements below 400MHz as below:

loss = 6 - 30log(f/400) dB for 400<f<500

Currently the draft specifies parameters to 500MHz - see editor's note on page 215

This comment was on D1.4 and was resubmitted by the editor.

Cl **55** *SC* **55.8.3.1** *P* **212** *L* **38** *Comment #* 695

Powell, Scott Broadcom

Comment Type **TR** *Comment Status* **A** *mdi - rl*

(Resubmission of comment 34 from last meeting deferred by task force.) Not necessary to specify RL to 500MHz with a 400MHz signal. Accepted resolution to comment 34 last meeting: "Editor will resubmit to working group ballot"

SuggestedRemedy

Change upper limit from 500MHz to 400MHz.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Related comments : 695, 14005

Relax the return loss specification above 400MHz; make no substantive change to the requirements below 400MHz as below:

loss = 6 - 30log(f/400) dB for 400<f<500

Cl **55** *SC* **55.8.3.2** *P* **212** *L* **44** *Comment #* 456

Cohen, Larry Independent

Comment Type **T** *Comment Status* **A** *mdi - impedance balance*

The impedance balance test circuit shown in Figure 55-31 is not practical to the specified bandwidth of 500 MHz. Note the component impedance, which includes the fabrication parasitics as well as the nominal resistance, must be matched to the necessary tolerance. Also the given test circuit provides 96 Ohms instead of 100 Ohms differential termination.

SuggestedRemedy

Use a balun based test circuit. Example off-the-shelf test balun BH Electronics 040-0092 provides a minimum of 50 dB balance to 650 MHz.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Neither resistors or baluns are sufficient to make accurate measurements to higher frequencies. Change measurement method to a more appropriate test method.

In favor: 12
Opposed: 2

Cl **55** *SC* **55.8.3.2** *P* **212** *L* **48** *Comment #* 422

Cobb, Terry — Systimax

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

The balance will not meet the latest magnetics measurements that are posted on our web.

SuggestedRemedy

See contribution from tcobb

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change to a recommendation.

Change equation to:
50 30 MHz <= f < 100 MHz
50 - 32 x ((f-100)/1000) 100 MHz <= f <= 500 MHz

Add editor's note indicating More data will be presented.

This as per the equation on slide 10 of cobb_1_0505.pdf with upper freq reduced from 1000MHz to 500MHz.

Cl **55** *SC* **55.8.3.2** *P* **213** *L* **10** *Comment #* 206

David V James — JGG

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

DVJ-206
Misleading capitalization

SuggestedRemedy

DEVICE UNDER TEST
==>
Device under test

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove figure

Cl **55** *SC* **55.8.3.2** *P* **213** *L* **21** *Comment #* 451

Wael William Diab — Cisco Systems

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

It looks like this would be deleted at publication. Also it would be more helpful to reference a presenation rather than a specific company name.

SuggestedRemedy

Please state that the editor's note will be removed at publication. Please reference a presentation or information if this is to be carried formward in D2.1

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove note

Cl **55** *SC* **55.8.3.3** *P* **213** *L* **27** *Comment #* 501

Chris, Pagnanelli — Solarflare Communicati

Comment Type **T** *Comment Status* **A** *mdi - common mode outpu*

The common-mode output voltage requirement was changed from 50 mV peak-to-peak to 15 mV peak-to-peak without final feedback from the task force.

SuggestedRemedy

Change the common-mode output voltage requirement to 50 mV peak-to-peak, pending final feedback from the task force.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Not necessary based on response to comment 355

Related comments: 279, 355, 423, 457, 501

Cl **55** *SC* **55.8.3.3** *P* **213** *L* **27** *Comment #* 457

Cohen, Larry — Independent

Comment Type **T** *Comment Status* **A** *mdi - common mode outpu*

The common-mode output signal measured on a single pair may have a partial return path through phantom circuit coupling and hence is not the true common-mode output appplicable to potential radiated emission. Emission limits are frequency dependent so a single wideband peak-to-peak specification limit is not applicable to emissions compliance. Finally, the common-mode output voltage test circuit shown in Figure 55-32 is not practical to the specified bandwidth. Note the component impedance, which includes the fabrication parasitics as well as the nominal resistance value, must be matched to the necessary tolerance.

SuggestedRemedy

An antenna current measurment performed with a clamp-on current probe over the entire cable (all four pairs at once) would provide the true common-mode output. Change the single pair common-mode voltage measurement to an antenna current (current probe) measurement. Change the peak-to-peak specification to a frequency dependent limit mask whereby the current is measured over a specific bandwidth (e.g. 100 kHz.).

However, if the task force chooses to remain with a single-pair common-mode voltage measurement, replace the test circuit in Figure 55-32 with a balun based test circuit. Example off-the-shelf test balun BH Electronics 040-0092 provides a minimum of 50 dB balance to 650 MHz.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 355

Related comments: 279, 355, 423, 457, 501

Cl **55** *SC* **55.8.3.3** *P* **213** *L* **28** *Comment #* 355

Siavash Fallahi — Broadcom

Comment Type **TR** *Comment Status* **A** *mdi - common mode outpu*

A single peak-to-peak voltage measurement of the common mode output may not be a sufficient predictor of EMI compliance. Additionally, data has not been presented to motivate the choice of 15mVpp.

SuggestedRemedy

A common mode PSD mask (maximum common mode dBm/Hz vs frequency) should be specified along with experimental data validating that a compliant cabling system driven with such a signal can meet CISPR/FCC Class A EMI emissions limits.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Drop the common mode output voltage measurement test and extend the impedance balance test to 1000MHz.

In favor: 14
Opposed: 3

It is beyond the scope of the standard to define a system level EMI emissions test, this has been done in other standards bodies. Sub-clause 55.9.5 already requires a system integrating a 10GBASE-T phy to meet those requirements. See comment 279.

See presentation by tcobb on common-mode voltage.

Related comments: 279, 355, 423, 457, 501

Cl **55** *SC* **55.8.3.3** *P* **213** *L* **28** *Comment #* 423

Cobb, Terry — Systimax

Comment Type **T** *Comment Status* **A** *mdi - common mode outpu*

The common-mode voltage needs only to be specified at frequencies greater than 30 MHz. Also change to dBm to be consistent with other specifications.

SuggestedRemedy

Change text after less than to:

-32.5 dBm for all frequencies greater than 30 MHz.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

No longer necessary due to response to comment 355.

Related comments: 279, 355, 423, 457, 501

Cl **55** *SC* **55.8.3.3** *P* **213** *L* **29** *Comment #* 279

Dove, Daniel — HP ProCurve Networki

Comment Type **TR** *Comment Status* **A** *mdi - common mode outpu*

15mV is an impractical and unnecessary limit.

EMI compliance is not directly related to the common-mode voltage on the MDI, but rather, to the frequency/amplitude vector and is outside the scope of this standard.

SuggestedRemedy

Change to 50mV to remain consistent with earlier standards.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Based on response to comment 355. This is no longer necessary.

Related comments: 279, 355, 423, 457, 501

Cl **55** *SC* **55.8.3.3** *P* **213** *L* **34** *Comment #* 207

David V James — JGG

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

DVJ-207
Misleading capitalization

SuggestedRemedy

DEVICE UNDER TEST
==>
Device under test

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove figure

Cl **55** *SC* **55.8.3.4** *P* **214** *L* **19** *Comment #* 208

David V James — JGG

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

DVJ-208
Misleading capitalization

SuggestedRemedy

DEVICE UNDER TEST
==>
Device under test

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove figure

Cl **55** *SC* **55.8.3.4** *P* **214** *L* **9** *Comment #* 292

Reviriego, Pedro — Agere Systems

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

The test 'A powered MDI will not disrupt 10GBaseT and vice versa' is not clear.

SuggestedRemedy

Include a reference to relevant PoE standards.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to 534

Related comments: 292, 534

Cl **55** *SC* **55.8.3.4** *P* **214** *L* **9** *Comment #* 534

Zimmerman, George — Solarflare Communicati

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

The requirement "A powered MDI will not disrupt 10GBASE-T and vice versa." is not applicable because there is no 10GBASE-T link to which one can apply power. It seems that the intent was to assure that when a 10GBASE-T PHY is connected to a powered MDI as a link partner, no damage is caused to either the 10GBASE-T PHY or the powered MDI.

SuggestedRemedy

Reword to "A 10GBASE-T PHY shall be able to sustain, without damage, connection to a powered MDI, and shall not cause damage to the powered MDI".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Reword as shown below: and add reference to POE clause.

A 10GBASE-T PHY shall be able to sustain, without damage, connection to a PSE and shall not cause damage to the PSE.

Related comments: 292, 534

Cl **55** *SC* **55.9** *P* **215** *L* **4** *Comment #* 524

Zimmerman, George — Solarflare Communicati

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

The editors note appears to be a fragment out of place. It is not clear what is the application of the frequency range of interest and what the equations are.

SuggestedRemedy

Delete or clarify

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete

Cl **55** *SC* **55.9.2** *P* **215** *L* **5** *Comment #* 293

Reviriego, Pedro — Agere Systems

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

The editor's note is not underlined.

SuggestedRemedy

Underlined it for consistency.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete note.

Cl **55** *SC* **55.9.3** *P* **215** *L* **10** *Comment #* 344

Dawe, Piers — Agilent

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

Our normative references need to be specific, version-controlled, available, reasonable and relevant. The variety of codes and regulations that might apply to IT equipment and cable installation through the near 200 countries of the world is none of these. Such local codes may include restrictions on qualifications, years of apprenticeship, gender, religion, membership of political party, pricing, ... We cannot mandate these varied and possibly unsuitable requirements. Recent PMD clauses have omitted this subclause altogether or downgraded it to a recommendation. It remains so obvious that one has to obey the law that we don't need to say that.

SuggestedRemedy

For preference, remove the sentence 'It is a mandatory requirement that sound installation practice, as defined by applicable local codes and regulations, be followed in every instance in which such practice is applicable.', and the associated PICS. Or, if some guidance is necessary, write down specifically what to look out for, and remove the PICS. Or, less desirable, change to 'It is recommended that {proper|sound} installation practice(s), as define by applicable local codes and regulation(s), be followed in every instance in which such practice(s) are applicable.', and remove the PICS. (Options in last sentence for info, representing the differences between .3an/D2.2 55.9.3 and 58.8.3.)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "It is a mandatory requirement" to
"It is recommended" and remove associated PICS.

Cl **55** SC **All** P **All** L **All** Comment # 383

Sailesh Rao Phyten Technologies, I

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

It is not feasible to implement a robust receiver for 100m Cat-6E (Model 3) line length operation using the 128 Double Square line coding scheme documented in Draft 2.0, for two main reasons:
1. Even assuming all noise sources are perfectly Gaussian, the input-referred rms noise budget for the receiver is 650 microvolts, using an optimum MMSE implementation (ref. vareljian_1_1104.pdf). This is the noise budget that must be allocated to overcome
a) residual Echo
b) residual NEXT
c) residual FEXT
d) A/D quantization noise
e) sampling jitter noise
f) circuit thermal noise
g) finite precision implementation noise, etc.
This total noise budget is inadequate and it is, in fact, 7.0dB lower than just the thermal noise budget used in the 802.3ap task force models (altmann_01_1104.pdf, slide 5).
2. Three out of seven bits in the 128DSQ line code are not protected by the LDPC code. These unprotected bits are vulnerable to isolated noise events on the order of a few millivolts (ref. rao_1_1104.pdf, slide 23).

SuggestedRemedy

At least two line code alternatives were presented in rao_2_1104.pdf to address the fundamental inadequacies of the 128-DSQ line code used in D2.0. Either PAM16-P or PAM8-P would be an useable choice for 10GBASE-T.

Response *Response Status* **U**

REJECT.

All in favor of accepting comment:
Yes: 4
No: 25

Motion to accept fails.

Motion to reject. See response to 387

Yes: 25
No: 4
Motion passes

Cl **55A** SC P **237** L **12** Comment # 234

David V James JGG

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

DVJ-234
Typos.

SuggestedRemedy

Hb_Gb_matrices.zip)).
==>
Hb_Gb_matrices.zip).

Response *Response Status* **C**

ACCEPT.

Cl **55A** SC P **237** L **18** Comment # 233

David V James JGG

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

DVJ-233
All references belong in the references or bibliography clauses.

SuggestedRemedy

Move this Gallager reference to the Bibliography, with a cross-reference here.

Response *Response Status* **C**

ACCEPT.

Reference moved to Annex A.

Cl **55A** SC P **237** L **19** Comment # 367

Barrass, Hugh Cisco Systems

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

The reference should be in Annex A.

SuggestedRemedy

Replace:

"A classic reference on LDPC codes is “Low-Density Parity-Check codes,” by Robert G. Gallager - The MIT Press (September 15, 1963)."

With:

"For further information on LDPC codes, see reference [Bnn]."

Add reference to Annex A.

Response *Response Status* **C**

ACCEPT.

Cl **55A** SC P **237** L **7** Comment # 235

David V James JGG

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

DVJ-235
Misleading capitalization

SuggestedRemedy

The Parity Check Matrix
==>
The parity check matrix

Response *Response Status* **C**

ACCEPT.

Cl **55A** SC P **237** L **8** Comment # 366

Barrass, Hugh Cisco Systems

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

It is a bad idea to put the reference for the matrix generator in this position and in Clause 55.3

Note that this comment must be taken in conjunction with the preceding comment to remove the information from Clause 55.3.

SuggestedRemedy

Add the following text at the beginning of the paragraph:

"The file http://www.ieee802.org/3/an/private/gen_802.3an.txt contains a representation of G. gen_802.3an.txt contains 1723 rows, one for each row of G. Each row has numbers ranging from 0 to 2047 separated by spaces. Each number represents the column index of the “1” entries in the specific row. All other entries of G are “0”. G can also be constructed from P, which is available in PDF format online at https://www.ieee802.org/3/an/private/???.pdf. Annex 55A is an informative annex that describes how G was obtained from a sparse parity check matrix."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Cl **55A** SC P **237** L **8** Comment # 368

Barrass, Hugh Cisco Systems

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

The editor's note notwithstanding, the generator matrix must be made available in the public area of the website for future drafts.

SuggestedRemedy

Change the URL for this annex and for Clause 55.3 to point to a public area.

Response *Response Status* **C**

REJECT.

Drafts are in the private area. This is a part of the draft.

Cl **55A** SC **55A** P **237** L **19** Comment # 346

Dawe, Piers Agilent

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

Add the reference to the bibliography

SuggestedRemedy

per comment

Response *Response Status* **C**

ACCEPT.

Cl **99** SC P **1** L **24** Comment # 565

Booth, Brad Intel

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

This isn't a Task Force ballot.

SuggestedRemedy

Change to be Working Group ballot.

Response *Response Status* **C**

ACCEPT.

Cl **99** SC P **1** L **24** Comment # 303

Dawe, Piers Agilent

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

We're in working group ballot now.

SuggestedRemedy

Change 'Task Force Ballot' to 'working group ballot'.

Response *Response Status* **C**

ACCEPT.

Cl **99** *SC* *P* **2** *L* *Comment #* 607

Grow, Robert Intel

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

Front matter will be required for Sponsor Ballot. (Front matter is not part of the standard.)

SuggestedRemedy

Add more complete front matter (to be supplied by WG Chair) prior to Sponsor Ballot. It would be nice if this was done for at least one WG recirculation.

Response *Response Status* **U**

ACCEPT.

Cl **99** *SC* *P* **2** *L* **1** *Comment #* 306

Dawe, Piers Agilent

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

This is a pretty long document...

SuggestedRemedy

Please add a table of contents.

Response *Response Status* **C**

ACCEPT.

The bookmarks should suffice but we can add a table of contents.

Cl **99** *SC* *P* **3** *L* **1** *Comment #* 608

Grow, Robert Intel

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

These are not revisions, the are changes.

SuggestedRemedy

Retitle as changes.

Response *Response Status* **C**

ACCEPT.