Cl **00** *SC* **0** *P* *L* # 8
SAYOGO, BARTIEN Individual

Comment Type **G** *Comment Status* **X**

Which number is this amandment?
I suggest that this amandment should cover Cor 1.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **0** *L* **0** # 13
DAWE, PIERS J G Individual

Comment Type **G** *Comment Status* **X**

Instructions in this comment form say "Page/Sub-clause/Line Number - These fields are optional. Any data entered must be integers only. No alpha characters or symbols -- doing so will result in an error and the upload will be invalidated. If you wish to reference multiple pages, provide the details in the comment field." Obviously, as we have annexes called A, B and so on, this is not acceptable. I believe it is also not true; some uploads are accepted.

SuggestedRemedy

Action Balloting Center: fix your form! I would have made this a General-Required comment but that would make pain for our volunteer officers who do not control MyBallot.

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **1** *L* **1** # 12
DAWE, PIERS J G Individual

Comment Type **E** *Comment Status* **X**

Various editorial/typographical e.g. inconsistent font sizes in a few diagrams

SuggestedRemedy

See pdf sent to editors

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **1** *L* **1** # 136
BOOTH, MR BRAD J Individual

Comment Type **ER** *Comment Status* **X**

First use of IEEE P802.3ap should have the trademark symbol.

SuggestedRemedy

Add to first usage and remove from participants list on page 6.

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **1** *L* **32** # 138
BOOTH, MR BRAD J Individual

Comment Type **ER** *Comment Status* **X**

Introduction text throughout the draft points out that this is an amendment to 802.3-2005 whe it is an amendment to 802.3-2005 and its amendments.

SuggestedRemedy

Change to include "and its amendments".

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **3** *L* **30** # 234
GROW, ROBERT M Individual

Comment Type **E** *Comment Status* **X**

Line should end with a colon

SuggestedRemedy

Add colon

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **3** *L* **32** # 235
GROW, ROBERT M Individual

Comment Type **E** *Comment Status* **X**

The publication editor changed this for 802.3an, as all amendments are part of IEEE Std 802.3-2005. Having the separate heading creates the impresion that this isn't true.

SuggestedRemedy

Remove line and make Section descriptions left flush

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **4** *L* **35** # 236
GROW, ROBERT M Individual

Comment Type **E** *Comment Status* **X**

There are no following amendments listed

SuggestedRemedy

Delete the second paragraph of the Editor's Note

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **6** *L* **4** # 237
GROW, ROBERT M Individual

Comment Type **E** *Comment Status* **X**

The Task Force isn't the standard number

SuggestedRemedy

Change "IEEE P802.3ap-200xx" to "P802.3ap"

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **6** *L* **26** # 238
GROW, ROBERT M Individual

Comment Type **E** *Comment Status* **X**

Individuals are not listed at the top and also in the members list.

SuggestedRemedy

Delete all officers and editors listed above the list. Review the list to make sure it is complete as some individuals appear to be missing (column breaks are a possible point).

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **15** *L* **26** # 139
BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**

Title of annexes are on different lines.

SuggestedRemedy

Remove annex titles or format to be on the same line.

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **17** *L* **31** # 140
BOOTH, MR BRAD J Individual

Comment Type **ER** *Comment Status* **X**

Missing the date of Cor1.

SuggestedRemedy

Insert 2006 after Cor1.

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **17** *L* **31** # 239
GROW, ROBERT M Individual

Comment Type **E** *Comment Status* **X**

New amendments approved?

SuggestedRemedy

Add 802.3aq and 802.3aq if appropriate per September SASB actions.

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **17** *L* **46** # 240
GROW, ROBERT M Individual

Comment Type **E** *Comment Status* **X**

802.3an has been approved

SuggestedRemedy

If appropriate per SASB actions: & lost at publication from recently approved amendment projects that modified the same text and tables (e.g., IEEE Std 802.3an-2006 and IEEE Std 802.3aq-2006),

Proposed Response *Response Status* **O**

Cl **01** *SC* **1.4** *P* **18** *L* **9** # 141
BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**

Missing the period inside the parantheses.

SuggestedRemedy

Change all four definitions to include a period before the closing parantheses.

Proposed Response *Response Status* **O**

Cl **01** *SC* **1.4** *P* **18** *L* **10** # 222
LAW, DAVID J Individual

Comment Type **E** *Comment Status* **X**

Don't see the value of including subclause 73.5 as part of this reference, subclause 72.6.10.2.2 seems to define DME clearly.

SuggestedRemedy

Change '..72.6.10.2.2 and 73.5)' to read '..72.6.10.2.2)'.

Proposed Response *Response Status* **O**

Cl **01** *SC* **1.4** *P* **18** *L* **12** # 24
BARRASS, HUGH Individual

Comment Type **E** *Comment Status* **X**

The three MAU types listed should be in alphabetical order.

SuggestedRemedy

The three MAU types listed should be in alphabetical order.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.3.2.1.3** *P* **18** *L* **38** # 84
LAW, DAVID J Individual

Comment Type **TR** *Comment Status* **X**

Subclause 73.1 states 'It is highly recommended that a device that has negotiated 1000BASI KX operation through this clause not perform Clause 37 auto-negotiation. If Clause 37 auto-negotiation is performed after this clause's auto-negotiation, then it is highly recommended that the advertised abilities used in Clause 37 match those advertised abilities used in this clause.'
The problem is that these are just recommendations and therefore the standard does permit Clause 73 and Clause 37 Auto-Negotiation to advertise different abilities. If this were to happen the text provides no guidance at to which of the two 'local technology ability' or 'advertised ability' to use.

SuggestedRemedy

Either define which the behaviour of management in the case of both Clause 73 and Clause 37 Auto-Negotiation being active or prohibit this option.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.13** *P* **19** *L* **16** # 223

LAW, DAVID J Individual

Comment Type **E** *Comment Status* **X**

Normally we don't explain the reference in detail and instead place them in the same order as the items they relate to in the text. For an example see subclause 30.4.3.1.15 'aAutoPartition which contains the text 'A Clause 27 and Clause 41 repeater port partitions on entry to the PARTITION WAIT state of the partition state diagram (Figure 27-8 and Figure 41-4).;'

SuggestedRemedy

Change the text '(see 65.2 for 1000BASE-PX PHY or see Clause 74 for 10GBASE-R PHY).' to read '(see 65.2 and Clause 74).'.
Perform similar changes for:
Page 19, Line 32
Page 20, Line 7
Page 20, Line 27

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.13** *P* **19** *L* **16** # 143

BOOTH, MR BRAD J Individual

Comment Type **ER** *Comment Status* **X**

Reference to 10GBASE-R PHY should be plural (PHYs) as there is no indication that this will not work for other 10GBASE-R port types.

SuggestedRemedy

Make the change here and in other locations throughout the draft that reference Clause 74 fo 10GBASE-T PHY.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.14** *P* **19** *L* **31** # 3

KAROCKI, PIOTR Individual

Comment Type **E** *Comment Status* **X**

I think this sentence can be written more clearly.
"A read-write value that indicates the mode of operation of the 1000BASE-PX PHY or 10GBASE-R PHY optional FEC Sublayer for forward error correction"
means (if I'm not mistaken)
"A read-write value that indicates the mode of operation of the (1000BASE-PX PHY or 10GBASE-R PHY) optional FEC Sublayer for forward error correction"

SuggestedRemedy

"A read-write value that indicates the mode of operation of the optional FEC Sublayer for forward error correction of either 1000BASE-PX PHY or 10GBASE-R PHY"

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.14** *P* **19** *L* **32** # 243

GROW, ROBERT M Individual

Comment Type **E** *Comment Status* **X**

Missing base text

SuggestedRemedy

There should be a strikethrough "F" next to the inserted "f".

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.14** *P* **19** *L* **33** # 244

GROW, ROBERT M Individual

Comment Type **E** *Comment Status* **X**

Looks like there is a new line forced here

SuggestedRemedy

Remove new line.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.14** *P* **19** *L* **34** # 224

LAW, DAVID J Individual

Comment Type **TR** *Comment Status* **X**

The last sentence of the first paragraph states 'When Clause 73 Auto-Negotiation is enabled a GET operation maps to the variable FEC enabled in Clause 45 register 7.48'.
[1] This statement appears to be in conflict with the next paragraph which describes the GET operation without conditions and therefore would appear to apply globally.
[2] I thought that the provision of Clause 45 MDIO interface was optional, hence the behaviou has to be described for the situation where the registers do not exist.
[3] The second paragraph states that a SET operation changes the current mode of operation. This would mean that after Auto-Negotiation is complete and FEC has been enabled as described in subclause 73.6.5 'FEC capability' a network manager can happily disable it - although this would not be reflected in a GET operation which since this is to use the result of the Auto-Negotiation.This would not seem the desired behaviour.

SuggestedRemedy

Merge this sentence with the existing second sentence and provide a descript of the behavio when Clause 45 MDIO is not present. The desired behaviour of the SET operation needs to be decided.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.15** *P* **19** *L* **50** # 225

LAW, DAVID J Individual

Comment Type **T** *Comment Status* **X**

The following is the content of the rationale for revision on a maintenance request received from Michael Beck due to the maximum increment rates for this attribute, as well as aFECUncorrectableBlocks, being incorrect.
For 10 Mb/s 10PASS-TS implementations [rate measured at the alpha(beta)-interface], the smallest unit of data to which FEC can be applied, is a block of 128 bytes of data entering th PMA over the alpha(beta)-interface (see 62.2.4.2). Such a block will be coded into 144 bytes at the I-interface. Hence, the maximum number of FEC blocks per second equals:
10,000,000 / (8 * 128) = 9,766
For 1000 Mb/s implementations (rate measured at the GMII), the smallest unit of data to which FEC can be applied, is a single minimum-size data frame (see 65.2.3.2.2). S_FEC (5 bytes), preamble (7 bytes), and SLD (1 byte) are prepended. T_FEC (6 bytes), parity (16 bytes), and T_FEC (6 bytes) are appended. Hence, the maximum number of FEC blocks per second equals:
1,000,000,000 / [8 * (5 + 7 + 1 + 64 + 6 + 16 + 7)] = 1,179,246

SuggestedRemedy

Please consider making the following change:
Change '.. rate of 1 600 000 counts ..' to read '.. rate of 10 000 counts ..' and '.. 500 000 counts per second ..' to read '.. 1 200 000 counts per second ..' in both aFECCorrectedBlock and aFECUncorrectableBlocks.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.2** *P* **18** *L* **42** # 142

BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**

Editor's note is out of date.

SuggestedRemedy

Remove.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.2** *P* **18** *L* **44** # 241
GROW, ROBERT M Individual

Comment Type **E** *Comment Status* **X**

Update Editor's Note.

SuggestedRemedy

This attribute has been modified by IEEE Std 802.3an and IEEE Std 802.3aq, each inserting a MAU type into the list.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.2** *P* **18** *L* **50** # 83
LAW, DAVID J Individual

Comment Type **T** *Comment Status* **X**

While there is an objective in subclause 69.1.2 that states 'Support full duplex operation only' can see nothing in Clause 70 that normatively (or even informatively) states that half duplex operation cannot be support. The addition of the PMD defined in Clause 70 to the Clause 36 PMA/PCS to create a 1000BASE-KX PHY will create a PHY capable of Half-duplex operation. Furthermore while Clause 73 Auto-Negotiation does not support duplex ability negotiation, subclause 73.1 states that, although high not recommended, a different set of abilities can be negotiated by Clause 37 Auto-Negotiation after Clause 73 Auto-Negotiation is complete. This Clause 37 negotiation has to include the duplex ability (see Table 37-1). So a half-duplex 1000BASE-KX seems to be supported.

SuggestedRemedy

Add enumerations for half and full duplex 1000BASE-KX PHY.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.2** *P* **19** *L* **1** # 242
GROW, ROBERT M Individual

Comment Type **E** *Comment Status* **X**

I can't make sense of the insert order. This instruction though has the order 10GBASE-SR, 10GBASE-LRM and then 10GBASE-KX.

SuggestedRemedy

I believe all of these inserts are to be in quasi alphanumeric order (grouping all 10 then 100, etc. rather than strict order). Perhaps the insertion point of 10GBASE-LRM is off.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.6.1.1.10** *P* **22** *L* **10** # 144
BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**

Extra punctuation at the end of the sentence.

SuggestedRemedy

Delete the extra punctuation.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.6.1.1.3** *P* **20** *L* **36** # 226
LAW, DAVID J Individual

Comment Type **E** *Comment Status* **X**

Typo.

SuggestedRemedy

Suggest that '.. FLP Bursts or /C/ ordered_sets ..' should read '.. FLP Bursts, /C/ ordered_set ..'.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.6.1.1.3** *P* **20** *L* **37** # 25
BARRASS, HUGH Individual

Comment Type **E** *Comment Status* **X**

To be consistent with "FLP bursts" and "/C/ ordered sets" the aAutoNegRemoteSignaling should reflect "DME signals" not "DME pages."

SuggestedRemedy

Change "DME pages" to "DME signals" in line 32 and 37.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.6.1.1.5** *P* **20** *L* **5** # 75
BARRASS, HUGH Individual

Comment Type **TR** *Comment Status* **X**

It is redundant to add a new technology ability field for the PAUSE bits as their function is defined by Annex 31A in exactly the same way as the existing PAUSE abilities.

SuggestedRemedy

Delete line 5: "Pause C0C1 Pause bits (C0:C1) as specified in Clause 73"

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.6.1.1.5** *P* **20** *L* **49** # 245
GROW, ROBERT M Individual

Comment Type **E** *Comment Status* **X**

10GBASE T is inserted after Rem Fault also, are these to go before 10GBASE-T? Insert order is quickly becoming a mystery to me, but there appears to be no reason for this order unless it is to be after 10GBASE-T and then it is appended to the sequence.

SuggestedRemedy

Change instruction to: Insert the following entries to "APPROPRIATE SYNTAX:" section, afte 10GBASE-T (IEEE Std 802.3an-2006):

Proposed Response *Response Status* **O**

Cl **30B** *SC* **30B.2** *P* **51** *L* **32** # 161
BOOTH, MR BRAD J Individual

Comment Type **ER** *Comment Status* **X**

Use of the terms "X copper" and "R copper" is confusing.

SuggestedRemedy

Change to be "8B/10B transmission" and "64B/66B transmission", respectively.

Proposed Response *Response Status* **O**

Cl **34** *SC* **34** *P* **22** *L* **15** # 246
GROW, ROBERT M Individual

Comment Type **GR** *Comment Status* **X**

I think opening Clause 34 and 44 is the wrong thing to do. As much as possible, Backplane Ethernet should be stand alone, just as we made EFM as much as possible stand alone. Including these changes makes a possible future division of the standard more difficult. Backplane has its own introductory clause.

SuggestedRemedy

Delete the text (I believe it is redundant with text in Clause 69) and move the table with appropriate introductory text to Clause 69.

Proposed Response *Response Status* **O**

Cl **34** *SC* **34.1** *P* **22** *L* **22** # 145
BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**

Missing period at end of paragraph.

SuggestedRemedy

Insert period.

Proposed Response *Response Status* **O**

Cl **44** *SC* **44.1.1** *P* **22** *L* **33** # 76
BARRASS, HUGH Individual

Comment Type **E** *Comment Status* **X**

There is a missing period at the end of the sentence. Also, putting the FEC information in a separate paragraph implies that the FEC sublayer is defined for any 10Gbit PHY.

SuggestedRemedy

Rewrite as:
10 Gigabit Ethernet is also defined for operation over electrical backplanes via the 10GBASE KX4 and
10GBASE-KR PHY. For additional information on Backplane Ethernet, refer to Clause 69. Ar optional FEC sublayer is defined in Clause 74.

Proposed Response *Response Status* **O**

Cl **44** *SC* **44.1.1** *P* **22** *L* **34** # 146
BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**
Missing period at end of paragraph.

SuggestedRemedy
Insert period.

Proposed Response *Response Status* **O**

Cl **44** *SC* **44.3** *P* **22** *L* **41** # 147
BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**
Correct reference to 802.3an.

SuggestedRemedy
As per comment.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1** *P* **23** *L* **14** # 148
BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**
Incorrect editing instruction.

SuggestedRemedy
Either use "change" or "insert".

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.1** *P* **23** *L* **50** # 149
BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**
Use "Table" instead of "table".

SuggestedRemedy
As per comment.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.1** *P* **24** *L* **5** # 247
GROW, ROBERT M Individual

Comment Type **E** *Comment Status* **X**
Changes aren't properly marked

SuggestedRemedy
I think it would be better to head these two pseudo columns with the complete bit reference a in Clause 22. Strike through line showing existing headers, add new underscore line with bit headings 1.0.6 and 1.0.13. Center the bit values below those headings. Same for line 10.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.6** *P* **24** *L* **29** # 248
GROW, ROBERT M Individual

Comment Type **E** *Comment Status* **X**
Unfortunately, this is the way 802.3aq should have been written, but it wasn't in D4.0. Because 802.3an expanded the 11xx values, P802.3aq should be published with that expansion and the 1001 = 10GBASE-T declaration. Changes are properly marked against what published 802.3aq should be, but they aren't against P802.3aq.

SuggestedRemedy
Insert Editor's Note: P802.3aq/D4.0 did not include some 802.3an changes as its base text. These base text updates are expected to be made in the IEEE Std 802.3aq-200x. Below change instruction and table markup that indicate a combination of IEEE Std 802.3an-2006 and P802.3aq/D4.0 assumes the published 802.3aq will include those IEEE Std 802.3an bas text updates.
Change instruction to read: Change the reserved descriptions in Table 45-7 (including IEEE Std 802.3an-2006 and P802.3aq/D4.0 changes) as follows. If
P802.3aq is not published before P802.3ap then row 1000 should be left as "Reserved".

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.7.4** *P* **25** *L* **5** # 249
GROW, ROBERT M Individual

Comment Type **E** *Comment Status* **X**
P802.3aq/D4.0 doesn't include 10GBASE-T changes

SuggestedRemedy
Change instruction to read: Change the first paragraph of 45.2.1.7.4 (including IEEE Std 802.3an-2006 and P802.3aq/D4.0 changes) as follows. If P802.3aq is not published before P802.3ap then do not add the text "for 10GBASE-LRM serial PMDs in 68.4.8,"

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.7.5** *P* **25** *L* **23** # 250
GROW, ROBERT M Individual

Comment Type **E** *Comment Status* **X**
P802.3aq/D4.0 doesn't include 10GBASE-T changes

SuggestedRemedy
Change instruction to read: Change the first paragraph of 45.2.1.7.5 (including IEEE Std 802.3an-2006 and P802.3aq/D4.0 changes) as follows. If P802.3aq is not published before P802.3ap then do not add the text "for 10GBASE-LRM serial PMDs in 68.4.8,"

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.7.8** *P* **25** *L* **23** # 251
GROW, ROBERT M Individual

Comment Type **E** *Comment Status* **X**
P802.3aq/D4.0 doesn't include 10GBASE-T changes

SuggestedRemedy
Change instruction to read: Change the first paragraph of 45.2.1.7.8 (including IEEE Std 802.3an-2006 and P802.3aq/D4.0 changes) as follows. If P802.3aq is not published before P802.3ap then do not add the text "for 10GBASE-LRM serial PMDs in 68.4.8,".

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.7.8** *P* **26** *L* **23** # 252
GROW, ROBERT M Individual

Comment Type **E** *Comment Status* **X**
P802.3aq/D4.0 doesn't include 10GBASE-T changes

SuggestedRemedy
Change instruction to read: Change the reserved descriptions in Table 45-11 (including IEEE Std 802.3an-2006 and P802.3aq/D4.0 changes) as follows. If P802.3aq is not published before P802.3ap, then row 1.11.1 should be left as "Reserved"

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.77** *P* **27** *L* **33** # 150
BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**
Cross-reference to Table 45-54 is goofed up.

SuggestedRemedy
Fix.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.78** *P* **28** *L* **23** # 151
BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**
Run-on sentence.

SuggestedRemedy
Change comma after "read only" to be a semi-colon and insert a comma after "however".

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.78.3** *P* **29** *L* **5** # 152
BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**
Double period.

SuggestedRemedy
Search document for double periods and fix.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.8** *P* **26** *L* **23** # 4
KAROCKI, PIOTR Individual

Comment Type **E** *Comment Status* **X**
Why not "ability" (in two rows, 10GBASE-KR and KX4)? Other rows has "ability" word in 'name' column.

SuggestedRemedy
1.11.4 10GBASE-KR ability
1.11.3 10GBASE-KX4 ability

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.82** *P* **33** *L* **1** # 5
KAROCKI, PIOTR Individual

Comment Type **E** *Comment Status* **X**
No space in clause title, "(Register1.160)"

SuggestedRemedy
Change to "(Register 1.160)"

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.83.1** *P* **34** *L* **34** # 153
BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**
Missing space between "ability" and "(".

SuggestedRemedy
Fix.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.84.1.1** *P* **36** *L* # 253
GROW, ROBERT M Individual

Comment Type **E** *Comment Status* **X**
I think this is the first time we have gone six levels deep in subclauses. I believe we already are in violation of the style manual with five.

SuggestedRemedy
I don't see an easy way out, but talk to the publication editor for suggestions.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.84.1.1** *P* **36** *L* **37** # 137
BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**
Throughout the draft there is use of 6 heading levels. Does this meet the IEEE sytle guide?

SuggestedRemedy
If not, change nesting of headings.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.7.10** *P* **44** *L* # 256
GROW, ROBERT M Individual

Comment Type **E** *Comment Status* **X**
Style, unmarked change

SuggestedRemedy
Use emdash instead of hyphen after NOTE 1 and NOTE 2. The 1 needs to be underscore.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.7.12** *P* **46** *L* **1** # 257
GROW, ROBERT M Individual

Comment Type **E** *Comment Status* **X**
No renumbering required, insert is at the end of 45.2.7.

SuggestedRemedy
Delete second sentence of instruction.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.7.6** *P* **40** *L* **43** # 7

MCCLELLAN, MR BRETT A Individual

Comment Type **E** *Comment Status* **X**

It is unclear which parts of this subclause apply only to backplane and which apply to non-backplane devices. For example, does the text on lines 34 to 37 apply to all devices? Do line 45 to 50 apply to backplane devices? Page 40 line 43 and page 44 lines 9-10 separately describe the use of bit 7.16.12.

SuggestedRemedy

Break 45.2.7.6 into two subclauses, one describing the use of registers 7.16 to 7.18 for backplane and one for non-backplane devices.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.7.7** *P* **40** *L* **23** # 154

BOOTH, MR BRAD J Individual

Comment Type **ER** *Comment Status* **X**

Editing instruction is confusing and incorrect.

SuggestedRemedy

Move the editing instruction after the heading and change to read "Insert after the heading th following paragraphs:". Delete the unchanged paragraphs or provide an editor's note that these paragraphs are unchanged and are left in so users don't have to reference 802.3an. Before the first note, insert an editing instruction to read "Change Note to be Note 1 as follows:" and show the edits made to the note. Before the 2nd note, insert the editing instruction "Insert the following note:".
Same applies to 45.2.7.10 and its notes.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.7.7** *P* **40** *L* **26** # 254

GROW, ROBERT M Individual

Comment Type **E** *Comment Status* **X**

Base text error

SuggestedRemedy

802.3an includes third series comma after 7.17.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.7.7** *P* **40** *L* **28** # 97

GANGA, ILANGO S Individual

Comment Type **T** *Comment Status* **X**

This register is shared by 802.3an and 802.3ap. The organization of the current text is ambiguous as to which corresponds to 802.3an and which corresponds to 802.3ap.

SuggestedRemedy

To make it clear. Have a separate subclause within 45.2.7.7. (say 45.2.7.7.1 and 45.2.7.7.2) and keep the general changes that are common to 802.3ap and .3an in 45.2.7.7 and move the 802.3an specific changes to 45.2.7.7.1 and move 802.3ap specific changes to 45.2.7.7.2 If moving .3an changes is not feasible, at a minimum have a separate subclause for 802.3ap specific changes. Make similar changes to other shared registers such as AN LP base page ability registers and AN XNP register(s) etc.,

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.7.7** *P* **41** *L* **23** # 255

GROW, ROBERT M Individual

Comment Type **E** *Comment Status* **X**

Style, unmarked change

SuggestedRemedy

Use emdash instead of hyphen after NOTE 1 and NOTE 2. The 1 needs to be underscore.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.7.7** *P* **41** *L* **30** # 155

BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**

Change orphan settings on Table 45-137.

SuggestedRemedy

As per comment.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.7.8** *P* **42** *L* **26** # 156
BOOTH, MR BRAD J Individual

Comment Type **ER** *Comment Status* **X**
Editing instruction is confusing and incorrect.

SuggestedRemedy
Change editing instruction to read "Insert after the heading the following paragraphs:". Delete the unchanged paragraphs or provide an editor's note that these paragraphs are unchanged and are left in so users don't have to reference 802.3an.
Same applies to 45.2.7.9 and its note.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.5.1** *P* **47** *L* **6** # 258
GROW, ROBERT M Individual

Comment Type **ER** *Comment Status* **X**
Invalid changes to PICS header information. 45.5.1 is included without change marks and I believe it has been decided to delete the similar information from the published 802.3an. When approved, 802.3ap becomes part of 802.3-2005, but 802.3-2005 is not part of 802.3an so it is not appropriate to update the standard to which you claim to conform. (P802.3ap doesn't have all of the PICS items.)

SuggestedRemedy
Delete 45.5.1 and its subclauses

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.5.1** *P* **47** *L* **8** # 157
BOOTH, MR BRAD J Individual

Comment Type **ER** *Comment Status* **X**
Clause 45 applies to all of 802.3 and not just 802.3ap.

SuggestedRemedy
Remove 45.5.1 and 45.5.2.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.5.10.8** *P* **50** *L* **1** # 259
GROW, ROBERT M Individual

Comment Type **ER** *Comment Status* **X**
Bad subclause number

SuggestedRemedy
Change to 45.5.3.8. Make sure change also corrects error on line 18.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.5.10.8** *P* **50** *L* **13** # 160
BOOTH, MR BRAD J Individual

Comment Type **ER** *Comment Status* **X**
Naming doesn't match what is used.

SuggestedRemedy
Change to be AN or change AN in 45.5.10.9 to be ABN.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.5.3.2** *P* **48** *L* **17** # 158
BOOTH, MR BRAD J Individual

Comment Type **ER** *Comment Status* **X**
FEC-R not found.

SuggestedRemedy
Change to be FEC or change other instances of FEC to be FEC-R.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.5.3.3** *P* **49** *L* **8** # 159
BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**
Feature names are too long.

SuggestedRemedy
Change to be shorter.

Proposed Response *Response Status* **O**

Cl **69** *SC* **69.1.1** *P* **53** *L* **12** # 162
BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**
Don't use "and/or".

SuggestedRemedy
Change to be "or".

Proposed Response *Response Status* **O**

Cl **69** *SC* **69.1.1** *P* **53** *L* **19** # 77
BARRASS, HUGH Individual

Comment Type **E** *Comment Status* **X**
Some say that it is a grammatical error to needlessly split an infinitive.

SuggestedRemedy
Change "...segment to automatically select the..."
to "...segment to select automatically the..."

Proposed Response *Response Status* **O**

Cl **69** *SC* **69.1.2** *P* **53** *L* **30** # 85
LAW, DAVID J Individual

Comment Type **E** *Comment Status* **X**
This list of PHY types provided here is not connected with text in this item.

SuggestedRemedy
Suggest that 'Support operation over ..' be changed to read 'Support operation of the following PHY over ..'.

Proposed Response *Response Status* **O**

Cl **69** *SC* **69.1.3** *P* **54** *L* **11** # 86
LAW, DAVID J Individual

Comment Type **T** *Comment Status* **X**
The LLC is Logical Link Control and is not an 'Other MAC Client'.

SuggestedRemedy
Suggest 'LLC -- LOGICAL LINK CONTROL OR OTHER MAC CLIENT' be changed to read 'LLC (LOGICAL LINK CONTROL) OR OTHER MAC CLIENT'.

Proposed Response *Response Status* **O**

Cl **69** *SC* **69.1.3** *P* **54** *L* **26** # 88
LAW, DAVID J Individual

Comment Type **T** *Comment Status* **X**
Why is just FEC marked as optional, aren't the GMII, XGMII and AN also optional.

SuggestedRemedy
Either remove this designation or be more consistent in the marking of options.

Proposed Response *Response Status* **O**

Cl **69** *SC* **69.1.3** *P* **54** *L* **26** # 163
BOOTH, MR BRAD J Individual

Comment Type **ER** *Comment Status* **X**
XGMII and GMII are also optional.

SuggestedRemedy
Put an asterisk after GMII and XGMII. Change "FEC is optional" to be "Optional".

Proposed Response *Response Status* **O**

Cl **69** *SC* **69.1.3** *P* **54** *L* **46** # 164
BOOTH, MR BRAD J Individual

Comment Type **ER** *Comment Status* **X**
Item d) and e) have names when used as observable interconnects.

SuggestedRemedy
Change to use TBI and XSBI, respectively.

Proposed Response *Response Status* **O**

Cl **69** *SC* **69.2.1** *P* **55** *L* **6** # 79
LAW, DAVID J Individual

Comment Type **E** *Comment Status* **X**

The text 'and the PHY sublayers' seems a bit odd - isn't it only ever to one sublayer - and isn' it the PCS. Clause 46 states 'The purpose of the XGMII is to provide a simple, inexpensive, and easy-to-implement interconnection between the Media Access Control (MAC) sublayer and the Physical layer (PHY).' Suggest similar wording is used here.

SuggestedRemedy

Change '.. and the PHY sublayers.' to read '.. and the PHY.'

Proposed Response *Response Status* **O**

Cl **69** *SC* **69.2.3** *P* **55** *L* **22** # 165
BOOTH, MR BRAD J Individual

Comment Type **ER** *Comment Status* **X**

Too much information.

SuggestedRemedy

Delete "or sixteen connections".

Proposed Response *Response Status* **O**

Cl **69** *SC* **69.2.3** *P* **55** *L* **37** # 184
BAUMER, HOWARD A Individual

Comment Type **ER** *Comment Status* **X**

Table 69-1 is missing a column for Clause 73. Since Clause 73 Is manditory for each of the Nomenclatures it should be added into the table with the other realted clauses.

SuggestedRemedy

Add a column for Clause 73 and mark it as "M" for each of nomenclature row

Proposed Response *Response Status* **O**

Cl **69** *SC* **69.2.4** *P* **56** *L* **13** # 6
KAROCKI, PIOTR Individual

Comment Type **E** *Comment Status* **X**

Two dots after "Clause 73".

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **69** *SC* **69.3** *P* **56** *L* **40** # 166
BOOTH, MR BRAD J Individual

Comment Type **ER** *Comment Status* **X**

The numbers don't work with what's in 36.5.1, as that number includes the PMD.

SuggestedRemedy

Move the PMD number into the PCS/PMA number to make it equal the 36.5.1. Insert a delay number for the backplane media.

Proposed Response *Response Status* **O**

Cl **69** *SC* **69.3** *P* **57** *L* **21** # 230
GHIASI, ALI Individual

Comment Type **TR** *Comment Status* **X**

PMD delay may be too short in some implementation

SuggestedRemedy

Increase the delay from 512 bits to 1024 bits, insignificant increase to other delays

Proposed Response *Response Status* **O**

Cl **69** *SC* **69.4** *P* **57** *L* **26** # 227
LAW, DAVID J Individual

Comment Type **T** *Comment Status* **X**

I would like it made very clear that in the case of conflict the State Machine takes precedence

SuggestedRemedy

Suggest this reads 'In the case of any ambiguity between the text and the state diagrams, the state diagrams shall take precedence.'

Proposed Response *Response Status* **O**

Cl **69A** *SC* **69A** *P* **184** *L* **1** # 210
BAUMER, HOWARD A Individual

Comment Type **TR** *Comment Status* **X**

This is a comment against Annex 69A. This comment is dependent upon changing Annex 69 from informative to normative for all PMD types and changing the acceptance of comments against Clause 70,71,72 specifying their recievers meeting BER requriements when connected to a compliant transmitter through a compliant channel
If the above paragraph becomes true then this annex is no longer needed

SuggestedRemedy

Remove Annex 69A from document

Proposed Response *Response Status* **O**

Cl **69A** *SC* **69A.2** *P* **184** *L* **40** # 263
GHIASI, ALI Individual

Comment Type **TR** *Comment Status* **X**

Inteference tolerance test only defines frequncy dependent attenuator where the group delay may be flat and not dispersive like FR4 material

SuggestedRemedy

Either define group delay property or the impulse response for the frequncy dependent attenuator.

Proposed Response *Response Status* **O**

Cl **69A** *SC* **69A.2.1** *P* **185** *L* **7** # 100
VALLIAPPAN, MAGESH Individual

Comment Type **GR** *Comment Status* **X**

When running EIT simulations, it was assumed (at least by me) that 800mVpp would be observed with an alternating ones/zeros pattern. This guarantees a minimum transmit energy at 5GHz, even with slow rise times.

SuggestedRemedy

Change text to - For 10GBASE-KR, the peak-to-peak amplitude delivered by the pattern generator shall be no more than 800 mV, adjusted by a gain bTC as defined in 69A.2.2, regardless of equalization setting.

Proposed Response *Response Status* **O**

Cl **69A** *SC* **69A.2.1** *P* **185** *L* **8** # 232
THALER, PATRICIA A Individual

Comment Type **TR** *Comment Status* **X**

The specifications of the 1000BASE-KX and 10GBASE-KX4 transmitters are clearly based on the minimum signal specified for their PHYs. It isn't clear that the 10GBASE-KR signal generator is. The current text in 72.6.10.4.2 appears to require the ability to put out a signal higher than 800 mV peak-to-peak. That text has a problem on which I submitted another comment.

SuggestedRemedy

Change the requirement for 10GBASE-KR signal generator to more closely reflect the lowest maximum level the PHY is required to support out of its transmitter.

Proposed Response *Response Status* **O**

Cl **69A** *SC* **69A.2.1** *P* **185** *L* **10** # 62
HEALEY, ADAM B Individual

Comment Type **E** *Comment Status* **X**

While "rise time" is a well understood term, this quantity is referred to as "transition time" throughout the document.

SuggestedRemedy

Change "rise time" to "transition time" to be consistent.

Proposed Response *Response Status* **O**

Cl **69A** *SC* **69A.2.1** *P* **185** *L* **13** # 63

HEALEY, ADAM B Individual

Comment Type **T** *Comment Status* **X**

72.7.2.2 (and comparable sections for the other PHY types) indicates the "10GBASE-KR receiver shall comply with the requirements for Table 72-9 for any signaling speed in the range 10.3125 GBd +/- 100 ppm". This test defines a specific offset (200 ppm relative to the DUT reference clock). These two statements are at odds unless one assumes the +200 ppm offset covers all the cases of +/- 100 ppm. At best, the statement is redundant.

SuggestedRemedy

Strike the text requiring a +200 ppm offset.

Proposed Response *Response Status* **O**

Cl **69A** *SC* **69A.2.1** *P* **185** *L* **17** # 49

HEALEY, ADAM B Individual

Comment Type **TR** *Comment Status* **X**

The half-power constraint applied to the pattern generator jitter source is poorly connected to the jitter constraints applied to compliant transmitters. The power of a sinusoid of peak amplitude A_DJ is 0.5*A_DJ^2. The power of Gaussian noise with peak value, at 1E-12, of A_RJ is (A_RJ/7.03)^2. Since, for all of the PHYs defined in IEEE P802.3ap, the worst-case transmitter has A_DJ and A_RJ of the same order, the DJ contribution to the total jitter powe is approximately 25 times larger than the RJ contribution. In the worst case, if the tester elect to split the jitter power in half, the required peak RJ, at 1E-12, would exceed 0.5 UI.

SuggestedRemedy

Define the (minimum) peak sinusoidal jitter and RMS random jitter (or peak value at the targe BER) to be applied by the pattern generator for each PHY covered by the test procedure. Use the respective transmitter requirements as the basis for minimum requiremed values. Delete lines stating that "The sinusoidal jitter plus the duty cycle distortion shall account for a least 50% of the total jitter power" and "The RMS amplitude of the jitter shall be no less..." State that the duty cycle distortion, sinusoidal jitter, and random jitter shall be no less than th values specified for the PHY type being tested. Using 10GBASE-KR for example, in Table 72 10, the field "Applied Jitter (RMS)" would be removed, with the accompanying text (including Equation 72-10) removed. Two new fields would be added: "Applied sinusoidal jitter (min)" with units of "UIpk-pk" and value of 0.115, and "Applied random jitter (min)" also with units "UIpk-pk" and value of 0.130 with a note indicating that "applied random jitter is specified at a BER of 1E-12". Finally, the parameter "Minimum DCD jitter" would be renamed "Applied duty cycle distortion (min)" for consistency, with units of "UIpk-pk" and value of 0.035. The total applied jitter would therefore be no less than 0.28 UIpk-pk, with emphasis places on the sinusoidal jitter assuming that it is more stressful than the random jitter. Additional editorial changes to provide a consistent labeling include renaming the following parameters: "Amplitude of broadband noise (RMS)" should become "Amplitude of broadband noise (min)" with units "mVrms", "Minimum transition time" should become "Transition time (20%,-80%, min) with units of "ps". Similar changes would be applied to 1000BASE-KX and 10GBASE-KX4 test requirements.

Proposed Response *Response Status* **O**

Cl **69A** *SC* **69A.2.2** *P* **185** *L* **36** # 50
HEALEY, ADAM B Individual

Comment Type **T** *Comment Status* **X**

The requirements for the interference generator are completely specified in 69A.2.3 and the sentence: "It should be capable of injecting differential interference large enough to cause a BER of at least 1E-4." is no longer necessary.

SuggestedRemedy

Delete the sentence.

Proposed Response *Response Status* **O**

Cl **69A** *SC* **69A.2.3** *P* **186** *L* **21** # 211
BAUMER, HOWARD A Individual

Comment Type **TR** *Comment Status* **X**

This is a comment against Annex 69A. .
The filter used to measure the noise power from the interfernece generator is specified with t precise of values.

SuggestedRemedy

Change the last sentence of the paragraph to read:
The filter for this measurement shall have at most a 40 dB/decade roll-off and a 3 dB cut-off frequency of at least 0.5 times the signaling speed.

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B** *P* **187** *L* **3** # 183
KIM, YONGBUM Individual

Comment Type **TR** *Comment Status* **X**

There has never been a 802.3 PHY standard that has not assured interoperability. Transimite and receiver spec without a channel specification that allows a system to be qualified as conformant or not conformant will not guarantee interoperability. If this requirement is not me PAR may need to be revisited on the basis that interoperability criteria has not been met.

SuggestedRemedy

Change "informative" to "normative", and make any necessary corrections in the draft standard to be consistent.

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B** *P* **187** *L* **3** # 133
FRAZIER, JR., HOWARD M Individual

Comment Type **TR** *Comment Status* **X**

Annex 69B must be made normative. There is no normative specification of the interconnect characteristics for the PHYs defined in this draft, either incorporated in the draft or by reference to an external standard. A normative specification of the interconnect characteristic is essential for interoperability between components from different manufacturers. We should not depend on some unspecified body to provide a normative specification in the future, and we cannot reference a non-existent document.

SuggestedRemedy

Make Annex 69B normative. Reword all "it is recommended" sentences in Annex 69B to be "shall" statements. Add PICS for Annex 69B.

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.2** *P* **187** *L* **18** # 212
BAUMER, HOWARD A Individual

Comment Type **TR** *Comment Status* **X**

This is a comment against Annex 69B.
Return loss and insertion loss deviation are missing from the list of informative characteristic and mehods

SuggestedRemedy

Change "& for the insertion loss, crosstalk, &" to "& for the insertion loss, insertion loss deviation, return loss, crosstalk, &"
and on line 22 "& defined in 69B.4.3, 69B.4.6, &" to "& defined in 69B.4.3, 69B.4.4, 69B.4.5, 69B.4.6, &"
and on line 47 of page 191,

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.3** *P* **187** *L* **47** # 65
HEALEY, ADAM B Individual

Comment Type **E** *Comment Status* **X**

Consistent use of terminology.

SuggestedRemedy

Change "minimum rise time" to "minimum transition time".

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4** *P* **188** *L* # 16

Proposed Response *Response Status* **O**

MCCLELLAN, MR BRETT A Individual

Comment Type **TR** *Comment Status* **X**

Submitted on behalf of Chris DiMinico.
To ensure interoperability channel parameters are typically normatively specified and include in the performance implementation conformance statement (PICS). The channel parameters are identified, in part, to enable appropriate tests against by which to assess the claim for conformance of the implementation. The PICS for Clauses 70, 71 and 72 (802.3ap-200x) do not include channel parameters and/or appropriate specifications/tests to ensure interoperability.
Annex 69B provides informative interconnect characteristics for differential, controlled impedance traces up to 1 m, including two connectors, on printed circuit boards residing in a backplane environment. Although Annex 69B states that the interconnect characteristics can be applied to a specific implementation of the full path (including transmitter and receiver packaging and supporting interaction of these components, the interconnect characteristics are not normatively specified and more importantly are not directly tied to appropriate tests (PICS) to ensure interoperability.
Recognizing that a backplane interconnect is highly dependent on implementation and the need to enable system trade-offs for the designer, a
subset of draft 2.4 channel parameters may be sufficient to ensure interoperability.

SuggestedRemedy

Clause: 69B
Page 188
Line: 3
Change informative to normative.
Add shall statements to the channel parameters necessary to enable appropriate tests by which to assess the claim for conformance of the implementation. Include those channel parameters in the Clauses 70, 71 and 72 (802.3ap-200x) PICS and/or appropriate specifications/tests to ensure interoperability.
Subclause: 69B.4.6.4
Page 195: Line 16.
Replace: It is recommended that ICRfit, offset by PILD and PSYS, be greater than or equal t
ICRmin as defined in Equation (69B-26).
With: ICRfit, offset by PILD and PSYS, shall be greater than or equal to ICRmin as defined ir
Equation (69B-26).
Subclause: 69B.4.5.
Page 192: Line 28:
Replace: It is recommended that the channel return loss, RL, measured in dB at TP1 and TP4, be greater than or equal to RLmin&.
With: The channel return loss, RL, measured in dB at TP1 and TP4, shall be greater than or equal to RLmin as defined in Equations (69B-12), (69B-13), and (69B-14).
Subclause: 69B.4.4.
Page 191: Line 34
Replace: It is recommended that ILD be within the high confidence region defined by Equatio
(69B-10) and Equation (69B-11):
With: The ILD shall be within the high confidence region defined by Equation (69B-10) and Equation (69B-11):

Cl **69B** *SC* **69B.4** *P* **188** *L* **1** # 214

BAUMER, HOWARD A Individual

Comment Type **TR** *Comment Status* **X**

This is a comment against Annex 69B.
The purpose of a standard is to ensure a system will opperate when seperately manufactured compomemts are combined to construct the system. This interopperability requirement for a standard can only be ensured if each of the system comonents are fully specified. Only when each piece is fully specified can someone assembling the system from seperately manufactured componets be assured the resultant system will work.
This draft has broken down the system into thre separate and distict components, each one which can come from a multitude of different vendors. These three components are: The transmitter, the backplane channel and the receiver. Each of these components has its limitations on how it can be tested and therefor on how it should be specified. In order to test component it has to be both able to be controlled and the affects of that controll have to be able to be observed.
The transmitter is very easily controlled and observed. The nature of the transmitter is to give it digital data of "1"s and "0"s and have it produce a waveform that can be applied to the channel. The transmitter by its mere nature is easily controlled and the results observed. A specification for the transmitter has already been drafted taking advantage of its nature.
The channel is also a component that is easily controlled and the affects of that control observerd. Each end of the channel is exposed whereby test equiptment can be made to inject signals into it, control, and observe the signals at the output end, observed. The beginings of a specification for the channel have been started, however, the task force has ellected not to make it manditory that an 802.3ap system meet these, or any, channel specifications.
Although the reciever is very easily controlled, its inputs are redily available to stimulate with test signals, it is very dificult to observe. Even if the receiver specification is encumbered with internal nodes exposed for test purposes the fact is the function of the reciever is to take the incoming signals and turn them into digital "1"s and "0"s. This function alone means the only way to observe the final results of the reciever's function is to count how many times it functions properly. This is called Bit Error Ratio, BER.
The current specification for the reciever measures the receivers performance by measureing the BER it produces for a vastly reduced subset of channels as recommened by this Annex.
The interference tollerance test only requires a lossy channel with near perfect return loss (no return loss) and lumps all external noise affects into one lump sum of AWGN. All this test does is show that a particular receiver will recover data and the expeceted BER for that one test channel in the presence of AWGN.
The only real way to guarantee a system will work is to require that the receiver recover data at the targeted BER when a compliant transmitter is transmitting a signal through a compliant channel. Since there is no compliant channel this cannot be done.

SuggestedRemedy

Change Annex 69B from informative to normative. Change all recommended phrases to shall phrases and add appropriate pics section.

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4** *P* **188** *L* **1** # 215

BAUMER, HOWARD A Individual

Comment Type **TR** *Comment Status* **X**

This is a comment against Annex 69B.
When the informative channel models are taken as normative the link budget is not closed. That is there are a significant number of false positives. From the May 3, 2006 channel ad hoc teleconference valliappan_c2_0506.pdf, column 7 shows peters_B12,1,20,M1,20 & DAmbrosia_6T channels as meeting BER targets. From the May06 interim mellitz_01_0506.pdf, slide #8 shows Peters_B12,1,20,M1,20 & SAmbrosius_1,2,3,4,5,7T channels passing the recommended channel limits. This takes into acount adjusting the maximum transmit aplitude and minimum transmit equalization per villiappan_c2_0506.pdf. The link budget needs to be closed, (i.e. no known false positives).

SuggestedRemedy

Adjust the channel parameters such that ther are no known false positive channels. A presentation will be provided during the Sep06 interim with suggested changes.

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4** *P* **188** *L* **1** # 213

BAUMER, HOWARD A Individual

Comment Type **TR** *Comment Status* **X**

This is a comment against Annex 69B.
The frequency ranges for the different recommended channel parameters are inconsistant. There are two main reasons for a set of channel parameters. The first is so a vendor of a channel has a set to specifications bywhich they can check their channel against to see if they are meeting the recommendations. The second is so a systems analysist and architect can build a model that they can use to design their receiver to opperate with. It is this later reason the drives the need for consistant frequency ranges for all of the channel parameters.

SuggestedRemedy

Pick one set of frequency ranges to use for all channel parameters per PMD type.

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.1** *P* **188** *L* **3** # 135

FRAZIER, JR., HOWARD M Individual

Comment Type **TR** *Comment Status* **X**

The worst case link budgets for each of the PHYs, operating on a worst case channel, must close. There cannot be corner conditions under which a compliant pair of PHYs, operating or a compliant channel, do not interoperate.

SuggestedRemedy

Change the channel characteristics, and if necessary the input and output characteristics of the PHYs, so that the link budget closes under all worst case conditions.

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.1** *P* **188** *L* **11** # 17

MCCLELLAN, MR BRETT A Individual

Comment Type **T** *Comment Status* **X**

Submitted on behalf of Chris DiMinico.
The range of frequencies over which the insertion loss parameters are specified (channel bandwidth) for each port type should be related to the port type signaling speed (signal bandwidth) or a rationale (technical justification) to characterize the channel bandwidth beyond the signal bandwidth should be provided. Why does fmax=15 GHz apply to all port types, e.g., KX,KX4 and KR. Why is the KR channel characterized to fmax=15 GHz?
In addition, it would be helpful to have a single range of frequencies for the insertion loss parameter specifications for each port type or provide the rationale (technical basis) for the three different frequency ranges. Draft 2.4 includes channel parameters specified over three different frequency ranges (fmin to fmax), (f1 to f2), and (fa to fb).
Summary Draft 3.0
1. IL(f) and the A(f) ILD allowance are specified from fmin to fmax
2 Amax(f) frequency range is not explicitly specified.
3. ICR(f) - is specified from fa to fb
4. A(f) is specified from f1 to f2.
5. ILD(f) is specified from f1 to f2. For frequencies from f2 to fmax the ILD is bounded by ILmax(f).

SuggestedRemedy

1. Delete fmin parameter: Table 69B-1
2. Delete fmax parameter: Table 69B-1
3. Select either (f1 to f2) or (fa to fb) to reconcile ambiguity in frequency ranges for the insertion loss parameters (including Amax).
4. Limit the channel frequency specification range (f1 to f2 or fa to fb) to the required signal bandwidth for each port type.

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.1** *P* **188** *L* **14** # 64

HEALEY, ADAM B Individual

Comment Type **E** *Comment Status* **X**

Consistent use of terminology.

SuggestedRemedy

Change "The maximum attenuation&" to "The maximum fitted attenuation&"

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.1** *P* **188** *L* **14** # 67

HEALEY, ADAM B Individual

Comment Type **E** *Comment Status* **X**

Return loss did not appear to make this list.

SuggestedRemedy

Add sentence "The minimum return loss (RL) is defined in 69B.4.5." between ILD and ICR sentences.

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.1** *P* **188** *L* **16** # 216

BAUMER, HOWARD A Individual

Comment Type **TR** *Comment Status* **X**

This is a comment against Annex 69B.
A reference to the recommended return loss is missing from the list of parameters.

SuggestedRemedy

Insert the followinf sentence as the fourth sentence in the indicated paragraph:
The minimum return loss (Rlmin) is defined in 69B.4.5.

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.1** *P* **188** *L* **19** # 66
HEALEY, ADAM B Individual

Comment Type **E** *Comment Status* **X**

"To enable system trade-offs for the designer a series of confidence curves have been created for the different parameters" is no longer true. Each parameter has as single delimiting curve partitioning the high confidence region. There is no curve family.

SuggestedRemedy

Delete the sentence. Merge the second sentence of the affected paragraph with the paragraph above.

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.2** *P* **189** *L* **21** # 217
BAUMER, HOWARD A Individual

Comment Type **ER** *Comment Status* **X**

This is a comment against Annex 69B.
Frequency limits for recommended Amax limit are missing causing confusion over which frequency range Amax should be compared against.

SuggestedRemedy

Add "for f1 <= f <= f2" as part of equation 69B-6 following the convention used for the other channel charateristics.

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.2** *P* **189** *L* **23** # 68
HEALEY, ADAM B Individual

Comment Type **E** *Comment Status* **X**

The paragraph starting with "In addition, it is recommend that&" is unnecessary. Just with an other section of the document, a "compliant" system must meet all of the applicable requirements there is no need to emphasize this point at the end of each subclause. One reason not to do this evident in this paragraph since the return loss requirements that were subsequently added Annex 69B are not accounted for here despite the fact that the documer recommends that those requirements are met also.

SuggestedRemedy

Delete the sentence, and corresponding sentences in 69B.4.3 and 69B.4.4.

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.2** *P* **189** *L* **24** # 218
BAUMER, HOWARD A Individual

Comment Type **TR** *Comment Status* **X**

This is a comment against Annex 69B.
Return loss is missing from the list of parameters

SuggestedRemedy

change "& defined in 69B.4.4, and the &" to "& defined in 69B.4.4, the return loss defined in 69B.4.5, and the &"
Make this same change at line 46

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.3** *P* **189** *L* # 19
MCCLELLAN, MR BRETT A Individual

Comment Type **T** *Comment Status* **X**

Submitted on behalf of Chris DiMinico.
Please clarify high confidence region. Is it bounded by ILmax or Amax?
I'm assuming ILmax.

SuggestedRemedy

Either remove text "high confidence region" or remove Amax in Figure 69B-2, 69B-3, and 69E 4

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.3** *P* **190** *L* # 18
MCCLELLAN, MR BRETT A Individual

Comment Type **T** *Comment Status* **X**

Submitted on behalf of Chris DiMinico.
The range of frequencies over which the insertion loss parameters are specified (channel bandwidth) for each port type should be related to the port type signaling speed (signal bandwidth) or the rationale (technical justification) to characterize the channel bandwidth beyond the signal bandwidth should be explicitly provided.

SuggestedRemedy

Limit the channel frequency specification (channel bandwidth) ranges plotted in Figure 69B-2 69B-3, and 69B-4 to the required signal bandwidth for each port type (f1 to f2 or fa to fb).

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.3** *P* **190** *L* **3** # 111
FRAZIER, JR., HOWARD M Individual

Comment Type **TR** *Comment Status* **X**

The "High Confidence Region" in Figure 69B-2 is unclear because two curves are present.

SuggestedRemedy

Either 1) use separate figures for Amaz and Ilmax, or 2) shaded or cross-hatch the figure so that the high confidence regions for Amax and Ilmax can be readily discerned.

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.3** *P* **190** *L* **12** # 219
BAUMER, HOWARD A Individual

Comment Type **E** *Comment Status* **X**

This is a comment against Annex 69B.
The "high confidence region" label for the three figures graphically depicting the insertion loss and maximum attenuation can be a little bit confussing. This confusion arrises from having tw "limit lines" on one graph yet only one "high confedence region" label.

SuggestedRemedy

Two possible solutions are:
1) Double the number of figures so that there would only be one limit line per figure.
2) Add wording to the "high confidence region" note to the affect of: Amax high confidence rigion is the all of the area above the Amax line, ILmax high confidence region is the all of the area above the Ilmax line.

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.3** *P* **190** *L* **28** # 112
FRAZIER, JR., HOWARD M Individual

Comment Type **TR** *Comment Status* **X**

The "High Confidence Region" in Figure 69B-3 is unclear because two curves are present.

SuggestedRemedy

Either 1) use separate figures for Amaz and Ilmax, or 2) shaded or cross-hatch the figure so that the high confidence regions for Amax and Ilmax can be readily discerned.

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.3** *P* **191** *L* **3** # 113
FRAZIER, JR., HOWARD M Individual

Comment Type **TR** *Comment Status* **X**

The "High Confidence Region" in Figure 69B-4 is unclear because two curves are present.

SuggestedRemedy

Either 1) use separate figures for Amaz and Ilmax, or 2) shaded or cross-hatch the figure so that the high confidence regions for Amax and Ilmax can be readily discerned.

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.4** *P* **191** *L* **30** # 69
HEALEY, ADAM B Individual

Comment Type **E** *Comment Status* **X**

Instead of "least mean square fit", it is probably better to refer to "fitted attenuation".

SuggestedRemedy

Per comment.

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.6** *P* **192** *L* **26** # 26
MELLITZ, RICHARD I Individual

Comment Type **TR** *Comment Status* **X**

sub-clause 69b.4.6: Return loss does not descrimate between simple traget impedance mismatch and residual ISI.

SuggestedRemedy

Remove channel return loss and replace with a residual ISI parameter. See presenation.

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.6** *P* **193** *L* **30** # 70
HEALEY, ADAM B Individual

Comment Type **E** *Comment Status* **X**

No apparent value to the sentence, "In order to limit the crosstalk at TP4, the differential crosstalk&is specified to meet the BER objective defined in 69.1.2". Presumably, all requirements are defined with this in mind.

SuggestedRemedy

Delete sentence.

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.6** *P* **193** *L* **31** # 220
BAUMER, HOWARD A Individual

Comment Type **TR** *Comment Status* **X**

This is a comment against Annex 69B.
The recommended crostalk limitation is assuming the crosstalk is coming from like transmitte but in actuallity it is not, it can come from any of the transmitter PMD types

SuggestedRemedy

Change "& assume that aggressors and victim are driven by PHYs of the same type and transmit characteristics." to "& assumes that the crosstalk aggressors can be driven by any compliant PMD type."

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.6** *P* **194** *L* **47** # 101
VALLIAPPAN, MAGESH Individual

Comment Type **GR** *Comment Status* **X**

System budget with penalties for transmitter/aggressor configuration is not compatible with a expectation of PHY interoperability and seriously affects the value of the standard.

SuggestedRemedy

We need to either tighten channel limits or transmitter requirements.

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.6.4** *P* **194** *L* # 20
MCCLELLAN, MR BRETT A Individual

Comment Type **T** *Comment Status* **X**

Submitted on behalf of Chris DiMinico.
1. In equation (69B-24) the PILD calculation results in a -0.8 penalty when ILD=0 and A(fb) = Amax(fb)?
2. The IL deviations in 802.3ap is defined as the difference between the IL(f) and the least mean squares fit A(f). ILD(f) exhibits an oscillatory behavior over frequency. The PILD results in a level offset penalty and may not appropriately account for the oscillatory ILD channel self interference.
3. The source of the channel self-interference impairments generally associated with the oscillatory behavior is the re-reflected propagating waves (forward echo) often considered directly as a noise penalty.

SuggestedRemedy

Consider ILD as defined in 802.3ap directly as a noise penalty and include explicitly as a requirement for the test channel specified in 69A.2.2 test channel.

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.6.4** *P* **194** *L* **36** # 15

MOORE, CHARLES E Individual

Comment Type **T** *Comment Status* **X**

I do not feel comfortable with our ICR specification. While it is could work as stated i do not like the fact that the basic equation assumes the thru channel, victim and aggressor transmitters are better than minimum spec, and only applies in general if corrections are added.

SuggestedRemedy

Possible modifications could be:
1. Remove equations 69B-24 and 69B-25, the paragraphs explaining them, beginning at page 194, line 36 and ending page 195 line 18, and table 69B-2. Replace equation 69B-26 with:
ICRfit = 23.3 - 18.7log(f/5 GHz)
(Assuming a maximum value of 3dB for PILD. The 23.3 value may change if this assumption is wrong.)
2. Remove equations 69B-24 and 69B-25, the paragraphs explaining them, beginning at page 194, line 36 and ending page 195 line 18, and table 69B-2. Replace equation 69B-26 with:
ICRfit = 23.3 - 18.7log(f/5 GHz) + Bsys
add:
"If the system designer has no assurance that transmitter variability any better than specified under the appropriate port type transmitter specification and no assurance that the receiver interference tolerance will be any better than specified for the appropriate port receiver specification, he should a system bonus (Bsys) of 0. If better than specified parts will always be used compute Bsys as:
Bsys = 20*log10 ((minimum transmitter amplitude to beused/
maximum transmitter amplitude to be used)/(
minimum transmitter amplitude allowed by spec/
maximum transmitter amplitude allowed by spec)) +
20*log10 (minimum expected interference tolerance/
specified interference tolerance)
3*log10((minimum transmitter rise time to be used/
maximum transmitter rise time to be used)/
(minimum transmitter rise time allowed by spec/
maximum transmitter rise time allowed by spec))"
3. Rename 60B4.6 "Interfernece"
Change the first paragraph to:
"In order to limit interference at TP4, the differential crosstalk due to near-end and far-end aggressors and self interference are specified to meet the BER objective defined in 69.1.2."
add a new paragraph "Self interfernece"
"The self interference due to through channel irregularities at TP4 is calculated with the equation:
SI(f) = 14.3-10*log10 (1.6* ILD(f) ^2)
Change Equation 69B-17 to
PSXT = -10log(10 ^(-PSNEXT/10) + 10 ^(-PSFEXT/10) + 10 ^(-SI/10))
Remove equations 69B-24 and 69B-25, the paragraphs explaining them, beginning at page 194, line 36 and ending page 195 line 18, and table 69B-2. Replace equation 69B-26 with:
ICRfit = 20.3 - 18.7log(f/5 GHz) + Bsys
add:
"If the system designer has no assurance that transmitter variability is any better than specified for the appropriate port type transmitter and no assurance that the receiver interference tolerance will be any better than specified for the appropriate port receiver, he should a system bonus (Bsys) of 0. If better than specified parts will always be used compute Bsys as:
Bsys = 20*log10 ((minimum trnasmitter amplitude to be used/
maximum trnasmitter amplitude to be used)/(
minimum transmitter amplitude allowed by spec/
maximum transmitter amplitude allowed by spec)) +
20*log10 (minimum expected interference tolerance/
specified interference tolerance)
3*log10((minimum transmitter rise time to be used/
maximum transmitter rise time to be used)/
(minimum transmitter rise time allowed by spec/
maximum transmitter rise time allowed by spec))"

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.6.4** *P* **194** *L* **44** # 134

FRAZIER, JR., HOWARD M Individual

Comment Type **TR** *Comment Status* **X**

The term ILD(squared) or ILD^2 is problematic. What are units of dB squared? If SCC14 reviews this carefully, they will comment against the use of these units. This could (and probably will) result in the draft being rejected by RevCom.

SuggestedRemedy

Find another way to express this penalty that does not create new units.

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.6.4** *P* **194** *L* **44** # 221
BAUMER, HOWARD A Individual

Comment Type **TR** *Comment Status* **X**

This is a comment against Annex 69B.
What physical significance is the ILD^2 term? Units of dB^2 do not make any sense. Using a arbitrary parameter, that happens to fit a finite set of data points, to adjust limits for an unlimited unknown data set is not a justifiable scientific or engineering process.
If the intent is to make trade offs between residual ISI due to signal distortions cause by internal interactions within the channel itsself (non-smooth insertion loss transfer function) the a more physically relating parameter of that distortion should be used.

SuggestedRemedy

The task force should try correlating parameters along the lines of the risidual power of the insertion loss with respect to the average power or the power of the return loss, etc.

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.6.4** *P* **195** *L* **28** # 114
FRAZIER, JR., HOWARD M Individual

Comment Type **TR** *Comment Status* **X**

In Figure 69B-7, the legend pointing to the upper curve is incorrect

SuggestedRemedy

Change legend to read ICRmin + PILD +PSYS

Proposed Response *Response Status* **O**

Cl **69B** *SC* **69B.4.6.4** *P* **195** *L* **28** # 115
FRAZIER, JR., HOWARD M Individual

Comment Type **TR** *Comment Status* **X**

The "High Confidence Region" in Figure 69B-7 is unclear

SuggestedRemedy

Using shading or cross-hatch so that the High Confidence Region can be readily discerned

Proposed Response *Response Status* **O**

Cl **70** *SC* **70** *P* **68** *L* **17** # 41
SPAGNA, FULVIO Individual

Comment Type **T** *Comment Status* **X**

The text refers to "output" impedance and "output" levels which is inappropriate this being an Input Return Loss specification.

SuggestedRemedy

Change text to read "input" impedance and "input" levels.

Proposed Response *Response Status* **O**

Cl **70** *SC* **70** *P* **68** *L* **17** # 42
SPAGNA, FULVIO Individual

Comment Type **T** *Comment Status* **X**

The text for the differential input return loss refers to equations (70-1) and (70-2). I would reccomend inserting separate equations and graph for the receiver differential input return loss.

SuggestedRemedy

Label Figure 70-5 "Differential output return loss"
Add following text to 70.7.2.5
ReturnLoss(f) >= 10 (70-3)
for 50 MHz<= f <= 625 Mhz and
ReturnLoss(f) >= 10 - 10 x log(f/625) (70-4)
and a new figure, Figure 70-6, identical to Figure 70-5, but labelled Differential input return loss.

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.1** *P* **58** *L* **8** # 167
BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**

PHY is already defined.

SuggestedRemedy

Remove "(physical layer device)". Applies to 71.1 and 72.1.

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.2** *P* **58** *L* **27** # 169

BOOTH, MR BRAD J Individual

Comment Type **ER** *Comment Status* **X**

Wording is awkward.

SuggestedRemedy

Change to read: "The 1000BASE-KX PMD performs the following three functions in support of the matching service interface primitives of 38.1.1: Transmit, Receive, and Signal Detect. Also applies to 70.6.

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.3** *P* **58** *L* **33** # 80

LAW, DAVID J Individual

Comment Type **TR** *Comment Status* **X**

Subclause 70.3 'PMA requirements for Auto-Negotiation (AN) service interface'and 71.3 'PMA requirements for Auto-Negotiation (AN) service interface' both state that 'The PMA associated with this PMD shall support the AN service interface primitives defined in 73.9. Th PMA shall generate the AN_LINK.indication to indicate a change in link status. The PMA sha use AN_Link.request to enable and disable operation.'.
Subclause 73.9.1.1 specifies that AN_LINK.indication has 'one of three values: READY, OK, or FAIL, indicating whether the underlying receive channel is intact and ready to be enabled (READY), intact and enabled (OK), or not intact (FAIL).
Subclause 73.9.2.1 specifies that AN_LINK.request has 'one of three values: SCAN_FOR_CARRIER, DISABLE, or ENABLE. The link_control=SCAN_FOR_CARRIER mode is used by the Auto-Negotiation function prior to receiving any DME pages or link_status=READY indications. During this mode, the PMA shall search for carrier and repor link_status=READY when carrier is received, but no other actions shall be enabled.'.
There is however no mention of these primitives in the respective PMA, Clause 36 for the 1000BASE-X PMA, Clause 51 for the 10GBASE-R PMA and Clause 48 for the 10GBASE-X PMA. It is therefore difficult to know exactly what, for example, 'the PMA shall search for carrier and report link_status=READY when carrier is received' means when applied to the Clause 51 PMA used in the 10GBASE-KR PHY.
There is no signal called carrier (see Figure 51-3) and no mention of 'carrier' in that clause. In fact there seems to be only three mentions of in the entire set of 10Gb/s Ethernet clauses. The reason for that is that the only place that 'carrier' exists in 10Gb/s is as a signal generate by the RS.
Another example is that AN_LINK.indication should be set to FAIL when the receive channel is not intact. When a Remote Fault status is being received should that cause FAIL to be indicated, looking a 100BASE-X it would seem it should be optionally allowed to do so (see 24.3.1.5.1) but isn't this information only available in the PCS, not the PMA.

SuggestedRemedy

For each PHY type clearly define what the following:
When the underlying receive channel is intact and ready to be enabled.
When the underlying receive channel is intact and enabled.
When the underlying receive channel is not intact.
When carrier is being received.

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.3** *P* **58** *L* **35** # 78
LAW, DAVID J Individual

Comment Type **E** *Comment Status* **X**

Typo.

SuggestedRemedy

AN_Link.request' should read 'AN_LINK.request'. Please also correct:
Subclause 70.10.4.1, Page 71, Line 14 (twice)
Subclause 71.3, Page 74, Line 40
Subclause 71.10.4.1, Page 87, Line 30 (twice)
Subclause 72.3, Page 92, Line 44

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.4** *P* **58** *L* **46** # 107
ABLER, JOSEPH M Individual

Comment Type **T** *Comment Status* **X**

the spec of 24 bit PMD delay is inconsistent with the value of 32 listed in table 69-2. Either of these values are readily achieved for a PMD designed solely for 1.25Gbps operation, but it is not a reasonable value for a combo KR/KX4/KX design which may have a 32 or 64 bit data path.

SuggestedRemedy

specify the KX PMD delay to be the same as KX4 & KR (512 bit times)

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.4** *P* **58** *L* **46** # 168
BOOTH, MR BRAD J Individual

Comment Type **TR** *Comment Status* **X**

The numbers don't work with what's in 36.5.1, as that number includes the PMD.

SuggestedRemedy

Change the numbers so the KX PMD is not called out separately.

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.6.7** *P* **61** *L* **14** # 170
BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**

Run-on sentence.

SuggestedRemedy

Change comma after "ONE" to be a semi-colon and insert a comma after "otherwise".
Also applies to 70.6.8, 70.6.9, 71.6.8, 71.6.9, 71.6.10.

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.7.1** *P* **62** *L* **14** # 171
BOOTH, MR BRAD J Individual

Comment Type **ER** *Comment Status* **X**

Table could use some clean-up.

SuggestedRemedy

Reference to differential peak-to-peak output voltage should be 70.7.1.5. Delete footnote a as Figure 70-4 is in 70.7.1.5. Missing periods at the end of the other footnotes. Put DC common mode voltage limits in mV (also applies to 70.7.1.5).

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.7.1.1** *P* **63** *L* **8** # 106
ABLER, JOSEPH M Individual

Comment Type **T** *Comment Status* **X**

diagram shows a connection for CM RL measurement, but no CM spec is provided

SuggestedRemedy

add a CM RL spec of 6dB using same freq points & slope of diff RL (also make PICs update)

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.7.1.4** *P* **63** *L* **40** # 172
BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**

Missing period.

SuggestedRemedy

Insert period after 59.7.1.

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.7.1.6** *P* **64** *L* **51** # 185
BAUMER, HOWARD A Individual

Comment Type **TR** *Comment Status* **X**

The return loss for 1000BASE-KX is relatively much tighter than 10GBASE-KX4. To accomedate existing 1000BASE-X type PMA/PMDs that previously did not have a return loss specification this return loss specification should be relaxed to be relatively the same as the 10GBASE-KX4 return loss. There is more than enough margin in the 1000BASE-KX link budget to acomidate this relaxation.

SuggestedRemedy

In line 51 change the frequency frange to 50MHz to 800MHz.
On page 65, line3 change 635MHz to 250MHz.
Line 6 f/625 to f/250.
Line 9 625MHz <= f <= 1250MHz to 250MHz <= f <= 800MHz.
page 68, line 17 1250MHz to 800MHz

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.7.1.6** *P* **64** *L* **51** # 173
BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**

Parantheses not required around equations numbers.

SuggestedRemedy

Remove. Search draft for other instances and correct.

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.7.1.6** *P* **65** *L* **9** # 74
THALER, PATRICIA A Individual

Comment Type **TR** *Comment Status* **X**

It is not clear why the return loss specification is set this tightly nor why it is specified to such high frequency (twice Nyquist) when the 8B/10B coding in Clause 71 doesn't bring it up so high.

SuggestedRemedy

Reduce the upper limit to something like 800 MHz and move the knee where the slope begin to 250 MHz.

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.7.1.6** *P* **65** *L* **13** # 122
FRAZIER, JR., HOWARD M Individual

Comment Type **TR** *Comment Status* **X**

Figure 70-5 should look more like Figure 71-4 on page 80. The curves have the same slope, with differing upper frequency limits. The different shapes and scales are needlessly confusir to the reader.

SuggestedRemedy

Plot Figure 70-5 using the same scale as Figure 71-4.

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.7.1.7** *P* **65** *L* **43** # 174
BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**

Missing period at end of paragraph.

SuggestedRemedy

Insert period.

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.7.2** *P* **66** *L* **29** # 27

MELLITZ, RICHARD I Individual

Comment Type **TR** *Comment Status* **X**

sub-clause 70.7.2: Test fixture section need for return loss

SuggestedRemedy

Add test fixture (w/TP4) for return loss or the editorial equivalent.

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.7.2.1** *P* **67** *L* **1** # 186

BAUMER, HOWARD A Individual

Comment Type **TR** *Comment Status* **X**

This comment is dependent upon changing Annex 69B from informative to normative for 1000BASE-KX phy.
There should be a more direct tie between the transmitter specifications, channel specifications and the receiver requirements. Without the receiver's performance being directly tied to a compliant transmitter and a compliant normative channel there is no way to honestly label a system as being a compliant 1000BASE-KX system.

SuggestedRemedy

Replace the whole of 70.7.2.1 with:
70.7.2.1 bit error ratio
The reciever shall operate with a BER of better than 10^-12 when receiving a compliant transmit signal, as defined in 70.7.1, though a comliant backplane channel as defined in Annex 69B.

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.7.2.1** *P* **67** *L* **20** # 175

BOOTH, MR BRAD J Individual

Comment Type **ER** *Comment Status* **X**

Test pattern information should not be in the table.

SuggestedRemedy

Put the information in the paragraph preceding the table.
Also applies to Table 71-7.

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.7.2.1** *P* **67** *L* **23** # 176

BOOTH, MR BRAD J Individual

Comment Type **ER** *Comment Status* **X**

Poor wording. Don't list the reference equation number if it is the equation following the sentence.

SuggestedRemedy

Change to say "using the following equation:"
Also applies to other equations in the draft (like 70-4).

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.7.2.1** *P* **67** *L* **23** # 116

FRAZIER, JR., HOWARD M Individual

Comment Type **TR** *Comment Status* **X**

The note and equation 70-3 seem like tutorial material. It does not seem necessary to state the derivation of the applied jitter.

SuggestedRemedy

Remove

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.7.2.2** *P* **67** *L* **42** # 177

BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**

Use a cross-reference to Table 70-7.

SuggestedRemedy

As per comment.

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.7.2.5** *P* **68** *L* **17** # 119
FRAZIER, JR., HOWARD M Individual

Comment Type **TR** *Comment Status* **X**

The second sentence of the paragraph refers to output impedance rather than input return loss. This looks like a copy/paste problem from 70.7.1.6

SuggestedRemedy

Change second sentence to read: "This return loss requirement applies at all valid input levels."

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.8** *P* **68** *L* **21** # 187
BAUMER, HOWARD A Individual

Comment Type **TR** *Comment Status* **X**

There is no normative backplane channel interconnect specification for a 1000BASE-KX PMI type. To insure a fully interoperable compliant system all three sections, transmitter, channel and reciever are fully specified. This subclause points to an informative interconnect characteristics annex that is labeled as "a reference model". By not making the interconnect characteristics normative this implicitly makes any interconnect useable with the 1000BASE-KX transmitter / reciever pair.

SuggestedRemedy

On line 23 change "Informative" to "Normative" and adjust the pics accordingly.
Also either change the whole of Annex 69B to be normative or appropirately add in to all of the "it is recommended that" phases "for 1000BASE-KX xxx shall meet".

Proposed Response *Response Status* **O**

Cl **70** *SC* **70.8** *P* **68** *L* **23** # 178
BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**

Missing period at end of paragraph.

SuggestedRemedy

Insert period.

Proposed Response *Response Status* **O**

Cl **71** *SC* **71** *P* **84** *L* **41** # 43
SPAGNA, FULVIO Individual

Comment Type **T** *Comment Status* **X**

The text for the differential input return loss refers to equations (71-1) and (71-2). I would reccomend to decouple the two Return Loss specs and insert separate equations and graph for the receiver differential input return loss.

SuggestedRemedy

Label Figure 71-4 "Differential output return loss"
Add following text to 71.7.2.5:
"
ReturnLoss(f) >= 10 (71-5)
for 100 MHz<= f <= 625 Mhz and
ReturnLoss(f) >= 10 - 10 x log(f/625) (71-6)
for 625 Mhz <= f <= 2000 MHz.
"
Add a new figure, Figure 71-6, identical to Figure 70-4, but labelled Differential input return loss.
In 71.7.2.5 change references to 71-1 and 71-2 to (71-5) and (71-6) respectively

Proposed Response *Response Status* **O**

Cl **71** *SC* **71.1** *P* **74** *L* **10** # 179
BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**

Extra period.

SuggestedRemedy

Remove period after "Clause 45".

Proposed Response *Response Status* **O**

Cl **71** *SC* **71.4** *P* **74** *L* **50** # 180
BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**

Missing period at end of paragraph.

SuggestedRemedy

Insert period.

Proposed Response *Response Status* **O**

Cl **71** *SC* **71.5** *P* **75** *L* **11** # 55
HEALEY, ADAM B Individual

Comment Type **E** *Comment Status* **X**

PMD_signal_detect_n missing from Table 71-3. PMD_transmit_disable_n missing from Table 71-2.

SuggestedRemedy

Add these variables to the appropriate tables.

Proposed Response *Response Status* **O**

Cl **71** *SC* **71.5** *P* **75** *L* **18** # 54
HEALEY, ADAM B Individual

Comment Type **E** *Comment Status* **X**

Inconsistent variable names: Global_PMD_transmit_disable/signal_detect.

SuggestedRemedy

In Table 71-2, change MDIO control variable to "Global PMD transmit disable" and PMD control variable to "Global_PMD_transmit_disable". In Table 71-3, change PMD status variable to "Global_PMD_signal_detect".

Proposed Response *Response Status* **O**

Cl **71** *SC* **71.5** *P* **75** *L* **19** # 89
GANGA, ILANGO S Individual

Comment Type **T** *Comment Status* **X**

In Table 71-2 rename variable PMD_global_transmit_disable to Global_PMD_transmit_disab

SuggestedRemedy

In Table 71-2 rename variable PMD_global_transmit_disable to Global_PMD_transmit_disab

Proposed Response *Response Status* **O**

Cl **71** *SC* **71.5** *P* **75** *L* **20** # 92
GANGA, ILANGO S Individual

Comment Type **T** *Comment Status* **X**

Variables corresponding to Lane by Lane Transmit disable is not specified in table 71-2.

SuggestedRemedy

Add Lane by Lane Transmit disable variable to Table 71-2. Refer to subclause 53.3, add the last 4 rows from Table 53-2. Make suitable text change if any to subclause 71.6.6

Proposed Response *Response Status* **O**

Cl **71** *SC* **71.5** *P* **75** *L* **33** # 93
GANGA, ILANGO S Individual

Comment Type **T** *Comment Status* **X**

In Table 71-3 rename variable PMD_global_signal_detect to Global_PMD_signal_detect

SuggestedRemedy

In Table 71-3 rename variable PMD_global_signal_detect to Global_PMD_signal_detect. Make the same change to text in subclause 71.6.4 to be consistent with table and with Claus 45.

Proposed Response *Response Status* **O**

Cl **71** *SC* **71.5** *P* **75** *L* **35** # 94
GANGA, ILANGO S Individual

Comment Type **T** *Comment Status* **X**

Variables corresponding to Lane by Lane Signal detect as specified in subclause 71.6.4 is nc documented in table 71-2.

SuggestedRemedy

Add Lane by Lane PMD Signal detect variable to Table 71-3. Refer to subclause 53.3, add the last 4 rows from Table 53-3. Make suitable text change if any to subclause 71.6.4

Proposed Response *Response Status* **O**

Cl **71** *SC* **71.6.4** *P* **76** *L* **43** # 96
GANGA, ILANGO S Individual

Comment Type **E** *Comment Status* **X**
Fix typo "Globabl" to Global

SuggestedRemedy
As per comment

Proposed Response *Response Status* **O**

Cl **71** *SC* **71.6.4** *P* **76** *L* **47** # 95
GANGA, ILANGO S Individual

Comment Type **T** *Comment Status* **X**
The PMD lane by lane signal detect function is currently defined under subclause 71.6.4 Global Signal Detect function

SuggestedRemedy
Have a separate subclause (say 71.6.5) for Lane by Lane signal detect function and move th text over to there. (similar to Clause 53.4.5)

Proposed Response *Response Status* **O**

Cl **71** *SC* **71.7.1** *P* **78** *L* **34** # 108
ABLER, JOSEPH M Individual

Comment Type **T** *Comment Status* **X**
TJ spec is inconsistent with RJ & DJ specs

SuggestedRemedy
change RJ to 0.28UI, need to also make change in sect 71.7.1.8

Proposed Response *Response Status* **O**

Cl **71** *SC* **71.7.1** *P* **78** *L* **35** # 181
BOOTH, MR BRAD J Individual

Comment Type **E** *Comment Status* **X**
Footnote a not required as figure is in 71.7.1.4.

SuggestedRemedy
Remove footnote.

Proposed Response *Response Status* **O**

Cl **71** *SC* **71.7.1.1** *P* **79** *L* **8** # 105
ABLER, JOSEPH M Individual

Comment Type **T** *Comment Status* **X**
diagram shows a connection for CM RL measurement, but no CM spec is provided

SuggestedRemedy
add a CM RL spec of 6dB using same freq points & slope of diff RL (also make PICs update)

Proposed Response *Response Status* **O**

Cl **71** *SC* **71.7.2** *P* **83** *L* **22** # 28
MELLITZ, RICHARD I Individual

Comment Type **TR** *Comment Status* **X**
sub-clause 71.7.2: Test fixture section need for return loss

SuggestedRemedy
Add test fixture (w/TP4) for return loss or the editorial equivalent.

Proposed Response *Response Status* **O**

Cl **71** *SC* **71.7.2.1** *P* **83** *L* **24** # 188

BAUMER, HOWARD A Individual

Comment Type **TR** *Comment Status* **X**

This comment is dependent upon changing Annex 69B from informative to normative for 10GBASE-KX4 phy.
There should be a more direct tie between the transmitter specifications, channel specifications and the receiver requirements. Without the receiver's performance being directly tied to a compliant transmitter and a compliant normative channel there is no way to honestly label a system as being a compliant 10GBASE-KX4 system.

SuggestedRemedy

Replace the whole of 71.7.2.1 with:
71.7.2.1 bit error ratio
The reciever shall operate with a BER of better than 10^-12 1hen receiving a compliant transmit signal, as defined in 71.7.1, though a comliant backplane channel as defined in Annex 69B.

Proposed Response *Response Status* **O**

Cl **71** *SC* **71.7.2.1** *P* **83** *L* **46** # 117

FRAZIER, JR., HOWARD M Individual

Comment Type **TR** *Comment Status* **X**

The note and equation 71-3 seem like tutorial material. It does not seem necessary to state the derivation of the applied jitter.

SuggestedRemedy

Remove

Proposed Response *Response Status* **O**

Cl **71** *SC* **71.7.2.4** *P* **84** *L* **33** # 124

FRAZIER, JR., HOWARD M Individual

Comment Type **ER** *Comment Status* **X**

"Channel" should be "channel".

SuggestedRemedy

Fix capitalization

Proposed Response *Response Status* **O**

Cl **71** *SC* **71.7.2.5** *P* **84** *L* **39** # 120

FRAZIER, JR., HOWARD M Individual

Comment Type **TR** *Comment Status* **X**

Interesting. Similar paragraph to 70.7.2.5, but different text.

SuggestedRemedy

Change second sentence to read: "This return loss requirement applies at all valid input levels."

Proposed Response *Response Status* **O**

Cl **71** *SC* **71.8** *P* **84** *L* **43** # 189

BAUMER, HOWARD A Individual

Comment Type **TR** *Comment Status* **X**

There is no normative backplane channel interconnect specification for a 10GBASE-KX4 PMD type.
To insure a fully interoperable compliant system all three sections, transmitter, channel and reciever need to be fully specified. This subclause points to an informative interconnect characteristics annex that is labeled as "a reference model". By not making the interconnect characteristics normative this implicitly makes any interconnect useable with the 10GBASE-KX4 transmitter / reciever pair.

SuggestedRemedy

On line 46 change "Informative" to "Normative" and adjust the pics accordingly.
Also either change the whole of Annex 69B to be normative or appropirately add in to all of the "it is recommended that" phases "for 10GBASE-KX4 xxx shall meet".

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.1** *P* **92** *L* **21** # 73

THALER, PATRICIA A Individual

Comment Type **GR** *Comment Status* **X**

Shouldn't clause 74 be included as an optional PHY clause?

SuggestedRemedy

Add Clause 73 FEC to the table.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.10.4.5** *P* **125** *L* **22** # 103
ABLER, JOSEPH M Individual

Comment Type **E** *Comment Status* **X**
receiver CM RL is no longer specified

SuggestedRemedy
remove from PICs

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.5** *P* **93** *L* **19** # 53
HEALEY, ADAM B Individual

Comment Type **E** *Comment Status* **X**
Inconsistent variable names: Global_PMD_transmit_disable/signal_detect.

SuggestedRemedy
In Table 72-2, change MDIO control variable to "Global PMD transmit disable" and PMD control variable to "Global_PMD_transmit_disable". In Table 72-3, change PMD status variable to "Global_PMD_signal_detect". In addition, in 72.6.4 (p. 94, l. 39), change "PMD_global_signal_detect" to "Global_PMD_signal_detect". In 72.6.5 (p. 95, l. 7) change "PMD_global_transmit_disable" to "Global_PMD_transmit_disable".

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.5** *P* **93** *L* **19** # 90
GANGA, ILANGO S Individual

Comment Type **T** *Comment Status* **X**
In Table 72-2 rename variable PMD_global_transmit_disable to Global_PMD_transmit_disab

SuggestedRemedy
In Table 72-2 rename variable PMD_global_transmit_disable to Global_PMD_transmit_disable. Make the same change to text in subclause 72.6.5 and 72.6.8 to be consistent with table and with Clause 45.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.5** *P* **93** *L* **35** # 91
GANGA, ILANGO S Individual

Comment Type **T** *Comment Status* **X**
In Table 72-3 rename variable PMD_global_signal_detect to Global_PMD_signal_detect

SuggestedRemedy
In Table 72-3 rename variable PMD_global_signal_detect to Global_PMD_signal_detect. Make the same change to text in subclause 72.6.4 to be consistent with table and with Claus 45.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.2** *P* **96** *L* **24** # 182
BOOTH, MR BRAD J Individual

Comment Type **ER** *Comment Status* **X**
The reference to DME in token ring is confusing and has no relevance if they are different.

SuggestedRemedy
Delete information.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.2.2** *P* **96** *L* **52** # 190
BAUMER, HOWARD A Individual

Comment Type **T** *Comment Status* **X**
Missng shall

SuggestedRemedy
change "The control channel is transmitted &" to "The control channel shall be transmitted &' and add appropriate pics entry

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.2.2** *P* **97** *L* **8** # 30

THALER, PATRICIA A Individual

Comment Type **E** *Comment Status* **X**

It might be more clear to use the same term here that is used in defining the Manchester cod above. Also, the sentence structure: "Since each control channel bit . . ." makes it sound like that is defined elsewhere when this the only place I see it specified.

SuggestedRemedy

Replace paragraph with "The data cell length shall be 8 10GBASE-KR baud. Therefore, the total length of the control channel is 256 10GBASE-KR baud.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.2.3** *P* **97** *L* **15** # 191

BAUMER, HOWARD A Individual

Comment Type **T** *Comment Status* **X**

Missng shall

SuggestedRemedy

change "& update field is shown &" to "& update field shall be as shown &" and add appropriate pics entry

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.2.3** *P* **97** *L* **16** # 192

BAUMER, HOWARD A Individual

Comment Type **T** *Comment Status* **X**

Missng shall

SuggestedRemedy

change "& update field is transmitted &" to "& update field shall be transmitted &" and add appropriate pics entry

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.2.3.1** *P* **98** *L* **2** # 193

BAUMER, HOWARD A Individual

Comment Type **TR** *Comment Status* **X**

Unrelated text> The text beginning with the sentnce starting with "At" has nothing to do with sending or receiving the preset command. In fact this text effectively disallows the preset sta from ever being achieved as it forces an initialize command to always follow a preset command.

SuggestedRemedy

Remove text starting with the sentnce beginging with "At" to the end of the paragraph.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.2.3.1** *P* **98** *L* **10** # 22

THALER, PATRICIA A Individual

Comment Type **ER** *Comment Status* **X**

This comment also applies to lines 23 and 38. "reset" should be "preset"

SuggestedRemedy

replace "reset" with "preset"

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.2.3.1** *P* **98** *L* **10** # 194

BAUMER, HOWARD A Individual

Comment Type **T** *Comment Status* **X**

There is no "reset" command, this should probably be "preset"

SuggestedRemedy

Change "reset" to Preset"

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.2.3.1** *P* **98** *L* **10** # 102
ABLER, JOSEPH M Individual

Comment Type **E** *Comment Status* **X**

reset is listed rather than "preset"

SuggestedRemedy

change to preset, lines 10, 23, & 38

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.2.3.1** *P* **98** *L* **10** # 58
HEALEY, ADAM B Individual

Comment Type **T** *Comment Status* **X**

Precedence of operators is clearly established in the coefficient update state machine via the definition of COEF_UPDATE (72.6.10.3.4) and does not need to be enforced elsewhere.

SuggestedRemedy

From 72.6.10.2.3.1 (p. 98, l. 10), 72.6.10.2.3.2 (p. 98, l. 23), and 72.6.10.2.3.3 (p. 98, l. 38), strike the text "If received, precedence is (1) reset, (2) initialize, and (3) increment/decrement

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.2.3.2** *P* **98** *L* **17** # 195
BAUMER, HOWARD A Individual

Comment Type **TR** *Comment Status* **X**

Conflict in returned coefficient status for initialize state. 72.6.10.2.3.2 states that the initialize command is set until all coefficients indicate update, however, 72.6.10.4.2 states that the initialize state forces the value of c(0) to its maximum state therefor causing the returned coefficient status to be maximum.

SuggestedRemedy

Change "& status for all coefficients indicate updated." to "& status for coefficients c(-1) and c(1) indicate updated and status for coefficient c(0) indicatse maximum."

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.2.3.2** *P* **98** *L* **23** # 196
BAUMER, HOWARD A Individual

Comment Type **T** *Comment Status* **X**

There is no "reset" command, this should probably be "preset"

SuggestedRemedy

Change "reset" to Preset"

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.2.3.3** *P* **98** *L* **38** # 197
BAUMER, HOWARD A Individual

Comment Type **T** *Comment Status* **X**

There is no "reset" command, this should probably be "preset"

SuggestedRemedy

Change "reset" to Preset", two instances

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.2.4** *P* **99** *L* **3** # 198
BAUMER, HOWARD A Individual

Comment Type **T** *Comment Status* **X**

Missng shall

SuggestedRemedy

change "The status report field is used &" to "The status report field shall be used &" and adc appropriate pics entry

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.2.4** *P* **99** *L* **4** # 200
BAUMER, HOWARD A Individual

Comment Type **T** *Comment Status* **X**
Missng shall

SuggestedRemedy
change "& status report field is transmitted &" to "& status report field shall be transmitted &" and add appropriate pics entry

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.2.4** *P* **99** *L* **4** # 199
BAUMER, HOWARD A Individual

Comment Type **T** *Comment Status* **X**
Missng shall

SuggestedRemedy
change "& status report field is shown &" to "& status report field shall be as shown &" and add appropriate pics entry

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.2.5** *P* **100** *L* **15** # 201
BAUMER, HOWARD A Individual

Comment Type **T** *Comment Status* **X**
Missng shall

SuggestedRemedy
change "& process responds &" to "& process shall respond &" and add appropriate pics entı

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.2.6** *P* **100** *L* **21** # 202
BAUMER, HOWARD A Individual

Comment Type **E** *Comment Status* **X**
grammar / spelling

SuggestedRemedy
change "& Sequence of order &" to "& Sequence of an order &"

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.3.1** *P* **101** *L* **3** # 57
HEALEY, ADAM B Individual

Comment Type **T** *Comment Status* **X**
Precedence of operators is clearly established in the coefficient update state machine via the definition of COEF_UPDATE (72.6.10.3.4) and does not need to be enforced elsewhere.

SuggestedRemedy
Strike &"and preset is not activated and initialize is not activated" for both "dec" and "inc" variable definition.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.3.1** *P* **101** *L* **15** # 32
THALER, PATRICIA A Individual

Comment Type **E** *Comment Status* **X**
Variable list should be in alphabetical order.

SuggestedRemedy
Correct ordering. "preset" and "local_rx_ready" are out of order. Also others:
frame_offset
new_coeff
new_marker

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.3.1** *P* **102** *L* **10** # 56
HEALEY, ADAM B Individual

Comment Type **E** *Comment Status* **X**

Variable names should be sorted in ascending alphabetical order.

SuggestedRemedy

Relocate frame_offset definition to the correct location in the order.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.3.4** *P* **103** *L* **29** # 33
THALER, PATRICIA A Individual

Comment Type **E** *Comment Status* **X**

The statement of priority here is redundant. Priority is already established in the definition of preset, initialize, inc and dec variables. As defined only one can be true at a time. Priority is also covered in the text on training frame structure. A little redundancy is okay but excessive redundancy makes it more difficult to read the standard.

SuggestedRemedy

Delete the sentence beginning "if multiple actions are requested..." including the ordered list.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.4.2** *P* **104** *L* **17** # 229
THALER, PATRICIA A Individual

Comment Type **TR** *Comment Status* **X**

RE: At the start of training the initial value of c(0) shall be set to the maximum value that satisfies the constraints of section 72.7.1.10.
This requirement is not feasible - it requires the signal to be set to exactly the maximum allowed signal level.
Rationale:
The only constraint that 72.7.1.10 places on the maximum value of c(0) is the requirement: "Any coefficient update equal to increment that would result in a violation of 72.7.1.4 shall return a coefficient status value maximum for that coefficient.." It also gives a value for maximum v2 when c(1) and c(-1) are disabled but that doesn't apply in this case - they aren't disabled. 72.7.1.4 requires the peak to peak voltage to be less than 1200mV.
Therefore to satisfy 72.6.10.4.2 to the letter, the transmitter would have to set c(0) to a level such that the peak to peak voltage was exactly 1200 mV which isn't possible.

SuggestedRemedy

Add a better definition for the initialization condition. One way would be to specify a range for v2.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.4.3** *P* **107** *L* **2** # 59
HEALEY, ADAM B Individual

Comment Type **T** *Comment Status* **X**

The exit conditions from the NOT_UPDATED state can be simplified to add clarity. The function COEF_UPDATE yields a new coefficient output that is either within the valid range o the coefficient or outside of it. Each of the branches updates the coefficient and set the statu code based value returned by COEF_UPDATE relative to valid range of the coefficient. None of the branch conditions rely on command that yielded the new coefficient value.

SuggestedRemedy

Update the state transition test conditions as follows: NOT_UPDATED to MAXIMUM is new_coef >= MAX_LIMIT, NOT_UPDATED to UPDATED is (new_coef < MAX_LIMIT)*(new_coef > MIN_LIMIT), NOT_UPDATED to MINIMUM is new_coef <= MIN_LIMIT

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.6** *P* **95** *L* **10** # 231

GHIASI, ALI Individual

Comment Type **TR** *Comment Status* **X**

It is not speccifed what type of loopback the PHY should provide system or remote loopback

SuggestedRemedy

Please specify local loop back

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.1.10** *P* **112** *L* **34** # 205

BAUMER, HOWARD A Individual

Comment Type **E** *Comment Status* **X**

There is a referance to management control of the transmit equalizer but no definition of this control can be found in this draft. How this management control is done needs to be described.

SuggestedRemedy

Add the following sentence after "& via management.":
The optional management control to configure the state of the transmitter equalizer is beyonc the scope of this standard and is left up to the individual implementers.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.1.10** *P* **113** *L* **1** # 206

BAUMER, HOWARD A Individual

Comment Type **T** *Comment Status* **X**

Missing shall

SuggestedRemedy

Change "The results are to be &" to "The results shall be &" and add the appropriate pics.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.1.10** *P* **113** *L* **12** # 228

THALER, PATRICIA A Individual

Comment Type **TR** *Comment Status* **X**

The range of behavior allowed by this table could produce very unexpected results. It doesn't constrain a tap change to be close to a change of that specific tap.
For example: for the an update that increments c(1), a compliant transmitter could decrease v1 by -5, increase v2 by 20 and increase v3 by 5 so that the relative amplitudes of v2 and v3 change by 15 mV - the same relative change that would be legitimate for an update that increments c(-1).
For another example, an update to increment c(0) could increase v1 or v3 by 5 mV while increasing v2 by 20 mV. Again a 15 mV relative change with a similar effect on wave form to if c(1) or c(2) were incremented

SuggestedRemedy

Require that the changes be the same for the two or three voltages that have the same direction of change in the table for a given update. I'm not sure how to word that clearly.
For example for an increment to c(1), not only should v2 and v3 increase by 5 to 20 mV. It should also be required that the increases of the two voltages be the same to within 5 mV. Similarly when c(0) is incremented, the changes in all three voltages should be within 5 mV o each other.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.1.10** *P* **113** *L* **12** # 110

THALER, PATRICIA A Individual

Comment Type **E** *Comment Status* **X**

Notes a and b are applied to one table cell, but it appears that they are intended to apply to the whole left and right sides of the table. Move them to the captions: coefficient updatae anc requirements.

SuggestedRemedy

Move the notes.
Also, it would be more readable if the material after page 112 line 33 to the end of this subclause came after 72.7.1.11. Consider moving it to a separate subclause.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.1.10** *P* **113** *L* **48** # 207
BAUMER, HOWARD A Individual

Comment Type **TR** *Comment Status* **X**

There is no lower limit for Rpst or Rpre which contributes to link budget failure. Proposed change helps limit the amount of crosstalk that can be created.

SuggestedRemedy

Add list items:
g) Any coefficient update equal to increment that would cause Rpst or Rpre to be less than 1.33 shall return a coefficient status value maximum for that coefficient.
h) Any coefficient update equal to decrement that would cause Rpst or Rpre to be less than 1.33 shall return a coefficient status value minimum for that coefficient.
Change the preset state to be such that the transmitter state meets list item g & h above.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.1.11** *P* **114** *L* **10** # 48
HEALEY, ADAM B Individual

Comment Type **TR** *Comment Status* **X**

Incorrect test pattern specified.

SuggestedRemedy

The test pattern for the transmitter output waveform is the square wave test pattern defined i 52.9.1.2, with a run of at least 8 consecutive ones.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.1.3** *P* **108** *L* **45** # 60
HEALEY, ADAM B Individual

Comment Type **T** *Comment Status* **X**

The statement that the corresponding unit interval is nominally 96.96 ps is not precise or necessary

SuggestedRemedy

Strike the statement.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.1.4** *P* **108** *L* **51** # 203
BAUMER, HOWARD A Individual

Comment Type **TR** *Comment Status* **X**

This also applies to page 113 line 40 in table 72-8. Allowable maximum output amplitude variance is to high contributing to link budget failure. Proposed change helps limit the amoun of crosstalk that can be created.

SuggestedRemedy

Change 1200mV to 900mV
in table 72-8 change 400-600 to 350-450

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.1.4** *P* **108** *L* **52** # 61
HEALEY, ADAM B Individual

Comment Type **T** *Comment Status* **X**

30 mVp-p does not use the preferred subscript for "peak-to-peak". In addition, this text does not appear in the corresponding subclauses for 1000BASE-KX and 10GBASE-KR and it is not clear that it needs to be here.

SuggestedRemedy

Suggest deleting sentence or at least changing the text to "30 mV peak-to-peak".

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.1.6** *P* **110** *L* **36** # 104
ABLER, JOSEPH M Individual

Comment Type **T** *Comment Status* **X**

equation is incorrect

SuggestedRemedy

Denominator should be 2000 for current definition. Is there a reason for different freq points & slope vs. diff RL?

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.1.6** *P* **110** *L* **36** # 45
SPAGNA, FULVIO Individual

Comment Type **T** *Comment Status* **X**

Equation is inconsistent with frequency range.

SuggestedRemedy

In 72-7 replace "5156 MHz" with "2000 MHz"

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.1.7** *P* **111** *L* **28** # 204
BAUMER, HOWARD A Individual

Comment Type **TR** *Comment Status* **X**

The rising edge transition time specification has not equalization setting requirement placed o it whereas the falling edge is specified in the no equalization (preset) state.

SuggestedRemedy

Specify the rising edge transition time only for the no equalized (preset) state by changing "& wave test pattern of 49.2.8." to "wave test pattern of 49.2.8 with no transmitter equalization."

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.1.7** *P* **111** *L* **28** # 71
HEALEY, ADAM B Individual

Comment Type **T** *Comment Status* **X**

While I agree that it is prudent to limit the minimum transition time as a means of crosstalk control, there is a very detailed set of transmitter output waveform requirements defined in 72.7.1.10 and it is not clear that maximum limit to transition time restricts anything that isn't already restricted in a more meaningful way by 72.7.1.10. In other words, is it possible for a waveform with an excessively slow transition time to meet the requirements of Table 72-8, and if so, what is the real impact of such a waveform on system performance?

SuggestedRemedy

Investigate the need for an upper bound on transition time and eliminate the requirement if it not necessary.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.1.7** *P* **111** *L* **28** # 34
THALER, PATRICIA A Individual

Comment Type **TR** *Comment Status* **X**

As written, the text "with no transmitter equalization" applies to the falling edge test only. Presumably it should apply to the rising edge test too.

SuggestedRemedy

At the beginning of the paragraph insert
"Transition time is measured with no transmitter equalization."
Delete "with no transmitter equalization" in the falling edge sentence.
Alternatively, I would be satisfied if "with no transmitter equalization" is added to the rising edge sentence.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.1.7** *P* **111** *L* **31** # 72
HEALEY, ADAM B Individual

Comment Type **T** *Comment Status* **X**

It is more appropriate to specify the test pattern to be the "square wave test pattern defined i 52.9.1.2, with a run of at least 8 consecutive ones." In addition, rather than measuring rise time relative to the peak-to-peak voltage range, it is more appropriate to specify the levels relative to v2 and v5 as defined in 72.7.1.11 in order to achieve a more stable measurement (up to 5% overshoot is allowed by Table 72-8, which would impact the measurement).

SuggestedRemedy

Per comment.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.1.8** *P* **111** *L* **41** # 46
HEALEY, ADAM B Individual

Comment Type **E** *Comment Status* **X**

Double quotes around the digits 1 and 0.

SuggestedRemedy

First, a consistent treatment for the designation of logical digits in-line with text should be established (review prior art). Then apply this practice consistently (note the "0, 1, 0, 1" text o the following line).

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.1.8** *P* **111** *L* **42** # 47

HEALEY, ADAM B Individual

Comment Type **T** *Comment Status* **X**

A more clear definition of the nominal pulse width may be valuable in to facilitate of consistency in measurement.

SuggestedRemedy

Define the nominal pulse width to be the average width of one and zero pulses.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.1.9** *P* **111** *L* **49** # 261

GHIASI, ALI Individual

Comment Type **TR** *Comment Status* **X**

Transmitter jitter is tested with 4 MHz High pass filter and this must match the receiver jitter tolerance filter

SuggestedRemedy

Transmitter jitter must be tested with 400 KHz to match the receiver filter otherwise the transmitter and receiver canboth pass but the link will fail.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.2** *P* **115** *L* **29** # 29

MELLITZ, RICHARD I Individual

Comment Type **TR** *Comment Status* **X**

sub-clause 72.7.2: Test fixture section need for return loss

SuggestedRemedy

Add test fixture (w/TP4) for return loss or the editorial equivalent.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.2.1** *P* **116** *L* **1** # 208

BAUMER, HOWARD A Individual

Comment Type **TR** *Comment Status* **X**

This comment is dependent upon changing Annex 69B from informative to normative for 10GBASE-KR phy.
There should be a more direct tie between the transmitter specifications, channel specifications and the receiver requirements. Without the receiver's performance being directly tied to a compliant transmitter and a compliant normative channel there is no way to honestly label a system as being a compliant 10GBASE-KR system.

SuggestedRemedy

Replace the whole of 72.7.2.1 with:
72.7.2.1 Bit error ratio
The reciever shall operate with a BER of better than 10^-12 1hen receiving a compliant transmit signal, as defined in 72.7.1, though a comliant backplane channel as defined in Annex 69B.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.2.1** *P* **116** *L* **4** # 262

GHIASI, ALI Individual

Comment Type **TR** *Comment Status* **X**

ap receivers have interference tolerance but not test has been provided to determine if the combination of a transmitter and backplane will pass with margin. Creating an standard wher the user can't verify their link will work and with how much margin is against IEEE standard pracice.

SuggestedRemedy

There are 3 options to resolve this major weakness and interoperability of ap standard
I. Move all the electrical related to KR to the Annex and call it informative
II. Define a test similar to LRM/SFP+ dWDP test by using a reference receiver with 4T/2 FFE and 5 T spaced DFE. This code is available in 802.3aq.
III. Define a set of Normative channels

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.2.1** *P* **116** *L* **4** # 260

GHIASI, ALI Individual

Comment Type **TR** *Comment Status* **X**

ap receiver is specified to be tested without the credited SJ the transmitter was given by applying a 4 MHz High pass filter. Transmitter jitter in the range of 100'sKHz to 4 MHz which was filtered by the transmitter high pass filter may break the receiver.

SuggestedRemedy

Propose to add SJ to the receiver interference tolerance with following amplitude and frequnc
40 KHz - 5 UI
200 KHz - 1 UI
400 KHz - 0.5 UI
>400 KHz to 40 MHz - 0.1 UI

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.2.1** *P* **116** *L* **5** # 233

THALER, PATRICIA A Individual

Comment Type **TR** *Comment Status* **X**

The referenced test is not adequate to ensure that receivers that pass this test will work on a the channels within the informative channel model. It tests on a single channel when backplane channel characteristics vary significantly. It only tests the ability of the transmitter adapt to one set of conditions and therefore it is likely to return false positives.

SuggestedRemedy

Change the test to ensure a receiver that meets the test will interoperate with the transmitters of this PHY over the channels in the channel model.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.2.1** *P* **116** *L* **23** # 118

FRAZIER, JR., HOWARD M Individual

Comment Type **TR** *Comment Status* **X**

The note and equation 72-10 seem like tutorial material. It does not seem necessary to state the derivation of the applied jitter.

SuggestedRemedy

Remove

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.2.1** *P* **116** *L* **36** # 52

HEALEY, ADAM B Individual

Comment Type **E** *Comment Status* **X**

The correction factor for transition time should be located in Annex 69A, just as the correctio factor for amplitude is.

SuggestedRemedy

Relocate this text, and the related text in clauses 70 and 71, to Annex 69A.2.2.

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.2.4** *P* **117** *L* **8** # 125

FRAZIER, JR., HOWARD M Individual

Comment Type **ER** *Comment Status* **X**

"Channel" should be "channel".

SuggestedRemedy

Fix capitalization

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.2.5** *P* **117** *L* **14** # 109

ABLER, JOSEPH M Individual

Comment Type **E** *Comment Status* **X**

since the RL equations include an equation stating RL(f)>=, the wording "greater than or equal" in this section is redundant

SuggestedRemedy

state that the receiver shall meet the requirements of eq 72-4 & 72-5 (consistent with wordinç in sect 72.7.1.5)

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.2.5** *P* **117** *L* **14** # 121
FRAZIER, JR., HOWARD M Individual

Comment Type **TR** *Comment Status* **X**

Interesting. Similar paragraph to 70.7.2.5, but different text.

SuggestedRemedy

Change second sentence to read: "This return loss requirement applies at all valid input levels."

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.2.5** *P* **117** *L* **16** # 44
SPAGNA, FULVIO Individual

Comment Type **T** *Comment Status* **X**

The text for the differential input return loss refers to equations (72-4) and (72-5). I would reccomend decouple the two specifications and insert separate equations and graph for the receiver differential input return loss.

SuggestedRemedy

Label Figure 72-9 "Differential output return loss"
Add following text to 72.7.2.5:
"
ReturnLoss(f) >= 9 (72-12)
for 50 MHz<= f <= 2500 MHz and
ReturnLoss(f) >= 9 - 12 x log(f/2500) (72-13)
for 2500 Mhz <= f <= 7500 MHz.
"
Add a new figure, Figure 72-13, identical to Figure 72-9, but labelled Differential input return loss.
In 72.7.2.5 change references to 72-4 and 72-5 to (72-12) and (72-13) respectively

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.8** *P* **117** *L* **21** # 209
BAUMER, HOWARD A Individual

Comment Type **TR** *Comment Status* **X**

There is no normative backplane channel interconnect specification for a 10GBASE-KR PMD type.
To insure a fully interoperable compliant system all three sections, transmitter, channel and reciever need to be fully specified. This subclause points to an informative interconnect characteristics annex that is labeled as "a reference model". By not making the interconnect characteristics normative this implicitly makes any interconnect useable with the 10GBASE-KR transmitter / reciever pair.

SuggestedRemedy

On line 46 change "Informative" to "Normative" and adjust the pics accordingly.
Also either change the whole of Annex 69B to be normative or appropirately add in to all of the "it is recommended that" phases "for 10GBASE-KR xxx shall meet".

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.8** *P* **117** *L* **21** # 99
PALM, STEPHEN R Individual

Comment Type **TR** *Comment Status* **X**

There is no normative backplane channel interconnect specification for a 10GBASE-KR PMD type.

SuggestedRemedy

To insure a fully interoperable compliant system all three sections, transmitter, channel and reciever need to be fully specified.

Proposed Response *Response Status* **O**

Cl **73** *SC* **73.1** *P* **127** *L* **47** # 35
BARRASS, HUGH Individual

Comment Type **E** *Comment Status* **X**

"Highly recommended" is not a preferred phrase and adds no meaning in addition to "recommended."
If the committee wish to convey the idea that the behavior is "really, really, highly and strongl recommended with our biggest wishes and both fingers crossed" they should do so by writing "recommended."

SuggestedRemedy

Change "Highly recommended" to "recommended" - 2 instances.

Proposed Response *Response Status* **O**

Cl **73** *SC* **73.2** *P* **168** *L* **6** # 87
LAW, DAVID J Individual

Comment Type **T** *Comment Status* **X**

Wont it be rather unusual for the MAC Client to be LLC in the case of Backplane Ethernet.

SuggestedRemedy

Suggest that 'LLC--LOGICAL LINK CONTROL' be changed to read "LLC (LOGICAL LINK CONTROL) OR OTHER MAC CLIENT' as is the normal designation for this sublayer in IEEE Std 802.3.

Proposed Response *Response Status* **O**

Cl **73** *SC* **73.3** *P* **128** *L* **47** # 23
BARRASS, HUGH Individual

Comment Type **TR** *Comment Status* **X**

It is not clear how the multiple PHYs might share an MDI (or even what the definition of such "shared MDI might be). It is made clear that a KX4 PHY must use lane 1 for autoneg (73.5.1.1) and also it implies (but doesn't state) that KR and KX should use lane 1 (73.7.6) - although lane 1 is not defined in Clauses 70 & 72.
My reading of the text suggests that an implementer may choose to send KX on lane 2 and KR on lane 3. In fact, the use of "at least one of" in the text for 73.7.4.1 (p.135, l.49) implies that 2 PHYs might establish link simultaneously. This seems to imply that implementers may use various configurations including ones that have completely separate wires for KX, KX4 and KR - although it is unclear how autoneg would operate in that case.

SuggestedRemedy

Add the following
73.1 Multiple PHY configurations
In all cases where multiple PHY types are present sharing an MDI, all of the PHYs shall shar the same electrical connection and only one differential lane shall be used for autonegotiatior If one of the PHY types is 10GBASE-KX4 then serial PHY types shall share lane 1 of the MDI. If both serial PHY types are present then they shall share the same differential pair of electrical connections.

Proposed Response *Response Status* **O**

Cl **73** *SC* **73.5.1** *P* **129** *L* **15** # 38
BARRASS, HUGH Individual

Comment Type **T** *Comment Status* **X**

The DME cannot be transmitted when any of the PHYs are operating, therefore the statemen is untrue.

SuggestedRemedy

Change "local devices operating in" to "local devices capable of operating in."

Proposed Response *Response Status* **O**

Cl **73** *SC* **73.6.4** *P* **133** *L* **7** # 82
LAW, DAVID J Individual

Comment Type **E** *Comment Status* **X**

Typo.

SuggestedRemedy

Suggest that 'Technology Ability Field ..' should be changed to read 'The Technology Ability Field ..'.

Proposed Response *Response Status* **O**

Cl **73** *SC* **73.6.4** *P* **133** *L* **7** # 81
LAW, DAVID J Individual

Comment Type **T** *Comment Status* **X**

Subclause 73.6.4 'Technology Ability Field' states 'Technology Ability Field (A[24:0]) is a 25-b wide field' which contradicts the definition of 'Technology Ability Field' found in subclause 1.4.335, which was most recently updated by IEEE Std 802.3an-2006. It currently reads 'Within IEEE 802.3, a seven bit field in the Auto-Negotiation base page that is used to indicat the abilities of a local station, such as support for 10BASE-T, 100BASET4, and 100BASE-TX, as well as full duplex.'

SuggestedRemedy

Updated the definition found in subclause 1.4.335.

Proposed Response *Response Status* **O**

Cl **73** *SC* **73.6.4** *P* **133** *L* **16** # 37

BARRASS, HUGH Individual

Comment Type **T** *Comment Status* **X**

It is not clear why the heading "minimum requirement" is used for the column. In terms of the speed and number of lanes it seems to be a complete requirement - it would be erroneous to exeed the speed or number of lanes. If it implicitly includes other requirements (such as 8b/10b encoding) then the minimum is much higher.

SuggestedRemedy

Change "minimum requirement" to "requirement"

Proposed Response *Response Status* **O**

Cl **73** *SC* **73.7.4.1** *P* **135** *L* **48** # 14

MOORE, CHARLES E Individual

Comment Type **GR** *Comment Status* **X**

The text given implies that parallel detection should be attempted before DME and that all po types be tested simultaneously. The first is undesirable and the second will be unfeesible in many systems. Also the spec requires that parallel detection of 10GBASE_KR be tried if the port type is available. Some suppliers may feel that this could lead to false positive detection there is high but allowed amounts of crosstalk. Parallel detection of 10GBASE_KR should be optional or possibly not allowed.

SuggestedRemedy

replace:
"Prior to detection of DME pages, the Receive Switch shall direct MDI receive activity to the 1000BASE-KX, 10GBASE-KX4 and 10GBASE-KR PHYs, if present. If at least one"
with:
"A local device shall provide parallel detection for 1000BASE-KX and 10GBASE-KX4 if it supports those PHYs. It may provide parallel detection for 10GBASE-KR. Parallel detection shall be performed by directing the MDI receive activity to the the PHY. This detection may b done in sequence between detection of DME pages and detection of each supported PHY. If at least one...."

Proposed Response *Response Status* **O**

Cl **73** *SC* **73.7.4.1** *P* **135** *L* **48** # 31

THALER, PATRICIA A Individual

Comment Type **TR** *Comment Status* **X**

This text is overly specific. It is not necessary to specify that parallel detect and DME detect. The state machines don't require an order and it would not be possible to tell externally if this ordering "shall" was met.

SuggestedRemedy

Change to indicate that parallel detection and DME page detection do not have a required order. I expect Charles Moore to submit a suggested text change to accomplish this.

Proposed Response *Response Status* **O**

Cl **73** *SC* **73.7.4.1** *P* **135** *L* **48** # 132

FRAZIER, JR., HOWARD M Individual

Comment Type **TR** *Comment Status* **X**

Parallel detect for 1000BASE-KR can be fooled by crosstalk.

SuggestedRemedy

Make parallel detect optional for 1000BASE-KR, or make it foolproof by reducing the crosstalk, increasing the minimum receive signal level, or using out of band signalling.

Proposed Response *Response Status* **O**

Cl **73** *SC* **73.7.4.1** *P* **135** *L* **48** # 21

THALER, PATRICIA A Individual

Comment Type **TR** *Comment Status* **X**

The text here makes parallel detection of 10GBASE-KR mandatory. Because the maximum crosstalk allowed is extremely close to the minimum received signal level for 10GBASE-KR and it is possible to be coupled well enough to a crosstalk signal to establish sync, reliable parallel detection cannot be assured and it should not be mandatory.

SuggestedRemedy

At a minimum, make parallel detection optional for 10GBASE-KR.
My preferred solution would be to add text indicating that 10GBASE-KR parallel detection should only occur when supplemented by an implementation-dependent out of band mechanism that determines a link partner is present.

Proposed Response *Response Status* **O**

Cl **73** *SC* **73.7.4.1** *P* **135** *L* **49** # 36
BARRASS, HUGH Individual

Comment Type **T** *Comment Status* **X**

The use of "at least one of the" implies that more than one of these PHYs, sharing an MDI, may be detected simultaneously. This is not possible except in the case of an error condition and it should not need the use of an autoneg wait timer to resolve the issue.

SuggestedRemedy

Change "If at least one of the..." to "If one and only one of the..."
Delete "when the autoneg_wait_timer expires" from page 136, line 7.

Proposed Response *Response Status* **O**

Cl **73** *SC* **73.7.4.1** *P* **136** *L* **2** # 1
MARRIS, ARTHUR Individual

Comment Type **T** *Comment Status* **X**

The technology detected should be indicated in the AN LP base page ability register not the AN LP XNP ability register.

SuggestedRemedy

Change 'XNP' to 'base page'

Proposed Response *Response Status* **O**

Cl **73** *SC* **73.7.4.1** *P* **136** *L* **9** # 2
MARRIS, ARTHUR Individual

Comment Type **E** *Comment Status* **X**

Unnecessary capitalization

SuggestedRemedy

Change 'Fault' to 'fault'

Proposed Response *Response Status* **O**

Cl **73** *SC* **73.7.7.1** *P* **137** *L* **45** # 39
BARRASS, HUGH Individual

Comment Type **TR** *Comment Status* **X**

There is nothing in this section that indicates how the Message Code field is defined. There should be a normative reference to Annex 73A (that is only linked to this Clause by implication).

SuggestedRemedy

Add the following at the end of the paragraph:
Pages sent with the MP bit set shall conform to the Message formats defined in Annex 73A.

Proposed Response *Response Status* **O**

Cl **73A** *SC* **73A** *P* **196** *L* **8** # 40
BARRASS, HUGH Individual

Comment Type **TR** *Comment Status* **X**

This paragraph (and the Clause title) does not make it clear that these next page formats are for use by devices conforming to Clause 73.

SuggestedRemedy

Insert before the first sentence:
Devices using Clause 73 Autonegotiation shall use the Message Code definitions and message formats defined in this Annex.

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.1** *P* **162** *L* **9** # 126
FRAZIER, JR., HOWARD M Individual

Comment Type **ER** *Comment Status* **X**

Extra period after "72" and missing period after "69".

SuggestedRemedy

Change to read: "The 10GBASE-KR PHY described in Clause 72 optionally uses the FEC sublayer to increase the performance on a broader set of back plane channels as defined in Clause 69."

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.1** *P* **162** *L* **10** # 127

FRAZIER, JR., HOWARD M Individual

Comment Type **ER** *Comment Status* **X**

Ambiguous subject

SuggestedRemedy

Change "It" to "The FEC sublayer".

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.10.3** *P* **178** *L* **28** # 10

DAWE, PIERS J G Individual

Comment Type **TR** *Comment Status* **X**

This FEC scheme should be exemplary, so that 10GEPON and HSSG can copy the good stuff in it. At present it isn't quite. 1. This state machine could gain and lose "lock" repeatedly (chattering) - I understand that network management systems really hate anything like this th can cause unnecessary multiple alarms. It happens around a BER of 10^-4. Compare the "signal detect" of an optical PMD, which is expected to have hysteresis, and it also cuts in/ou at power levels "below sensitivity" where the BER is not acceptable. And compare Clause 49 64B/66B PCS sync which uses hi_ber to shield the system from such issues. A PCS with FEC is expected to be "better" than one without, so should hold its sync better than the plain vanilla Clause 49 PCS. Fortunately, this is easy to achieve (an early draft had it nearly right; a change to the sync-up criterion was applied, with hindsight wrongly, to the lose-sync criterion also). 2. The present state machine throws away lock unnecessarily in transient error conditions e.g. lightning strikes (or plugging a neighbouring card in?) hence taking MUCH longer than needed to recover a good link. What it should do is keep lock and de-assert FEC_SIGNAL.indication while BER >10^-4 but lock is OK.

SuggestedRemedy

In concept: there should be three states (not the states of the diagram): seeking lock, in lock with good BER (higher layers can use the data), and in lock but bad BER (higher layers can't use the data but link will recover very quickly if BER improves/burst event ends). Specifically: change requirements so that: when in lock, m consecutive correctable or uncorrectable block (any mix) cause FEC_SIGNAL.indication to become false yet not necessarily cause a slip; m consecutive uncorrectable blocks cause loss of sync (as at present); recovery from either (sync'd but FEC_SIGNAL.indication false) OR (out of sync) by n perfect blocks (as for initial block lock).

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.10.3** *P* **178** *L* **28** # 9

DAWE, PIERS J G Individual

Comment Type **TR** *Comment Status* **X**

This state diagram is too prescriptive. It forces all implementations to a second-best algorithr Can we do the job with words? I am aware of 1.2 and 21.5 saying how 802.3 does state diagrams but I don't believe this stops us doing the right thing; could have a flow diagram tha doesn't purport to be a state diagram (as we had a few drafts ago), or use words.

SuggestedRemedy

Try to define the lock requirements in words, based on the following. If we can't, give the committee's valid reason in the response, and change state machine so that: when in lock, m consecutive correctable or uncorrectable blocks (any mix) cause FEC_SIGNAL.indication to be false yet not necessarily cause a slip; m consecutive uncorrectable blocks cause loss of sync (as at present); recovery from either (sync'd but FEC_SIGNAL.indication false) OR (out of sync) by n perfect blocks (as for initial block lock).

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.10.3** *P* **178** *L* **31** # 123

FRAZIER, JR., HOWARD M Individual

Comment Type **ER** *Comment Status* **X**

In Figure 74-8, the letters "!fec" on the transition condition from the state INVALID_PARITY appear in the wrong font.

SuggestedRemedy

Fix the font to match the rest of the diagram

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.10.3** *P* **178** *L* **31** # 11

DAWE, PIERS J G Individual

Comment Type **E** *Comment Status* **X**

In the line "parity_invalid_cnt = m +" the "+" falls partly under a line of the drawing (depending on screen magnification) and can be mistaken as a "*"

SuggestedRemedy

When you fix or remove this state machine, check that any equations or similar don't lie unde lines. Thanks!

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.11.5** *P* **182** *L* **7** # 51
HEALEY, ADAM B Individual

Comment Type **E** *Comment Status* **X**
Center item label in the first three rows.

SuggestedRemedy
Per comment.

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.4.1** *P* **164** *L* **23** # 98
GANGA, ILANGO S Individual

Comment Type **E** *Comment Status* **X**
In figure 74-2, delete the additional double line for tx_data-group

SuggestedRemedy
As per comment

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.7.3** *P* **167** *L* **48** # 128
FRAZIER, JR., HOWARD M Individual

Comment Type **ER** *Comment Status* **X**
Awkward gramar and incomplete sentence.

SuggestedRemedy
Change first paragraph of this subclause to read: "The FEC sublayer does not decrease the symbol rate of the PCS, nor does it increase the baud rate of the PMD sublayer. Instead, the FEC sublayer compresses the sync bits from the 64b/66b encoded data provided by the PCS to accommodate the addition of 32 parity check bits for every block of 2080 bits."

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.7.4.4** *P* **170** *L* **1** # 129
FRAZIER, JR., HOWARD M Individual

Comment Type **ER** *Comment Status* **X**
Should start a new sentence.

SuggestedRemedy
Delete "then," and capitalize "If".

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.7.4.5** *P* **171** *L* **24** # 130
FRAZIER, JR., HOWARD M Individual

Comment Type **ER** *Comment Status* **X**
Don't need an apostrophe in "XOR'ing".

SuggestedRemedy
Change to "XORing", or better yet, change to "first performing an XOR operation of".

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.7.4.5.1** *P* **172** *L* **52** # 131
FRAZIER, JR., HOWARD M Individual

Comment Type **TR** *Comment Status* **X**
Don't use the word "guaranteed". The subsequent sentence with the "shall" statement provides the appropriate language.

SuggestedRemedy
Delete the first sentence of the last paragraph of this subclause.

Proposed Response *Response Status* **O**