

IEEE P802.3an D3.0 10GBASE-T Comments

Cl 00 SC 0 P 0 L 0 # 15  
 BOOTH, MR BRAD J Individual

Comment Type E Comment Status D

P. Dawe - Editorials; capitals, column widths, font sizes, odd marks in figures, front matter, 802.3-2005 vs 802.3REVAam, singular/plural...

SuggestedRemedy

per file sent to editor

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Some of the changes will be made. Others will be deferred to the IEEE editorial staff.

Cl 00 SC 0 P 0 L 0 # 2  
 COORDINATION, EDITORIAL

Comment Type GR Comment Status D

At the time of submission to the IEEE-SASB, or just prior to publication, you will need to supply email address for each member of the Working Group that worked on this standard. This will ensure that all members of the Working Group receive a complimentary PDF of the published standard.

SuggestedRemedy

Proposed Response Response Status W

PROPOSED ACCEPT.

Will be done by the WG chair.

Cl 00 SC 0 P 1 L 6 # 70  
 GROW, ROBERT M Individual

Comment Type E Comment Status D

Based on MEC comments on another project, this is "Draft amendment to"

SuggestedRemedy

Change "of" to "to"

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 00 SC 0 P 2 L 39 # 71  
 GROW, ROBERT M Individual

Comment Type ER Comment Status D

Some of the front matter introduction has been changed inconsistently. For example 802.3-2005 has "Section One" rather than "Section one". "Section One" is also used in the body of 2005 (one footnote).

SuggestedRemedy

Reconcile front matter in consultation with WG Chair and Editors. Incorporate valid comments submitted on other projects against this same front matter information. This includes a rewrite of section descriptions for accuracy (e.g., not all 10 Mb/s specifications are in Section One), listing of anticipated published standards per MEC comments, and making consistent for all amendments per MEC comments.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Actual changes will be deferred to WG Chair.

Editor's Note on the front matter (page 3) will be modified to indicate that all comments on the front matter will be referred to the WG Chair for consideration in consultation with the publication editor.

Based on MEC comments, the Editor's note will be changed to indicate that a description of any approved amendment or corrigendum would be added during publication preparation.

[The one document missing from the list is IEEE Std 802.3-2005/Cor1-20xx This won't be added and the rest will be deleted - to be added by the WG Chair/IEEE editorial staff at publication ]

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Cl 01 SC 1.3 P 12 L 15 # 72  
 GROW, ROBERT M Individual

Comment Type TR Comment Status D

The reference and Editor's note may not pass RevCom criteria and are confusing. While the Editor's Note may be appropriate for the reference on line 11, it isn't for the reference on 15.

SuggestedRemedy

If 2.1 is an approved draft awaiting publication then: "Edition 2.1 of ISO/IEC 11801 is an approved draft awaiting publication. When published this draft will superceed the 11801:2002 reference included in IEEE Std 802.3-2005, and the existing reference year can be changed to the current year of 11801 publication. If not published, the referenced draft should be included as a separate reference because it contains unique material required for this amendment.If 2.1 is not an approved draft, it is inappropriate to blindly give license to the publication editor to update when the final content is not known, and the reference should be to the latest draft known to have the relevant material for this amendment.

Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 01 SC 1.4 P 12 L 36 # 73  
 GROW, ROBERT M Individual

Comment Type ER Comment Status D

It is not wise to ignore MEC comments whether required or not. There was a pre-ballot MEC comment on 1.5 and it is appropriate to be consistent here.

SuggestedRemedy

List these items in alphanumeric order.

Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.

- Change to order below:  
 1.4.xxx 10GBASE-T: . . .  
 1.4.xxx 64B/65B transmission code: . . .  
 1.4.xxx DSQ128: . . .  
 1.4.xxx Hybrid: A circuit . . .  
 1.4.xxx LDPC(1723,2048) frame: . . .  
 1.4.xxx Tomlinson-Harashima precoder (THP): . . .

Cl 01 SC 1.5 P 13 L 4 # 74  
 GROW, ROBERT M Individual

Comment Type ER Comment Status D

Implement the pre-ballot MEC comment

SuggestedRemedy

List these items in alphanumeric order.

Proposed Response Response Status W  
 PROPOSED ACCEPT.

- Put into the order shown below:  
 Cat 6 Category 6 balanced cabling  
 AN Auto-Negotiation  
 DSQ double square  
 FIR finite impulse response  
 LD local device  
 LDPC low density parity check  
 LP link partner  
 NP next page  
 SFDR spurious free dynamic range  
 THP Tomlinson-Harashima precoder  
 XNP extended next page

Cl 05 SC 5 P 33 L 31 # 6  
 SWENSON, NORMAN L Individual

Comment Type T Comment Status R

This is a pile-on to comment 113 by Tom Lindsay on D3.0. Surveying additional module vendors and EDC vendors since the last meeting has revealed a growing concern that the TWDP limit should be raised to allow more manufacturing margin and that this would not be a problem for EDC chips on the market given the current margin in the link budget.

SuggestedRemedy

Increase the TWDP limit to 5.0 dB.

Response Response Status C  
 REJECT.

This comment appears to be on 802.3aq and it is out of the scope of the 802.3an project

IEEE P802.3an D3.0 10GBASE-T Comments

Cl 28 SC 28.2 P14 L 33 # 75  
 GROW, ROBERT M Individual

Comment Type ER Comment Status D  
 Reconcile base text.

SuggestedRemedy

Is Figures 28-14 to 28-17 in base text. These should probably be hot links "Figure 28-14 to Figure 28-18". An Editor's Note to explain if numbers are 2005 or autoadjusted would be appropriate.

Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 28 SC 28.2.1.1.2 P15 L 2 # 76  
 GROW, ROBERT M Individual

Comment Type ER Comment Status D  
 Reconcile base text.

SuggestedRemedy

(Figure 28-6) is existing text, remove underscore.

Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 28 SC 28.2.1.2.2 P15 L 42 # 55  
 LAW, DAVID J Individual

Comment Type TR Comment Status D  
 \*\*\* Comment submitted with the file 1142700024-XNP\_changes.FM attached \*\*\*

Subclause 28.2.1.2.2 'Technology Ability Field' specifies that bit D12 of the Base page encoding is Technology Ability field bit A7. As described in subclause 28.2.1.2.2 the meaning of the Technology Ability field bits are dependent on the value of the Selector field - the meaning of A7 when the Selector field value is IEEE 802.3 is defined in Annex 28B - in IEEE P802.3an bit A7 is defined as the Extended Next page (XNP) bit.

It is therefore not correct to state in the new subclause 28.2.1.2.3 'Extended Next Page' found in IEEE P802.3an that Extended Next page (XNP) is encoded in D12 of the base Link Code word or in subclause 28.2.3.4 that the XNP is a mandatory control bit (Page 16, line 19). This is only true when the Selector Field value is 'IEEE 802.3 as defined in Annex 28A'. When the Selector Field value is any other value defined in Annex 28A it is up to that particular standard to define the meaning of the Technology Ability field bits - they could choose to define A7 as XNP bit - but as the specification stands it would be quite legitimate, perverse, but legitimate, for them to define the XNP bit as any of the other Technology Ability field bits. It is also permissible to decide not to support Extended Next page and define A7 for their Selector Field value to mean something else.

This now means that we have now included a facility, Extended Next Page, in Clause 28 that is dependent on the Selector field value. I thought that was something we didn't do and that the functions in Clause 28 were available to all Auto-Negotiation uses. I think this is a pity as I believe that IEEE 1394c intend to use Auto-Negotiation Next Page Message code #5 and the ability to use Extended Next Pages would have made things more efficient for them. INCITS T11.2, who I understand are also about to ask for a Selector field (see item 8.1.4 of 'Draft minutes from FC-BaseT interim meeting on 1/19/06'), may also want to take advantage of Extended Next Page.

Now for them to be able to use Extended Next Page they will have to define a Ability bit in their standards, hopefully A7, to represent Extended Next page (XNP) bit. I agree that this is not a great effort and we can make sure we tell them to do this but it is all a bit confusing and an added complication.

SuggestedRemedy

[Option 1 - which I would recommend]. Redefine the Technology Ability Field to be seven bits long A[6:0] freeing up bit D12 of the Base Page encoding. I note that Table 55ü10 '10GBASE-T Base and Next Pages bit assignments' as well as registers 7.16 and 7.19 already do this.

To complete this, change the text in subclause 28.2.1.2.3 to state that the XNP bit is not supported for the Selector Field encoding 'IEEE Std 802.5' and 'IEEE Std 802.9' where bit D12 instead forms a eight Technology Ability Field - this will grandfather in existing implementations. Subclauses 28.2.4.1.3, Figures 28-2, 28-3 and 28B-1 changed to reflect the smaller Technology Ability Field. I have attached a FrameMaker file with the appropriate changes.



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This seems the best approach as all future uses of Auto-Negotiation will be able to use Extended Next page without having to define the XNP in there version of the Technology Ability field. It also seems reasonable to redefine what was a reserved bit, thought admittedly it was defined as a reserved Ability bit. We should however contact IEEE 1394 to make sure they are aware of this change, their draft is about to undergo sponsor ballot.

[Option 2] Subclause 28.2.1.2.3 'Extended Next Page' should be moved to be a subclause of 28.2.1.2.2 'Technology Ability Field'. Text should be added to make it clear that this bit is guaranteed to be encoded in bit D12 when the selector encoding is IEEE 802.3. For other values of the selector field the Extended Next Page bit may not exist, and when it does exist the bit position it is in will be defined by that standard.

*Proposed Response*      *Response Status* **W**  
 PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

This comment was entered incorrectly by the commenter and he has submitted his comment again and it shows up with a different number (55).

**Cl 28**      **SC 28.2.1.2.2**      **P 15**      **L 42**      # 56  
 LAW, DAVID J      Individual

*Comment Type* **G**      *Comment Status* **D**

Please ignore the 'General' category I placed against this subclause, it should have been 'Technical' but Myballot will not let category be changed after a comment is submitted. I have therefore submitted the comment again as a 'Technical require'.

*SuggestedRemedy*  
 See comment.

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

This is requesting withdrawal of comment 51 (which was incorrectly classified by the commenter as "G")

**Cl 28**      **SC 28.2.3.4**      **P 16**      **L 36**      # 16  
 BOOTH, MR BRAD J      Individual

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

P. Dawe - Here and elsewhere, some "will be"s that maybe should be is, shall be, should be or as appropriate

*SuggestedRemedy*  
 Scrub the document for bad "will"s

*Proposed Response*      *Response Status* **W**  
 PROPOSED REJECT.

This, among some of the other "will" occurrences are from the 2005 base text and are not being modified by 802.3an. It is out of scope to make these changes.

**Cl 28**      **SC 28.2.3.4.12**      **P 17**      **L 59**      # 79  
 GROW, ROBERT M      Individual

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

Is this to mean Insert subclause 28.2.3.4.12 after existing 28.2.3.4.10 (renumbered to 28.2.3.4.11), and renumber subsequent subclauses.

*SuggestedRemedy*  
 Fix editing instruction per comment

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

The editing instruction will read "Insert subclause 28.2.3.4.12 after existing 28.2.3.4.10 (renumbered to 28.2.3.4.11), and renumber subsequent subclauses.

**Cl 28**      **SC 28.2.3.4.2**      **P 16**      **L 50**      # 80  
 GROW, ROBERT M      Individual

*Comment Type* **E**      *Comment Status* **D**  
 Inconsistent subclause number.

*SuggestedRemedy*  
 Change instruction to 28.2.3.4.2

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

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Cl 28 SC 28.2.4.1.8 P 18 L 38 # 81  
 GROW, ROBERT M Individual

Comment Type E Comment Status D  
 Reconcile base text.

SuggestedRemedy  
 Line 38, third column heading should be underscore  
 Line 46, 53, 55, 2005 is "Link Partner"  
 Line 59, 2005 is "Able"  
 Page 19, Line 10, 2005 is "Able"

Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.

The column heading will be changed. Similar changes will be made to "link partner".

Comment 222 against D3.0 resulted in all occurrences of "Next Page Able" being changed to "Next Page able". This should fix all occurrences within 2005 to "Next Page able".

Cl 28 SC 28.2.4.1.8 P 19 L 12 # 60  
 LAW, DAVID J Individual

Comment Type T Comment Status D  
 \*\*\* Comment submitted with the file 1143200024-table\_28-8.fm attached \*\*\*

The State Diagram variable column defines the Next Page transmit as mr\_np\_tx[page\_size:1] which seems to tie the size of these registers to a variable that is 'set during the entry to the NEXT PAGE WAIT state' (see page 20, line 54). Also when page\_size does take the value 48 there is a mismatch between mr\_np\_tx and the MII register which is only 16 bits.

SuggestedRemedy  
 Suggest that a separate line be provided for mr\_np\_tx[16:1] and mr\_np\_tx[48:17]. These do have fixed mapping to the MII and MDIO register, also can add text to make it clear that the MII register set does not support extended next Page Operation.

See attached FrameMaker file.

Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 28 SC 28.3 P 19 L 30 # 82  
 GROW, ROBERT M Individual

Comment Type E Comment Status D  
 Should probably be written for hot links.

SuggestedRemedy  
 Figure x to Figure y

Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 28 SC 28.3.1 P 20 L 53 # 64  
 LAW, DAVID J Individual

Comment Type T Comment Status D

I cannot find where page\_size is set to any value, there is a comment in it's definition in the variables subclause that it will be set to the value 48 on entry to the NEXT PAGE WAIT state. There is however no statement if and when it will ve returned to the value of 16 which I assume may happen if the link is moved from one port to another that does not support extended Next pages.

SuggestedRemedy  
 I assume what is intended here is that page\_size is set by the variable definition and will not be explicitly set in the state machine. Assuming this is correct:

- [1] Add page\_size to list of variables in note in lower right of Figure 28-18
- [2] Add the text 'NOTE' This variable is set by this variable definition; it is not set explicitly in the state diagrams.' under the page\_size variable
- [3] Is the text that page\_size is set to 48 on entry to NEXT PAGE WAIT correct, I suspect simply the value is updated prior to entry to NEXT PAGE WAIT and it could be to 48 or to 16.
- [4] Doesn't the value of page\_size also depend on the value of XNP received, even in the device supports extended next page and it is enabled it still should not transmit extended Next Pages if the XNP bit received is zero. If this is correct update the description of page\_size to include the condition of the last received XNP.

Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.

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Cl 28 SC 28.3.1 P 20 L 53 # 65  
LAW, DAVID J Individual

Comment Type T Comment Status D

I cannot find where page\_size is set to any value, there is a comment in it's definition in the variables subclause that it will be set to the value 48 on entry to the NEXT PAGE WAIT state. There is however no statement if and when it will ve returned to the value of 16 which I assume may happen if the link is moved from one port to another that does not support extended Next pages.

SuggestedRemedy

I assume what is intended here is that page\_size is set by the variable definition and will not be explicitly set in the state machine. Assuming this is correct:

- [1] Add page\_size to list of variables in note in lower right of Figure 28-18
- [2] Add the text 'NOTEùThis variable is set by this variable definition; it is not set explicitly in the state diagrams.' under the page\_size variable
- [3] Is the text that page\_size is set to 48 on entry to NEXT PAGE WAIT correct, I suspect simply the value is updated prior to entry to NEXT PAGE WAIT and it could be to 48 or to 16.
- [4] Doesn't the value of page\_size also depend on the value of XNP received, even in the device supports extended next page and it is enabled it still should not transmit extended Next Pages if the XNP bit received is zero. If this is correct update the description of page\_size to include the condition of the last received XNP.

Proposed Response Response Status W  
PROPOSED REJECT.

This comment is a duplicate of 64 by the same commenter.

Cl 28 SC 28.3.2 P 21 L 48 # 83  
GROW, ROBERT M Individual

Comment Type E Comment Status D

Reconcile base text.

SuggestedRemedy

Ending "." isn't new text. Remove underscore

Proposed Response Response Status W  
PROPOSED ACCEPT IN PRINCIPLE.

The final sentence of this paragraph is new for 802.3an and should be kept with the underscore. The penultimate sentence of the paragraph will be modified to show that the "." is not new text.

Cl 28 SC 28.3.2 P 22 L 19 # 85  
GROW, ROBERT M Individual

Comment Type E Comment Status D

Reconcile base text.

SuggestedRemedy

Ending "." isn't new text. Remove underscore

Proposed Response Response Status W  
PROPOSED ACCEPT.

Cl 28 SC 28.3.2 P 22 L 7 # 84  
GROW, ROBERT M Individual

Comment Type E Comment Status D

Reconcile base text.

SuggestedRemedy

Space should be underscore to get it 2005 editorial error corrected. For clarity Strike through "5ms" and underscore "5 ms".

Proposed Response Response Status W  
PROPOSED ACCEPT.

Cl 28 SC 28.3.3 P 23 L 39 # 86  
GROW, ROBERT M Individual

Comment Type E Comment Status D

Reconcile base text.

SuggestedRemedy

Needs the ending "." included in 2005.

Proposed Response Response Status W  
PROPOSED ACCEPT.

Period to be placed following "initialized to 1".

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Cl 28 SC 28.5 P 25 L 4 # 89  
 GROW, ROBERT M Individual  
 Comment Type ER Comment Status D  
 Reconcile base text.  
 SuggestedRemedy  
 Is "link" in 2005.  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 28 SC 28.5.1 P 25 L 14 # 90  
 GROW, ROBERT M Individual  
 Comment Type ER Comment Status D  
 Reconcile base text.  
 SuggestedRemedy  
 Is "protocol" in 2005  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 28 SC 28.5.4.3 P 26 L 7 # 91  
 GROW, ROBERT M Individual  
 Comment Type ER Comment Status D  
 Reconcile base text.  
 SuggestedRemedy  
 The subclause number of item 3 in 2005 is 28.2.1.1.1. Either correct base text or mark changes as appropriate.  
 Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.  
 Change to 28.2.1.1.1.

Cl 28 SC 28.5.4.8 P 26 L 38 # 92  
 GROW, ROBERT M Individual  
 Comment Type E Comment Status D  
 Reconcile base text.  
 SuggestedRemedy  
 Change marking would be clearer if entire value string were struck out and new entire value string were underscored (tough to see a strike through of a dash). Change Page 27 line 3 consistently.  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 28C SC 28C.6 P 71 L 58 # 1  
 THALER, PATRICIA A Individual  
 Comment Type TR Comment Status D  
 Figure 28C-1 shows the bits being sent in a different order than the text of 28C.6 defines. This is somewhat a service to humanity change because 10GBASE-T did not introduce the text or the figure, but 10GBASE-T adds extended next pages which make it much more practical to use Message #5.  
 Therefore, it would be best to fix this figure as soon as possible to avoid incompatible implementations.  
 SuggestedRemedy  
 Since the text was in the original Annex 28C and the figure was added recently, the figure should be changed to match the text.  
 To do that, each 11-bit group will need to be flipped. An example of how the change could be made is the similar figure in 802.3ap/d2.3 Annex 73A.  
 Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.  
 See response to comment 32.



IEEE P802.3an D3.0 10GBASE-T Comments

Cl 28C SC 28C.6 P72 L15 # 32  
LAW, DAVID J Individual

Comment Type T Comment Status D

\*\*\* Comment submitted with the file 1139100024-figure\_28C-1.fm attached \*\*\*

The bit order of Figure 28C-1 is not clear as neither LSB/MSB of D0/D15 is marked. If it were assumed that this figure was in the normal order, the transmit order, with LSB on the left and MSB on the right the figure would be interpreted incorrectly.

Instead my understanding, based on the greyed out portion to the right of each user code representing the T, Ack2, MP, Ack & NP bits, is that the figure shows the pages in the order they are transmitted, with the first transmitted page on the left, but shows the bits from each page with the first transmitted bit of each page on the right.

Regardless, this is all far too subtle and could easily be misinterpreted. This therefore should be clarified as part of the IEEE P802.3an project as the addition of Extended Next Page, with the resultant reduction in the time taken to exchange multiple Next Pages, may increase the likelihood of this message being implemented.

SuggestedRemedy

[1] Add to Figure 28C-1 annotations for: MSB/LSB on the OUI and dependant values; Next Pages Types (Message or Unformatted); D15 and D0 for the Next Pages.

[2] Add a note to Figure 28C-1 that the bit order is the opposite from normal, and in particular from Figure 28-11 and 28-12 which define the Message and Unformatted Next Pages used.

Please find an updated version of Figure 28C-1 with these changes in the FrameMaker file attached.

Proposed Response Response Status W  
PROPOSED ACCEPT.

Cl 30 SC 30.3.2.1.2 P28 L48 # 93  
GROW, ROBERT M Individual

Comment Type E Comment Status D

Incorrect marking

SuggestedRemedy

As an insert, it doesn't need to be underscore. Also line 57, page 28 line 6, page 30 line 29

Proposed Response Response Status W  
PROPOSED ACCEPT IN PRINCIPLE.

Remove underscore on pg 28, line 48 and 57; pg 29, line 6; and pg 30, line 29.

Cl 30 SC 30.5.1.1.17 P28 L7 # 94  
GROW, ROBERT M Individual

Comment Type E Comment Status D

Grammar

SuggestedRemedy

delete "a"

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Page number entered is incorrect. Applies to page 29, line 7.

See response to comment #63.

Cl 30 SC 30.5.1.1.2 P29 L7 # 63  
LAW, DAVID J Individual

Comment Type E Comment Status D

Typo.

SuggestedRemedy

'Insert a new management attributes ..' should read 'Insert the following new management attributes ..'

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 30 SC 30.6 P29 L58 # 96  
Langner, Paul Aquantia

Comment Type E Comment Status X

Need to add 10GBASE-T Four-pair twisted-pair balanced copper cabling PHY as specified in Clause 55 to the list in 802.3 (Page 318)

SuggestedRemedy

30.6.1.1.5 aAutoNegLocalTechnologyAbility  
Insert 10GBASE-T after 1000BASE-TFD in list

10GBASE-T Four-pair twisted-pair balanced copper cabling PHY as specified in Clause 55

Proposed Response Response Status W

This comment was submitted after the close of the ballot cycle. A response recorded here will not automatically upload to MyBallot

IEEE P802.3an D3.0 10GBASE-T Comments

CI 44 SC 44 P L # 95  
 GROW, ROBERT M Individual

Comment Type ER Comment Status D  
 Reconcile base text.

SuggestedRemedy

While I tried to do a detailed base text review of earlier clauses, someone else doing it would be good. I didn't get a chance to do it again on clause 44 and 45 and it needs to be done.

Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.

Pg 30, line 4, change strikeout from 50 to 50A.  
 Pg 31, line 31, change editing instruction to read "Change bullet d) of second paragraph of 44.1.3 to include a reference to Clause 55:"  
 Pg 31, line 44, change editing instruction to read "Change Table 44-1 to include a new row and column for 10GBASE-T."  
 Pg 32, Table 44-1, the contents of the table (not row headings) should be centered instead of left justified.  
 Pg 33, line10, change heading to match that in 802.3-2005 "Protocol implementation conformance statement (PICS) proforma"  
 Pg 33, line 20, uncapitalize "protocol implementation conformance statement (PICS) proforma" to comply with 802.3-2005  
 Pg 33, line 26, change editing instruction to read "Change first paragraph of 44.5 to reference to Table F.1."  
 Pg 33, line 32, add editing instruction before Table 44-4 "Change existing Table 44-4 and Table 44-5 to be renumbered to Table 44-6 and Table 44-7, respectively. Insert the following new table as Table 44-4:"  
 Pg 34, line 1, change editing instruction to read "Insert reference to Table F.2 and insert new table as Table 44-5."  
 Pg 34, line 16, change editing instruction to read "Insert reference to Table F4:"  
 Pg 34, line 20, remove the strikeout 4 and remove the underscore under the 6 so it reads only as "Table 44-6".

CI 45 SC 45.2.1.1.3 P37 L 35 # 12  
 MARRIS, ARTHUR Individual

Comment Type T Comment Status D  
 Bits 5 through 2 may be used to select EFM copper PHYs or 1000BASE-KX which would be included in '10, 100 or 1000 Mb/s'

SuggestedRemedy

Delete the recently added text 'For devices not operating at 10, 100 or 1000 Mb/s,'

Proposed Response Response Status W  
 PROPOSED REJECT.

The text was added as the suggested remedy to comment #65 made by Hugh Barrass against draft 3.0. It was accepted as a service to humanity.

CI 45 SC 45.2.1.1.3 P37 L 40 # 13  
 MARRIS, ARTHUR Individual

Comment Type T Comment Status D  
 Insert additional paragraph at end of 45.2.1.1.3 for clarity.

When set to 0000, bits 5:2 select the use of a 10G PMA/PMD. More specific selection is performed using the PMA/PMD control 2 register (Register 1.7) (see 45.2.1.6).

SuggestedRemedy  
 as above

Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.

Clarify wording to:

"When bits 5:2 are set to 0000 the use of a 10G PMA/PMD is selected. More specific selection is performed using the PMA/PMD control 2 register (Register 1.7) (see 45.2.1.6).

CI 45 SC 45.2.1.10 P40 L 27 # 8  
 MARRIS, ARTHUR Individual

Comment Type E Comment Status D  
 Delete 10G from title of Table 45-11

SuggestedRemedy

Delete 10G from title of Table 45-11

Proposed Response Response Status W  
 PROPOSED ACCEPT.

IEEE P802.3an D3.0 10GBASE-T Comments

Cl 45 SC 45.2.1.10.1 P41 L 5 # 18  
 BOOTH, MR BRAD J Individual

Comment Type E Comment Status D

P. Dawe - The descriptions of ability bits are not consistent in 45. In the text, we have 'PMA/PMD is able to operate as 10GBASE-LRM' but 'PMA/PMD is able to support a 10GBASE-CX4 PMA/PMD type'. 'Support' is not precise (that's why we sometimes use it in objectives!). Nor accurate: 'The floor supports the table, the computer supports Linux, the modem supports PPP, PCS is able to support PRBS31 pattern testing...' This should be harmonized across .3ap, .3aq (I have made a comment), and in the next revision.

SuggestedRemedy

Change to 'operate as 10GBASE-T.' (6 times, I think)

Proposed Response Response Status W

PROPOSED ACCEPT.

Change 2 places in each of 45.2.1.10.1, 45.2.1.10.2, 45.2.1.10.3, 45.2.1.10.4, 45.2.1.10.5, 45.2.1.10.6

Cl 45 SC 45.2.1.10.5 P41 L 28 # 9  
 MARRIS, ARTHUR Individual

Comment Type T Comment Status D

Insert subclauses for KR and KX4 ability bit definitions.

SuggestedRemedy

45.2.1.10.5 10GBASE-KR ability (1.11.4)  
 When read as a one, bit 1.11.4 indicates that the PMA/PMD is able to support a 10GBASE-KR PMA/PMD type. When read as a zero, bit 1.11.4 indicates that the PMA/PMD is not able to support a 10GBASE-KR PMA/PMD type.

45.2.1.10.6 10GBASE-KX4 ability (1.11.3)  
 When read as a one, bit 1.11.3 indicates that the PMA/PMD is able to support a 10GBASE-KX4 PMA/PMD type. When read as a zero, bit 1.11.3 indicates that the PMA/PMD is not able to support a 10GBASE-KX4 PMA/PMD type.

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 45 SC 45.2.1.4 P37 L 46 # 7  
 MARRIS, ARTHUR Individual

Comment Type E Comment Status D

The table number for speed ability is 45-6 not 45-5 as stated in the document

SuggestedRemedy

Change 45-5 to 45-6

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 45 SC 45.2.1.6 P38 L 43 # 17  
 BOOTH, MR BRAD J Individual

Comment Type T Comment Status D

P. Dawe - No PMD for 10BASE-T and 100BASE-T.

SuggestedRemedy

Remove non-existent PMDs. Also in PICS 10T.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change:

"10BASE-T PMA/PMD type"  
 to  
 "10BASE-T PMA type"

Change:

"100BASE-TX PMA/PMD type"  
 to  
 "100BASE-TX PMA type"

Change:

"1000BASE-T PMA/PMD type"  
 to  
 "1000BASE-T PMA type"

Also change page 64 line 7 from:

Change:  
 "10GBASE-T PMA/PMD type"  
 to  
 "10GBASE-T PMA type"

IEEE P802.3an D3.0 10GBASE-T Comments

Cl 45 SC 45.2.7 P51 L 35 # 10  
MARRIS, ARTHUR Individual

Comment Type T Comment Status D

Need to add a note saying that these registers do not apply to Clause 37 auto-negotiation.

SuggestedRemedy  
Insert.

Note: These registers are not used for Clause 37 1000BASE-X autonegotiation. Clause 37 defines the registers used for Clause 37 1000BASE-X autonegotiation.

Proposed Response Response Status W  
PROPOSED REJECT.

Cl 45 SC 45.2.7.1 P35 L 30 # 14  
MARRIS, ARTHUR Individual

Comment Type T Comment Status D

The following text has been added to 802.3ap at the end of subclause 45.2.7.1 (backplane Ethernet) to address multispeed (1000BaseT and 100BASE-TX) operation.

"A device that supports multiple port types may implement both Clause 22 control register operation and Clause 45 control register operation. Some control functions have been duplicated in both definitions. The register bits to control these functions are simply echoed in both locations, any reads or writes to these bits behave identically whether made through the Clause 22 location or the Clause 45 location."

This text is either out-of-date or properly belongs in 802.3an.

SuggestedRemedy

Consider adding the above text to 802.3an.

Proposed Response Response Status W  
PROPOSED ACCEPT.

Cl 45 SC 45.2.7.2 P54 L 30 # 11  
MARRIS, ARTHUR Individual

Comment Type E Comment Status D

In table 45-119 the two lower order reserved bit should be labelled 1:0

SuggestedRemedy  
Change 2:0 to 1:0

Proposed Response Response Status W  
PROPOSED ACCEPT.

Cl 45 SC 45.2.7.2 P54 L 30 # 31  
MARRIS, ARTHUR Individual

Comment Type T Comment Status D

In Table 45-119 there is no bit definition for 'Link Partner Auto-Negotiation Able' as defined by bit 6.0 in Table 28-5. There is a corresponding state machine variable mr\_lp\_autoneg\_able (Register bit 6.0). There is a definition of Auto-Negotiation able device in 28.2.2.1. So 802.3an should support a mirror of this bit in Clause 45 for backwards compatibility. This variable is in 802.3an-D3.0 Table 28-8 but there is no mapping of this bit to Cl.45 MDIO register.

SuggestedRemedy

Add following bit to Table 45-119 AN status register:

7.1.0 Link Partner Auto-Negotiation Ability 1 = LP is able to perform Auto-Negotiation 0 = LP is not able to perform Auto-Negotiation

Add subclause

Link Partner Auto-Negotiation Ability (7.1.0)

The Link Partner Auto-Negotiation Ability bit shall be set to one to indicate that the Link Partner is able to participate in the auto-negotiation function. This bit shall be reset to zero if the Link Partner is not auto-negotiation able.

Proposed Response Response Status W  
PROPOSED ACCEPT.

Cl 45 SC 45.2.7.6 P56 L 24 # 54  
LAW, DAVID J Individual

Comment Type T Comment Status D

The register definition for 7.16 and 7.19 treat the Technology Ability field as a 7 bit field and the Extended next page bit as being a separate bit. As I have pointed out in another comment this definition is not supported by the text in subclause 28.2.1.2.2 'Technology Ability Field' which specifies this field as 8 bits wide. Only when the Selector field value is IEEE 802.3, as defined in Annex 28B, is bit A7 the Extended Next page (XNP) bit.

SuggestedRemedy

Personally I would suggest that this definition is correct, that my other comment be accepted, and the Clause 28 text changed to aligned with this register. If however this is not accepted this register should be changed to provide a 8 bit Technology Ability field and the Extended Next page (XNP) bit removed.

Proposed Response Response Status W  
PROPOSED ACCEPT IN PRINCIPLE.

This comment will be reconciled in conjunction with the outcome of comment #55.

IEEE P802.3an D3.0 10GBASE-T Comments

CI 45 SC 45.2.7.8 P57 L 50 # 61  
LAW, DAVID J Individual

Comment Type T Comment Status D

Maybe this is intended but since it is stated that these registers contain 'the next page link codeword to be transmitted when extended next page is enabled' and that, as far as I can see, there is no Clause 45 alternative register to use when extended next page is not enabled this Clause 45 Auto-Negotiation interface cannot be used to communicate with a, for example, legacy 1000BASE-T device.

Don't quite understand the need for this restriction, the state machine would seem to happily ignore the additional bits in registers 7.23 and 7.24 if extended Next Page exchange is not occurring. Similarly is all that is required on the receive side is to ignore registers 7.26 and 7.27.

*SuggestedRemedy*

See comment, if this is an intended restriction do nothing.

Proposed Response Response Status W

PROPOSED REJECT.

While the comment has merit, clause 45 AN registers were never intended to fully support auto negotiation outside 10GBASE-T.

CI 45 SC 45.2.7.8 P58 L 20 # 57  
LAW, DAVID J Individual

Comment Type TR Comment Status D

The implication in the Name column that register bits 7:22.10:0 map to the Message Code Field; bits 7.23:15:0 map to bits U15:U0; and 7:24:15:0 map to U31:U16 is only correct for the Extended Message page Encoding (see figure 28-13 in IEEE P802.3an).

When a Extended Unformatted Page is being sent the mapping will be as follows; register 7:22.10:0 will map to U0:U10; 7.23:15:0 will map to bits U26:U11; and 7:24:15:0 mapping to U42:U27.

Note - this assumes that Table 28-8 in IEEE P802.3an is correct in that there is a fixed mapping from these registers to mr\_np\_tx.

*SuggestedRemedy*

Suggest that for 7:22.10:0 'Message Code Field' be changed to read 'Message/Unformatted Code Field'; that for 7.23:15:0 'Unformatted Code field (bits U15:U0)' be changed to read 'Unformatted Code field 1'; and that for 7:24:15:0 'Unformatted Code field (bits U31:U16)' be changed to read 'Unformatted Code field 2'. These new names should also be reflected in Table 28-8.

The text related to these registers may also need to be re-worded due to this.

Proposed Response Response Status W

PROPOSED ACCEPT.

Change Name column for bits 7.22.10:0 to read:  
"Message/Unformatted Code Field"

Change Name column for bits 7.23.15:0 to read:  
"Unformatted Code field 1"

Change Name column for bits 7.24.15:0 to read:  
"Unformatted Code field 2"

IEEE P802.3an D3.0 10GBASE-T Comments

CI 45 SC 45.2.7.9 P 58 L 54 # 59  
LAW, DAVID J Individual

Comment Type TR Comment Status D

The implication in the Name column that register bits 7:25:10:0 map to the Message Code Field; bits 7:26:15:0 map to bits U15:U0; and 7:27:15:0 map to U31:U16 is only correct for the Extended Message page Encoding (see figure 28-13 in IEEE P802.3an).

When a Extended Unformatted Page is received the mapping will be as follows; register 7:25:10:0 will map to U0:U10; 7:26:15:0 will map to bits U26:U11; and 7:27:15:0 mapping to U42:U27.

Note that this assumes a similar mapping as that between the transmit registers and the mr\_np\_tx state diagram variable. As it stands I don't think there is any definition for where the bits U32:U42 would map to in this register space.

SuggestedRemedy

Suggest that for 7:25:10:0 'Message Code Field' be changed to read 'Message/Unformatted Code Field'; that for 7:26:15:0 'Unformatted Code field (bits U15:U0)' be changed to read 'Unformatted Code field 1'; and that for 7:27:15:0 'Unformatted Code field (bits U31:U16)' be changed to read 'Unformatted Code field 2'.

Text will need to be added to provide the mapping of bits U16:U0 for received Extended Message pages and bits U42:U0 for received Extended unformatted pages.

Proposed Response Response Status W  
PROPOSED ACCEPT.

Change Name column for bits 7.25.10:0 to read:  
"Message/Unformatted Code Field"

Change Name column for bits 7.26.15:0 to read:  
"Unformatted Code field 1"

Change Name column for bits 7.27.15:0 to read:  
"Unformatted Code field 2"

CI 55 SC 55 P 79 L 4 # 19  
BOOTH, MR BRAD J Individual

Comment Type E Comment Status D

P. Dawe - In time, this note will become stale and create maintenance work.

SuggestedRemedy

If you made this note an editorial note it would vanish at the next amalgamation, which I think is what we want.

Proposed Response Response Status W  
PROPOSED ACCEPT IN PRINCIPLE.

Removal at amalgamation will be done by the WG and task force chairs working together with the IEEE publication staff

CI 55 SC 55 P 179 L 1 # 87  
GROW, ROBERT M Individual

Comment Type E Comment Status D

55B doesn't appear in bookmarks

SuggestedRemedy

Check style definition.

Proposed Response Response Status W  
PROPOSED ACCEPT.

CI 55 SC 55.2 P 85 L 21 # 20  
BOOTH, MR BRAD J Individual

Comment Type T Comment Status D

P. Dawe - Draft says 'the Management Function Interface is specified in Clause 45.' Not true, it's the Management Data Input/Output (MDIO) Interface that is defined in 45.

SuggestedRemedy

I don't know what to suggest because it appears from the next paragraph that your 'Management Function Interface' is the Technology Dependent Interface. If you mean an existing thing, use its existing name.

Proposed Response Response Status W  
PROPOSED ACCEPT IN PRINCIPLE.

Change "Management Function Interface" to "Technology Dependent Interface" in lines 16, 21 and 24, and "Clause 45" to "Clause 28" in line 21.

IEEE P802.3an D3.0 10GBASE-T Comments

Cl 55 SC 55.2.2 P 87 L 14 # 21  
 BOOTH, MR BRAD J Individual

Comment Type T Comment Status D  
 P. Dawe - The thing labelled "MANAGEMENT" isn't: management is the other side if the MDIO. I commented on this diagram last time.

SuggestedRemedy  
 Could call this box "PCS/PMA control" or some such. Or just leave it blank: there isn't anything in there, apart from MDIO/MDC and TDI interfaces, that's specified in the standard.

Proposed Response Response Status W  
 PROPOSED REJECT.  
 The Task Force agreed this was the correct label on a related comment (#111) from the same author on draft3.0

Cl 55 SC 55.2.2 P 87 L 32 # 22  
 BOOTH, MR BRAD J Individual

Comment Type T Comment Status D  
 P. Dawe - Per 28, PMA connects downwards (not sideways) via TDI to AN (not directly to MDI)

SuggestedRemedy  
 Reconcile, or correct the diagram.

Proposed Response Response Status W  
 PROPOSED REJECT.  
 Does this matter?  
 In figure 55-1 the AN is shown under the PMA, in figure 28-15 AN is on top.

Cl 55 SC 55.3.2.2 P 93 L 10 # 23  
 BOOTH, MR BRAD J Individual

Comment Type T Comment Status D  
 P. Dawe - Transmit data-units are sent to the PMA or service interface via the PMA\_UNITDATA.request primitive, respectively. What choice, with respect to what?

SuggestedRemedy  
 Should this say "sent to the PMA service interface via the PMA\_UNITDATA.request primitive."?

Proposed Response Response Status W  
 PROPOSED ACCEPT.

Cl 55 SC 55.3.2.2.4 P 97 L 14 # 24  
 BOOTH, MR BRAD J Individual

Comment Type E Comment Status D  
 P. Dawe - Color. I remember this was the subject of a comment a long while back (might have been in .3ap)

SuggestedRemedy  
 Get rid of the color, use shading and hatching: but check it renders OK through pdf.

Proposed Response Response Status W  
 PROPOSED REJECT.

There are no colors on the page.

Cl 55 SC 55.3.2.2.7 P 97 L 54 # 25  
 BOOTH, MR BRAD J Individual

Comment Type E Comment Status D  
 P. Dawe - D3.0 # 113 refers. Ordered sets, Table 55-1 (almost), Idle, start, and more are just the same as 49.2. But not error, invalid blocks.

SuggestedRemedy  
 Suggest delete "10GBASE-R" from Table 49-1 (twice) then reduce 55.3.2.2.7 to "Ordered sets are as defined in 49.2.4.5." (eliminating Table 55-1). Similarly with Idle, start, and more.

Proposed Response Response Status W  
 PROPOSED REJECT.

There are specific differences.

IEEE P802.3an D3.0 10GBASE-T Comments

CI 55 SC 55.4 P 119 L 26 # 97  
Langner, Paul Aquantia

Comment Type T Comment Status D

The timing\_lock\_OK bit in the slave InfoField message field appears to be unused in this standard. How to set it is described on Page 122 lines 48-49, but this is the last reference to it in the document.

SuggestedRemedy

Delete this bit, or explain what was supposed to be done with this bit.

Proposed Response Response Status W

PROPOSED REJECT.

This comment was submitted after the close of the ballot cycle. A response recorded here will not automatically upload to MyBallot

Timing\_lock\_OK is described in pg 122, ln 46-49. It is an indicator provided for information only.

CI 55 SC 55.4 P 130 L 26 # 99  
Langner, Paul Aquantia

Comment Type T Comment Status D

There is appears to be a race condition between the state machines in Figure 55-24 and 55-25. Specifically, on reaching the loopback condition for PMA\_Training\_Init\_M the first time (which is supposed to occur upon the maxincr\_timer expiring and lack of slave\_detect), the intention was for the Transition Counter to have completed its count down from 2^9 to 0 prior to re-entering PMA\_Training\_Init\_M. However, the transition counter only starts the first time upon the expiration of maxincr\_timer, which means that the loopback occurs immediately, without waiting for the transition counter to complete its count-down.

SuggestedRemedy

There needs to be a transition state added in the loopback path of PMA\_Training\_Init\_M, which is entered upon maxincr\_timer=done, master\_init\_step = 1, and slave\_detect = 0, and exits for loopback upon transition\_count = 0.

Proposed Response Response Status W

This comment was submitted after the close of the ballot cycle. A response recorded here will not automatically upload to MyBallot

See response to comment #69

CI 55 SC 55.4.2.5 P 117 L 17 # 46  
UNGERBOECK, GOTTFRIED Individual

Comment Type ER Comment Status D

The entire section has gone through many changes without serious effort to improve the logical order of presenting the material. Generally, the section lacks clarity and conciseness. With more changes to be made, the time has come for a major overhaul of this section.

SuggestedRemedy

Rewrite the entire section PHY Control Function and elevate it to a higher heading level reflecting the importance of the section.

Proposed Response Response Status W

PROPOSED REJECT.

See response to comment 164 on D3.0.

The suggested remedy does not provide sufficient guidance for changes to the draft. The comment suggests no error within the draft, only a style preference.

CI 55 SC 55.4.2.5 P 117 L 26 # 45  
UNGERBOECK, GOTTFRIED Individual

Comment Type E Comment Status D

InfoFields are decoded "at a sampling rate"?

SuggestedRemedy

Replace text by "... but is required to decode IFs frequently enough to enable correct actions in a timely manner prior to the expiration of timers and/or transition counters reaching zero values."

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

This comment is identical to comment #44 submitted by the same commentor. See response to comment #44.



IEEE P802.3an D3.0 10GBASE-T Comments

CI 55 SC 55.4.2.5 P 117 L 26 # 44  
 UNGERBOECK, GOTTFRIED Individual

Comment Type E Comment Status D

InfoFields are decoded "at a sampling rate"?

SuggestedRemedy

Replace text by "... but is required to decode IFs frequently enough to enable correct actions in a timely manner prior to the expiration of timers and/or transition counters reaching zero values."

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Modify the last sentence (lines 25-28 of page 117) deleting the word "sampling" and by including references to figures 55-25 and 55-26 to read as shown below:

The link partner is not required to decode every IF transmitted but is required to decode IFs at a rate that enables the correct actions to timer expiration times, transition counters values, etc. described in Figure 55-24, Figure 55-25 and Figure 55-26.

CI 55 SC 55.4.2.5 P 121 L # 69  
 TELLADO, JOSE Individual

Comment Type T Comment Status D

Startup can be simplified without loss of robustness by reducing the Master fixed PBO settings from 10dB followed by 6dB if the Slave does not respond to a single fixed PBO setting of 10dB or 8dB

SuggestedRemedy

Draft3.1 with changes will be provided

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.  
 Draft with single fixed PBO provided.

See comments 69 and 42

CI 55 SC 55.4.2.5.14 P 121 L 44 # 42  
 UNGERBOECK, GOTTFRIED Individual

Comment Type TR Comment Status D

There is no need for the MASTER to advance in state PMA\_Training\_Init\_M to a "second fixed" transmit power level. The "first fixed" transmit power level corresponding to a power back-off of 10 dB will always be sufficient for the SLAVE to decode In-foFields, or otherwise reliable operation in states PCS\_Test and PCS\_Data cannot be achieved and the link will never work. --- Notice that for reliable decoding of LDPC-encoded 128-DSQ signals a decision-point SNR of at least 24 dB is needed. Hence, with a power back-off of 10 dB a decision-point SNR of at least 14 dB must be achievable, which is well sufficient for reliable decoding of InfoFields (SNR = 14 dB -> BER = 2.7e-7 for uncoded 2-PAM). The provision for advancing in state PMA\_Training\_Init\_M to the "second fixed" transmit power level can therefore be eliminated.

SuggestedRemedy

Operations should be as follows. In state PMA\_Training\_Init\_M the MASTER starts transmission with a power back-off of 10 dB. When it has converged its echo and NEXT cancellers, the MASTER sends en\_slave\_tx = 1 in its InfoFields. After detecting PMA\_training frames from the SLAVE and appropriate adjustment of its receiver the MASTER will be able to decode InfoFields from the SLAVE. Otherwise, an error situation exists. The MASTER then sends loc\_rcvr\_status = OK in its InfoFields. This indicates to the SLAVE that the MASTER is able to decode InfoFields and ready to transition to the PMA\_PBO\_Exch state. When the MASTER receives loc\_rcvr\_status = OK from the SLAVE it stores this as rem\_rcvr\_status = OK. When loc\_rcvr\_status = OK and rem\_rcvr\_status = OK the MASTER transitions to state PMA\_PBO\_Exch.

The same condition is used for the transition of the SLAVE from state PMA\_Training\_Init\_S to state PMA\_PBO\_Exch. In state SILENT, loc\_rcvr\_status is set to NOT\_OK.

Everything else in this connection should be eliminated, in particular: master\_init step, maxincr\_timer, slave\_detect, timing\_lock\_OK, PBO\_increase, loc\_SNR\_margin, state INIT\_master\_init\_step, the top part of the MASTER transition counter state in Figure 55-25, etc. --- It is obvious that loc\_rcvr\_status = OK sent by the MASTER implies that the MASTER has detected the SLAVE signal! Similarly, when loc\_rcvr\_status = OK is sent by the SLAVE, the SLAVE has obviously acquired timing!

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See response to comment #69

IEEE P802.3an D3.0 10GBASE-T Comments

Cl 55 SC 55.4.2.5.6 P 119 L 22 # 43  
 UNGERBOECK, GOTTFRIED Individual

Comment Type TR Comment Status D

The bits in the message field are in one way redundant and in another way incomplete. It is not always possible to infer from a received message field the current state of the link partner.

*SuggestedRemedy*

Adopt the following better encoding of message bits. Two state-indicator bits indicate the state of the transmitting transceiver: 00 = PMA\_Training\_M or \_S (forget about the 'Init\_'), 01 PMA\_PBO\_Exch, 10 = PMA\_Coeff\_Exch, 11 = PMA\_Fine\_Adjust. One bit 'loc\_rcvr\_status' indicates whether or not a transceiver is ready to transition to the next state. In state PMA\_Training\_M, the additional bit 'en\_slave\_tx' is needed. In state PMA\_Coeff\_Exch, the additional bit 'coeff\_exch\_done' is required; 0 indicates IF coefficient exchange format, and 1 indicates IF transition counter format and that coefficient exchange in both directions is completed. The same bit position can be used for 'en\_slave\_tx' and 'coeff\_exch\_done'. Hence, only four message bits are needed.

Furthermore, the state-indicator bits provide a useful function during transceiver testing and determining error conditions.

Bits 'trans\_to\_Coeff\_Exch', 'trans\_to\_Fine\_Adjust', and 'trans\_to\_PCS\_Test' are not needed. Initially in each state the transition counter is zero. The corresponding state transitions are announced by setting the transition counter to a non-zero value. The transition occurs when the transition counter reaches the value zero. At this time the state indicator bits assume the values for the next state.

Proposed Response Response Status W

PROPOSED REJECT.

The current IF messages work without requiring any changes

Adding two state-indicator bits may help implementation of error conditions of 55-24 but this change is not required as nothing is currently broken.

Cl 55 SC 55.4.2.5.7 P 120 L 26 # 48  
 ZIMMERMAN, GEORGE A Individual

Comment Type E Comment Status D

The transmission mode to which the reported SNR margin refers needs to be specified. All that I am aware of think this SNR margin is relative to the SNR required in data mode (DSQ transmission); however, because SNR margin is reported while infofields are being transmitted in PAM-2, it could be misunderstood to be relative to the SNR required for transmission of PAM-2.

*SuggestedRemedy*

Add the following text, (easiest at the end of the existing paragraph):

SNR Margin is relative to the SNR required for reception of LDPC-coded DSQ128 at 1e-12 BER in data mode.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

SNR Margin is relative to the SNR required for reception of LDPC-coded DSQ128 at an error rate of less than one frame in  $3.2 \cdot 10^9$

Cl 55 SC 55.4.3.1 P 119 L 26 # 34  
 KOEMAN, HENRIECUS Individual

Comment Type TR Comment Status D

There are two comments: 1) Non-overlapping ranges are needed in the length column to match those in the received signal column. For example "0 <= length < 35" or "0 <= length <= 35". 2) During evaluation of PSAXtalk performance, the measured IL will always be used (instead of length). Relevant measured values should be used to estimate the power backoff.

*SuggestedRemedy*

Replace the "length" column information with specific range information: "0 <= length < 35" or "0 <= length <= 35". Also, add an informative column with the IL limits. IL @ 250 MHz (dB)  
 (Reference), 0 <=IL <=9.9, 9.9 <IL <=13.4, 13.4 <IL <=16.9, 16.9 <IL <=20.3, 20.3 <IL <=23.8, 23.8 <IL <=27.3, 27.3 <IL <= 30.7, IL > 30.7

Proposed Response Response Status W

PROPOSED REJECT.

This column is for reference only and will not be used for determining the PBO setting.

IEEE P802.3an D3.0 10GBASE-T Comments

CI 55 SC 55.4.3.1 P 124 L 124 # 47  
 UNGERBOECK, GOTTFRIED Individual

Comment Type TR Comment Status D

The sign preceding the summation in equation (55-4) is wrong. ---- For TH precoding the overall channel extending from the precoder output to the output of the adaptive feed-forward equalizer in the receiver is equalized towards a causal monic response  $c(D) = 1 + c_1 \cdot D + c_2 \cdot D^2 + c_3 \cdot D^3 + \dots$ . The TH precoder pre-filters the sequence of transmit symbols  $a(D)$  by  $1/c(D)$  and adds to each symbol an integer multiple of  $2M$  such that the precoder output remains bounded in the interval  $[-M, +M]$ , where  $M = 16$  in the case of 10GBASE-T. Writing the precoder output as  $b(D) = a(D) + k(D) \cdot 2M \hat{u} [c(D) - 1] \cdot b(D)$  corresponds to  $b(D) = [a(D) + k(D) \cdot 2M] / c(D)$ , where  $k(D)$  is a sequence of integers.

SuggestedRemedy

Hence, the sign preceding the summation in equation (55-4) must be minus (-). ---- Suggested further notational changes: use 'b' for the augmented symbols 'a + k\*32' and 'x' for the precoder output; then in equation (55-6) replace 'a sub agmt' by 'b'.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

The sign in equation 55-4 is not wrong.

Choosing + or - is a notation preference which affects the sign of the coefficients  $c_k$  and the change requested by the commentor is not required.

To avoid any potential confusion about the sign, a reference to eq 55-4 which clearly indicates the sign, will be inserted in the coeff format description (pg 123, line 37).

CI 55 SC 55.4.3.1 P 125 L 8 # 62  
 TELLADO, JOSE Individual

Comment Type T Comment Status D

The PBO requested requires a 'shall' statement

SuggestedRemedy

Change "The minimum power backoff levels are described in the power backoff schedule in Table 55-6" to "The minimum power backoff level requested shall comply with the power backoff schedule in Table 55-6"

Modify PMF19  
 PMF19 PMA transmit power backoff settings 55.4.3.1 M Yes [ ]

Moreover insert new PICS in PMF  
 PMF20 Minimum power backoff requested 55.4.3.1 M Yes [ ] as per Table 55-6

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 55 SC 55.4.3.1 P 125 L 9 # 68  
 TELLADO, JOSE Individual

Comment Type T Comment Status D

The Slave has the additional restriction of PBO selection described in the PMA\_PBO\_Exch state

SuggestedRemedy

Insert the text: "Additionally, the Slave shall select a PBO level as described in the PMA\_PBO\_Exch state of 55.4.2.5.14"

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 55 SC 55.4.5.1 P 127 L 24 # 53  
 TAICH, DIMITRY Individual

Comment Type E Comment Status D

\*\*\* Comment submitted with the file 1142300024-ValidPBOSettings.doc attached \*\*\*

PBO settings description is distributed over several chapters and sometime redundant (does not have single reference source).

SuggestedRemedy

Please add "Valid PBO Settings" table to the PBO variable description (see attached document). Please refer this table every time specific PBO settings are described. Please use this table also as a reference for the all 3 PBO related variables  $\hat{u}$  PBO, PBO\_next and PBO\_tx  $\hat{u}$  all on page 127.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

IEEE P802.3an D3.0 10GBASE-T Comments

CI 55 SC 55.4.5.1 P 128 L 49 # 52  
 TAICH, DIMITRY Individual

Comment Type E Comment Status D

transition\_count variable description û this paragraph describes essential start-up mechanism behavior rather than defines state-machine variables. In my opinion this text should be moved to chapter 55.4.2.5.14, page 123, line 3. This change will makes startup description clearer, and concentrate more info in one place

SuggestedRemedy

As comment suggests

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Moreover, use transition\_count for the IF value and transition\_counter for the local implementation of the counter.

Describe the that transition to the next state occurs for the PMA frame immediately after the transition\_counter=0

CI 55 SC 55.4.6.1 P 130 L 31 # 66  
 TELLADO, JOSE Individual

Comment Type T Comment Status D

If loc\_SNR\_margin=OK, the Master receiver must have detected the slave

SuggestedRemedy

Eliminate the redundant slave\_detect=1 condition

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 55 SC 55.5 P 134 L 11 # 26  
 BOOTH, MR BRAD J Individual

Comment Type T Comment Status D

P. Dawe - Various desirable changes identified by 802.3/Cor 1

SuggestedRemedy

Make changes to keep in step with 802.3/Cor 1

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See response to comment #41

CI 55 SC 55.5 P 141 L 1 # 98  
 Langner, Paul Aquantia

Comment Type T Comment Status X

This comment is not intended to ""remove Category 7"" cabling from the standard. Instead it is intended to simplify the testing of Short reach compliance. Currently this clause requires compliance with both Category 6A and Category 7 short reach channels. Given that Category 7 cabling has attributes that are uniformly superior than Category 6A, the more difficult test will be to test for compliance over Category 6A, which should guarantee the ability to operate over the defined Category 7 channel.

SuggestedRemedy

Remove the unnecessary reference to Category 7. Change the phrase ""both short reach channels"" to ""the short reach channel"".

The changes required in the balance of the document are:

On Clause 45.2.1.61.2, change ""Class F and Class EA cabling"" to ""Class EA cabling""

On Clause 55.5.4.5.1, change ""channels"" to ""channel"" in the title

In Clause 55.5.4.5.1, delete the first paragraph

In Clause 55.5.4.5.1, change ""One"" to ""The""

Proposed Response Response Status W

This comment was submitted after the close of the ballot cycle. A response recorded here will not automatically upload to MyBallot

CI 55 SC 55.5.1 P 134 L 11 # 41  
 MCCLELLAN, MR BRETT A Individual

Comment Type E Comment Status D

Based on changes in Draft 802.3-2005/Cor 1/D1.1 Diff I think the following changes should be made.

- page 134 lines 11 to 22 :
- line 11 change "separation" to "isolation".
- lines 15 and 22 change "Vdc" to "V dc"
- lines 15 and 21 change 5.3.2 to 5.2.2
- line 19 change "annex" to "Annex"

SuggestedRemedy

Make changes as indicated.

Proposed Response Response Status W

PROPOSED ACCEPT.

IEEE P802.3an D3.0 10GBASE-T Comments

Cl 55 SC 55.5.3.3 P 138 L 13 # 27  
 BOOTH, MR BRAD J Individual

Comment Type T Comment Status D

P. Dawe - If a signal had edges that were alternately 1 ps early and 1 ps late, the RMS jitter is 1 ps. This formula gives 2 ps. Same issue as D3.0#119.

*SuggestedRemedy*

Please explain. Perhaps divide by 2?

Proposed Response Response Status W

PROPOSED REJECT.

Comment identical to comment 119 on D3.0

The given definition of RMS jitter in the draft is the correct definition of RMS jitter as is well accepted in literature so cannot be changed. In other words whatever jitter you get by application of this formula is by definition correct. Please see attached paper from Maxim detailing that RMS jitter is defined as the the square root of the expected value of the squared period jitter, as is defined in the draft. Also your example does not clearly state how you got 2ps by using the formula in the draft. Consider a waveform wherein the average period is T, and every period is T-1ps or T+1ps so that the average period is still maintained as T. Then by using the formula, we do get the rms jitter correctly to be 1ps

Cl 55 SC 55.5.4.5 P 141 L 9 # 88  
 GROW, ROBERT M Individual

Comment Type TR Comment Status D

I do not accept an indication of mode of operation sufficient. With all the obfuscation in the way short reach was added to the draft, it is in many ways a different PHY type because the two reach options have very different system capabilities. With previous PHYs, the PHY type implied the cabling requirements and we have lost that ability in this draft for a link partner force a multi-PHY capable DTE to use the desired PHY type. In network operation, the cable plant and switches have traditionally been upgraded as necessary, and a switch can be configured from its end alone to assure that the link partner connecting to it is appropriate for the cable plant.

*SuggestedRemedy*

Add capability bits and announce them via AN.  
 Arbitration should not allow a short reach mode link to come up unless both partners agree that short reach mode is supported. For power conservation, short reach mode should have precedence over long reach.

Proposed Response Response Status W

PROPOSED REJECT.

As written in the draft, the two modes differ only in the maximum length of the link that they can support. They are identical in every other way.

The cable type requirements for both are the same.

A 10GBASE-T PHY in short reach mode will link up successfully with a 10GBASE-T PHY in normal mode without any changes to the draft provided the link is short.

The suggested remedy of not allowing a short reach mode link to come up unless both partners agree that short reach mode is supported is unnecessary and would rule out situations where link operation would otherwise be possible if we stuck with the operation as currently specified in the draft.

A PHY that is operating over a short link is required to reduce transmit power whether it is in short reach mode or not so the suggested remedy does not guarantee any increase in power conservation.

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Cl 55 SC 55.6 P 142 L 3 # 28  
 BOOTH, MR BRAD J Individual

Comment Type E Comment Status D

P. Dawe - Is MII really the interface you mean? I assume you want MDIO. MDIO is optional: it says so in 45.1.

SuggestedRemedy

Change "10GBASE-T makes extensive use of the management functions provided by the MII Management Interface (Clause 45)," to "10GBASE-T makes extensive use of the management functions that may be provided by the MDIO interface (Clause 45).".

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

The MDIO interface defined in Clause 45 does provide the management functions called out in the text. The text is consistent with similar text from 40.5, regarding 1000BASE-T.

Text to be changed to "10GBASE-T makes extensive use of the management functions provided by the MDIO interface (Clause 45)."

Cl 55 SC 55.6.1.2 P 141 L 20 # 29  
 BOOTH, MR BRAD J Individual

Comment Type E Comment Status D

P. Dawe - Name of bit "Loop Timing" at variance with 45.2.7.10.6.

SuggestedRemedy

Harmonise name with 45.2.7.10.6. "Loop timing ability"?

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Comment applies to page 143, line 48.

Subclause 45.2.7.10.6 is titled LD loop timing ability (7.32.0). The text in 55.6.1.2 will be changed to reflect the title of 45.2.7.10.6.

Cl 55 SC 55.6.1.2 P 143 L 43 # 3  
 MICK, C Individual

Comment Type GR Comment Status D

Use of a single autonegotiation bit to discriminate between Short Reach mode and Normal mode overly restricts 10GBASE-T devices by allowing advertisement of either Short Reach mode or Normal mode but not both. It seems reasonable to assume that manufacturers will eventually want to provide 10Gbase-T chips that can operate in Normal mode for distances greater than 30 meters or in Short Reach mode for distances of 30 meters or less, with operation defined via autonegotiation. To advertise this ability we need two bits: one for Normal mode and one for Short Reach mode, just as are provided by bits U14-15 to advertise full duplex and half duplex operation.

SuggestedRemedy

Change p143 line 36 c1m 1 to U31:U22  
 Change p143 line 37 c1m 1 to U21  
 Change p143 line 42 c1m 1 to U20  
 Insert new row on p143 above line 43 (U18)  
 U19/ PHY short reach mode/ Defined in 45.2.1.61.2  
 /1=PHY can operate in short reach mode, 0=PHY cannot operate in short reach mode  
 Change definition of bit U18 p143, line 43  
 U18/ PHY normal mode/  
 /1=PHY can operate in normal mode, 0=PHY cannot operate in normal mode

Proposed Response Response Status W

PROPOSED REJECT.

The accepted response to comment 33 against D3.0 was to define only a single bit that states what mode the local device is operating in. As it stands, the device is either operating in short reach mode or normal mode, according to bit 1.131.0, and relayed to the link partner through the auto-negotiation process.

If a second bit were to be added, there would be no defined mechanism to allow the remote device to be told the state of the local device. In addition, there currently exists no mechanism to negotiate and resolve the link to either short reach mode or normal mode depending on the advertised abilities of both devices.

For full and half duplex bits, the information is used to help resolve the highest common denominator link between the two devices. The new short reach / normal reach bit is used to provide a status update to the remote device and not to resolve the link.

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Cl 55 SC 55.7.3.1.1 P 152 L 33 # 35  
 KOEMAN, HENRIECUS Individual

Comment Type TR Comment Status D

Equation (55-22) Does not contain sufficient indices. In fact, an index is needed for the wire pair of the disturbed channel, an index for the wire pair of the disturbing channel, and an index number for each disturbing channel.

SuggestedRemedy

Preferably use the same format currently used in equation (55-36).

Proposed Response Response Status W

PROPOSED ACCEPT.

Use same format as (equation 55-36)

Cl 55 SC 55.7.3.2.1 P 123 L 24 # 33  
 ARY, JACOB BEN Individual

Comment Type T Comment Status D

Not clear and too complicated,

SuggestedRemedy

change to "When the computed value at a certain frequency exceeds 67 dB, the result at that frequency is for information only.

Proposed Response Response Status W

PROPOSED ACCEPT.

change to "When the computed value at a certain frequency exceeds 67 dB, the result at that frequency is for information only."

Cl 55 SC 55.7.3.2.1 P 155 L 49 # 58  
 MEI, RICHARD Y Individual

Comment Type E Comment Status D

The recent ISO meeting change the definition of PSAELFEXT to PSAACR-F (Power Sum Attenuation to Alien Crosstalk Ratio - Far End). This change fixes the problem when calculation the PSAELFEXT of the victim channel surrounded by short disturbers. This definition change has no impact on 10GBASE-T operation.

SuggestedRemedy

Make a global change to reflect the latest ISO terminology and definition for PSAELFEXT.

Delete line 49 to 59 on page 155 and line 1 to line 9 on page 156, since this definition deos not account for the channels with uneven length.

Use ISO terminology and definition instead.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

see comment resolution #36

Cl 55 SC 55.7.3.2.1 P 155 L 52 # 37  
 KOEMAN, HENRIECUS Individual

Comment Type TR Comment Status D

Equation (55-28, existing) Does not contain sufficient indices. In fact, an index is needed for the wire pair of the disturbed channel, an index for the wire pair of the disturbing channel, and an index number for each disturbing channel.

SuggestedRemedy

Preferably use the same format currently used in equation (55-37). For AFEXT.

Proposed Response Response Status W

PROPOSED ACCEPT.

Use same format as (equation 55-37)

IEEE P802.3an D3.0 10GBASE-T Comments

Cl 55 SC 55.7.3.2.1 P 155 L 52 # 36  
 KOEMAN, HENRIECUS Individual

Comment Type TR Comment Status D

Equation (55-28): It is fundamentally incorrect to power sum ELFEXT results (essentially power summing SNR's: you always first power sum the noise sources, and than reference this to the signal level). When the IL values are close, this is practically not an issue. In case of alien crosstalk, there can be substantial differences in IL.

*SuggestedRemedy*

First compute the PS AFEXT, and then subtract the average IL of the disturbed channel wire pairs to obtain the PS AELFEXT (or the new name: PS AACR-F). Then use the same name (PS AFEXT) in the average margin computation.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change PSAELFEXT equation to address asymmetrical links consistent with ISO/IEC JTC 1/SC 25/WG 3 developments. Add note to point to terminology developments in ISO/IEC JTC 1/SC 25/WG 3.:

Change variable definition in equation (55-28) Page 155 L57: Page 156; L2 From: EL(f)<sub>i</sub> is the magnitude of Alien ELFEXT at frequency f of pair combination i

To: EL(f)<sub>i</sub> is the magnitude of pair-to-pair Alien ELFEXT at frequency f of pair combination i calculated from the pair-to-pair AFEXT and the minimum IL of the disturbed and disturbing pairs. Where minimum IL= minimum(disturbed pair IL,disturbing pair IL) .

Add Note: The computation of PSAELFEXT in equation 55-28 is consistent with the computation of Power sum alien attenuation to crosstalk ratio far end (PS AACR-F) PS AACR-F. The term PS AACR-F is used in ISO/IEC TR24750 and in the 1st amendment to the 2nd edition of ISO/IEC 11801; both documents are under development in ISO/IEC JTC 1/SC 25/WG 3.

Cl 55 SC 55.7.3.3 P 158 L # 30  
 ZHU, XING Individual

Comment Type T Comment Status D

\*\*\* Comment submitted with the file 1138800024-PowerBackoff\_Feb06.ppt attached \*\*\*

In 55.7.3.3 Alien Crosstalk Margin Computation, Step 1 - Step 3 give a way to adjust the PSANEXT and PSAFEXT for the power backoff derived from insertion loss measurement. The purpose is to take into account the effect of power backoff to the SNR at the receiver.

However, the proposed way is not applicable to all cable laying topologies and makes the problem complex and confusing while the obtained result may be wrong. Please refer to our attached contribution, where we give an example that two victim cables with actual same PSANXET and SNR may be reported with different PSANXET and SNR due to the introduction of power backoff in the computation of PSANEXT.

*SuggestedRemedy*

Remove the power back-off terms from Clause 55.7.3.3.

Proposed Response Response Status W

PROPOSED REJECT.

Concerning your IEEE presentation related to the 802.3an comment#30; In your analysis you add PBO to both the transmit IL (23.1+4) and the PSANEXT based on the IL\_bof -(Paxt-4).

The alien crosstalk computation adds the backoff factor only "once" to the noise and not to the transmit IL.

Therefore, for case 1: P\_T1r-27.1-Paxt  
 for case 2. P\_T1r-23.1-(Paxt-4)  
 are the same.

The calculation for both ANEXT and AFEXT incorporating the IL\_bof are intermediary steps in the alien crosstalk computation and should not be used as independent noise levels for comparison to independent limits.



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Cl 55 SC 55.7.3.3 P 158 L 34 # 38  
 KOEMAN, HENRIECUS Individual

Comment Type E Comment Status D

Substantial improvements have been achieved during this last edit, but further improvements are highly desirable. Equation (55-39) is in fact the same as equation (55-23) (except that a >=" sign is used). Similar observations apply to equation (55-40) which matches equation (55-29). These unneeded equation, combined with non-matching indices introduce confusion.

SuggestedRemedy

Make reference to existing equations, rather than creating new ones. Refer to ISO/IEC liaison documents for additional information.

Proposed Response Response Status W

PROPOSED REJECT.

The equations (55-39) and (55-40) are provided to supplement the description of the variable. The mathematical representation of the description was provided to avoid implementation errors. We were made aware of instances where the text was not interpreted as intended and we were asked to help clarify and therefore provided the unambiguous mathematical representation. The liaison documents you refer to work still under development in ISO/IEC JTC 1/SC 25/WG 3. We are in the final stages of balloting and should avoid referring to drafts still under development whenever possible.

Cl 55 SC 55.7.3.3 P 160 L 34 # 39  
 KOEMAN, HENRIECUS Individual

Comment Type TR Comment Status D

Step 6: The process to implement the integral from discrete data is unclear, in particular if the frequency intervals are not constant (i.e., a log sweep). The same comment applies to step 11.

SuggestedRemedy

Show equations that are based on the spreadsheet that was communicated with the cabling standards committees.

Proposed Response Response Status W

PROPOSED REJECT.

Editor's recommendations: I'm concerned that these type of refinements can lead to further comments on the recommended implementations. As defined, the integral clearly represents the mathematical operation.

Cl 55 SC 55.7.3.3 P 160 L 51 # 40  
 KOEMAN, HENRIECUS Individual

Comment Type T Comment Status D

The number of steps can be reduced by simply stating that the overall average margin is the minimum of the 4 pair margins and the average margin over all pairs. This reduces the complexity.

SuggestedRemedy

Remove step 7 and adjust step 12 to include each of the results for each of the 4 wire pairs..

Proposed Response Response Status W

PROPOSED REJECT.

The appropriate results are provided in each step. The computation is in two parts; (1)calculation of individual-pair margin, (2)calculation of average margin. Step 7. is the logical conclusion of a sequence of steps to determine the individual-pair margin and provides the equation for the individual-pair margin. Step 8. is the first step in determining the average margin.

Cl 55 SC 55.8.1 P 164 L 18 # 77  
 GROW, ROBERT M Individual

Comment Type ER Comment Status D

I do not believe we have properly responded to the pre-ballot MEC comment on this and following figures.

SuggestedRemedy

Why not reference Clause 40?

Proposed Response Response Status W

PROPOSED REJECT.

Historically we have duplicated the figures and text, because it makes the clause more readable.

I don't see any problem in leaving as is. It is always nice to have the pin outs in the document so a user doesn't have to find another document or clause.

Look at 802.3-2005, the figures are identical but still repeated between 100Base-T4 and 1000Base-T - see 23.7.1 and 40.8.1

## IEEE P802.3an D3.0 10GBASE-T Comments

CI 55 SC 55.8.2 P 164 L 56 # 67  
 TAICH, DIMITRY Individual

Comment Type T Comment Status D

We have to have clear Cross-talk specification - as measured at the MDI point. Current draft defines FEXT limits for RJ-45 connector only - excluding other potential crosstalk contributors - for example magnetics. This is in contrary to the rest of the MDI parameters - like Return loss, Impedance balance, etc.

In addition, test procedure for FEXT measurement isn't clear. For example, one can wonder whether measurement should be performed using external test fixture - or by analyzing signals on the transceiver's high-speed I/O.

## SuggestedRemedy

Use current FEXT limit line to specify worst-case combined magnetics and connector's cross-talk figures - as measured at the MDI.

Please provide testing guideline (similar to Alien Cross-talk measurement setup, for example) - so it would be clear how crosstalk compliance at the MDI point can be verified.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

A) Replace the text on lines 56-57 on page 164 with:

Cross-talk (as measured at the MDI) when mated with a specified balanced cabling connector (plug) shall meet the FEXT requirements as specified in (55-50):

B) Place a period at the end of line 3 on page 165 and insert the following text after it: FEXT loss is defined as:

$$\text{FEXT} = 20 \log_{10}(\text{VV}/\text{VD})$$

where:

VD = voltage applied to disturbing pair

VV = victim or disturbed pair output voltage

C) After line 5 on page 165 add

The output voltage is measured using a balanced 100 ohm load.

CI 55 SC 55.8.2.1 P 165 L 20 # 50  
 COBB, TERRY R Individual

Comment Type E Comment Status D

Although the term Attenuation is correctly used in it's context, I think it is confusing with the title of the sub clause.

## SuggestedRemedy

Change to: Return loss

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 55 SC 55.9.3 P 167 L 58 # 49  
 COBB, TERRY R Individual

Comment Type GR Comment Status X

Shields in cords or cables that is not properly terminated to ground will cause errors in the PHY.

See contibution from tcobb

## SuggestedRemedy

Add this sentence to the end of the paragraph:

Any shield in cords or cables in the link segment shall be terminated to ground when connected to the MDI.

Proposed Response Response Status O

CI 55 SC 55A P 177 L 7 # 78  
 GROW, ROBERT M Individual

Comment Type E Comment Status D

Didn't want to test the upload instructions that say no alpha characters in subclause field, this is on Annex 55A. Should this be unnumbered or numbered as is done in 55B?

## SuggestedRemedy

Make numbering consistent with IEEE style. (As I recall, number this heading, but check.)

Proposed Response Response Status W

PROPOSED ACCEPT.

This applies to page 178

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Cl 68 SC 68.5.1 P 33 L # 5  
SWENSON, NORMAN L Individual

Comment Type T Comment Status D

This is a pile-on to comment 113 by Tom Lindsay on D3.0. Surveying additional module vendors and EDC vendors since the last meeting has revealed a growing concern that the TWDP limit should be raised to allow more manufacturing margin and that this would not be a problem for EDC chips on the market given the current margin in the link budget.

*SuggestedRemedy*

Increase the TWDP limit to 5.0 dB.

Proposed Response Response Status W

PROPOSED REJECT.

This is a comment on clause 68 which is out of the scope of the 802.3an project

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Cl 68 SC 68.5.1 P 33 L 31 # 4  
SWENSON, NORMAN L Individual

Comment Type G Comment Status D

This is a pile-on to comment 113 by Tom Lindsay on D3.0. Surveying additional module vendors and EDC vendors since the last meeting has revealed a growing concern that the TWDP limit should be raised to allow more manufacturing margin and that this would not be a problem for EDC chips on the market.

*SuggestedRemedy*

Increase the TWDP limit to 5.0 dB.

Proposed Response Response Status W

PROPOSED REJECT.

This comment is on clause 68, which is out of the scope of the 802.3an project.