Cl **28** *SC* **28.5.4.10** *P* **24** *L* **42** # 1

Dr. David V. James

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

I believe I was not eligible for this ballot and the status should therefore be nonbinding. Feel free to override this binding note as appropriate.

This document does not meeting the requirements of the IEEE Style Manual. Please do any/all of the following:
1) Perform a careful review with an IEEE Editor or experienced (outside of 802.3) editor.
2) Read the IEEE Style Manual and update the draft accordingly. This can be found at: http://standards.ieee.org/guides/style/2005Style.pdf
3) Read/use descriptive comments and templates, found at: http://grouper.ieee.org/groups/msc/WordProcessors.html

A specific examples is the following from page 13, line 44:
28.5.4.10 Auto-Negotiation Annexes
==>
28.5.4.10 Auto-Negotiation annexes

From past experience, 802.3 leadership rarely corrects DVJ comments in recirculations, preferring to resolve/reject them in closed-door meetings with the IEEE Editors.

In light of that experience, and with less time to waste, the preceding references are viewed as sufficient for any motivated editor to find/correct other style errors. Thus, these have not been identified in detail.

SuggestedRemedy

I have established a new term for fair reviews, call RealReview. A requirement is that all comments be resolved and recirculated. If you agree to meet these criteria, I'm willing to identify errors in more detail.

Proposed Response *Response Status* **W**

Cl **30** *SC* **30.12.1** *P* **32** *L* **19** # 2

Dawe, Piers

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

behaviors

SuggestedRemedy

behaviours

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.12.1.1.1** *P* **32** *L* **32** # 3

Dawe, Piers

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

will map?

SuggestedRemedy

maps?

Proposed Response *Response Status* **O**

Cl **30** *SC* **30A** *P* **34** *L* **6** # 4

Dawe, Piers

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

GDMO?

SuggestedRemedy

Add GDMO to the list of abbreviations 1.5. If appropriate, add a suitable entry to the list of definitions 1.4.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.8** *P* **45** *L* **54** # 5

Dawe, Piers

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

It would be more consistent to add a 'the':

SuggestedRemedy

function for the 10GBASE-T PMA

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.10.1** *P* **46** *L* **37** # 6

Dawe, Piers

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

Should there be an editing instruction here because the next two subclauses are new?

SuggestedRemedy

Add editing instruction

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.59** *P* **46** *L* **51** # 7

Dawe, Piers

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

Editing instruction looks like regular part of document

SuggestedRemedy

Put it back into bold italic

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.60** *P* **47** *L* **26** # 8

Dawe, Piers

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

Although clause 28 uses capitals for 'local device' and 'link partner', clauses 1.4 (definitions), 56 and 57 do not. Since we have precedent both ways, might as well do (IMO) the right thing.

SuggestedRemedy

Revert to lower case

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.62** *P* **48** *L* **38** # 9

Dawe, Piers

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

One-off capital within this title

SuggestedRemedy

Change to '10GBASE-T test mode ...'

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.63** *P* **50** *L* **6** # 10

Dawe, Piers

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

There is not enough information here to know how to build these registers. I know that 0.0 dB is represented by 0x8000. Now, what is +0.1 dB represented by? Assuming it's a larger number, is it 0x8001, then +12.7 dB would be 0x8000 + decimal 127 = 0x807F, or is it 0x8100, then +12.7 dB would be 0x8000 + decimal 256 x decimal 127 = 0xFF00, or what? I presume getting this wrong would cause a problem, otherwise the accuracy criterion is pointless.

SuggestedRemedy

Either, unambiguously specify the mapping from power to register contents, or delete the accuracy requirement (and still explicitly say that a higher margin is represented by a larger number).

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.11** *P* **54** *L* **13** # 11

Dawe, Piers

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

Noticing that the base document hardly ever uses the ampersand, I wonder if it's contrary to approved style?

SuggestedRemedy

Find out; if appropriate, change '10GBASE-R & 10GBASE-T' to '10GBASE-R and 10GBASE-T'.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.11.1** *P* **54** *L* **59** # 12

Dawe, Piers

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

Wordsmithing: delete redundant words 'and PCS_status variable defined', that probably should contain 'or' not 'and' anyway.

SuggestedRemedy

... of the PCS_status variable defined in 49.2.14.1 for 10GBASE-R and in 55.3.6.1 for 10GBASE-T.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.7.8** *P* **63** *L* **1** # 13

Dawe, Piers

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

Continued table's title should end '(continued)', like table 45-125.

SuggestedRemedy

Frame template thing?

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.7.2.6** *P* **60** *L* **22** # 14

Dawe, Piers

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

The description of this link status MDIO bit does not reflect its latched nature. Other subclauses such as 45.2.3.12.1 seem to explain similar concepts more simply. Specific problem: 'Bit 7.1.2 is set to one when the variable link_status = OK...' is not true - because it's latched low.

SuggestedRemedy

Change to 'Bit 7.1.2 is set to one when read while the variable link_status = OK...'
Consider changing 'When read as a zero, bit 7.1.2 indicates that the link is not valid.' to 'When read as a zero, bit 7.1.2 indicates that the link has been invalid after this bit was last read.' This sentence should follow the 'When read as one' sentence. A complete rewrite in the style of 45.2.3.12.1 might work better.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.7.10** *P* **64** *L* **29** # 15

Dawe, Piers

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

Loop

SuggestedRemedy

loop (twice)

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.7.9** *P* **13663** *L* **43** # 16

Dawe, Piers

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

Table will look nicer and more compact if you redo the 'shrink to fit'.

SuggestedRemedy

Per comment.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.1.3.2** *P* **80** *L* **48** # 17

Dawe, Piers

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

SCAN_FOR_CARRIERUsed

SuggestedRemedy

Can you insert some white-space after SCAN_FOR_CARRIER?

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.2.1** *P* **80** *L* **30** # 18

Dawe, Piers

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

Believe there should not be a space between function and its subject

SuggestedRemedy

PMA_LINK.request(link_control) and similarly

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.2.2** *P* **82** *L* **3** # 19

Dawe, Piers

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

Nice diagram. But it implies that MDIO/MDC are part of XGMII and connect to the next layer up; also that they are input-only. Also, I thought the MDIO connected between the PMA/PCS and 'management'?

SuggestedRemedy

Group the XGMII lines to the left, use right-angled lines (like the PMA_LINK... to lead off to the side. Show MDIO as bidirectional. Give the box marked 'MANAGEMENT' (if it exists) a more specific name. It would be helpful to indicate what these to-the-side interfaces connect to: station management entity and auto-negotiation?

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.2.2.2.1** *P* **83** *L* **31** # 20

Dawe, Piers

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

Apparent hard returns in middle of phrase?

SuggestedRemedy

Remove any hard returns before 'MASTER PHY.' and 'SLAVE PHY.'

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.1.3** *P* **75** *L* **56** # 21

Dawe, Piers

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

'MASTER PHY', 'SLAVE PHY'. Q. Why are MASTER and SLAVE in capitals? Are they abbreviations, like PHY or PAM? A. No, copying clause 40?

SuggestedRemedy

Consider changing to 'MASTER PHY', 'SLAVE PHY' e.g. when going to sponsor ballot, consider if clause 40 should be changed when 802.3am is prepared.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.2.4** *P* **112** *L* **20** # 22

Dawe, Piers

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

connected to any manner

SuggestedRemedy

connected in any manner

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.6.1.1** *P* **136** *L* **30** # 23

Dawe, Piers

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

Table might just fit on the page if you redo the 'shrink to fit' (or change column widths by hand). Also, double colon in '7.14.15::0'. Table doesn't seem to use SC or LH.

SuggestedRemedy

Redo the 'shrink to fit' remove duplicate colon in '7.14.15::0'. Remove 'SC = Self Clearing, LH = Latch High'. Redo the 'shrink to fit' on table 55-10 also.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.6.1.2** *P* **137** *L* **54** # 24

Dawe, Piers

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

Would benefit from a comma

SuggestedRemedy

'Reserved, transmit as 0' (several times)

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.6.1.2** *P* **137** *L* **50** # 25

Dawe, Piers

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

For vertically merged cells, it's somewhat misleading to put the entry right at the top of the cell (remember, sometimes a table line doesn't print out).

SuggestedRemedy

At some point in the process, center these entries vertically.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.7.3.1.2** *P* **148** *L* **47** # 26

Dawe, Piers

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

Most tables use the abbreviations for physical units (without prejudice to the text above).

SuggestedRemedy

Change 'meters' to 'm', twice. Also table 55-12.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.7.4** *P* **154** *L* **35** # 27

Dawe, Piers

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

'assumed in the 10GBASE-T Matlab simulation models': First, what does it matter what programming language the models are/were written in? I presume a FORTRAN model would give the same answer. Second, as 802.3an apparently does not contain 'simulation models' nor reference them, the sentence is not very satisfactory for the reader.

SuggestedRemedy

Change to 'This limit was assumed when choosing the parameters for 10GBASE-T.' or similar. Or, delete 'Matlab' and include a reference to where the models can be found.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.8** *P* **156** *L* **3** # 28

Dawe, Piers

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

After review of the precedent in other clauses, I find that the sentence 'The link topology requires a crossover function in a DTE-to-DTE connection.' is in contradiction with 55.4.4, 'Automatic MDI/MDI-X Configuration is intended to eliminate the need for crossover cables between similar devices. Automatic MDI/MDI-X configuration is required for 10GBASE-T devices...' If it's required in the devices, to eliminate its need between the devices, then it's not required 'in a DTE-to-DTE connection' - because it's handled within the DTEs. This sentence is just a leftover from a time when this automatic configuration was not always there. I would make this a TR but I suppose that links will still work if you tell people they need crossovers they don't need.

SuggestedRemedy

Delete the sentence.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.8.2.2** *P* **158** *L* **52** # 29

Dawe, Piers

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

Spelling of anaylzer, analzer. And, most of this subclause uses the ohm sign. For consistency...

SuggestedRemedy

analyzer. Change 'ohms' to the symbol, twice.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.11** *P* **161** *L* **10** # 30

Dawe, Piers

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

After consulting expert opinion: this sentence 'The time required to insert or process any necessary overhead or stuff octets must be included as part of the data delay incurred by the 10GBASE-T PHY.' has been copied from 50.3.7 WIS data delay constraints, and makes no sense here: 10GBASE-T has nothing called 'overhead octets' or 'stuff'.

SuggestedRemedy

Delete the sentence.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.6.3** *P* **109** *L* **3** # 31

Dawe, Piers

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

For consistency with clause 45, where these registers live:

SuggestedRemedy

Remove 'logic' here and 'logical' on p140 line 14 and associated PICS.

Proposed Response *Response Status* **O**

Cl **99** *SC* **55.11** *P* **3** *L* **55** # 32

Dawe, Piers

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

I don't believe this is true: 'Errata, if any, for this and all other standards can be accessed at the following URL:...'. Maybe all IEEE standards...

SuggestedRemedy

Consult 802.3 officers and/or staff editor. Any change should be common across all active projects.

Proposed Response *Response Status* **O**

Cl **99** *SC* **55.11** *P* **4** *L* **25** # 33

Dawe, Piers

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

Suspect this sentence is not supposed to mean what it says: 'A patent holder or patent applicant has filed a statement'. Maybe none have, maybe two have...

SuggestedRemedy

Consult 802.3 officers and/or staff editor. Any change should be common across all active projects.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.61** *P* **48** *L* **35** # 34

Piers Dawe Agilent

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

Grammar (see D2.2#73). 'Assignment' is singular.

SuggestedRemedy

The assignment of bits for the reduction in power due to backoff setting ***is*** shown...

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.2.2.18** *P* **98** *L* **1727** # 35

Ho, Ricky

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

""Intmod"" is a very strange math symbol. Should it be consistent with other part of the document. For example, in pg. 101, lines 4 and 20, we just use mod. I believe that ""mod"" is a well-defined mathematical function. Otherwise, we should not use it in page 101.

SuggestedRemedy

Change to ""mod""

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.3.1** *P* **120** *L* **1** # 36

Ho, Ricky

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

M(x) = x mod 32 - 16 looks very weird. It seems that we change ""mod"" to some other math definition. Using conventional definition of ""mod"", for example, M(10) = -6.

SuggestedRemedy

Change to M(x) = (x + 16) mod 32 - 16.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.6.1** *P* **126** *L* **3942** # 37

Ho, Ricky

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

In the state of PMA_Fine_Adjust, the requirement of THP_tx <= THP_next has logical problem.

Logically, if we are able to adjust the THP coefficient to enable the process of THP_tx <= THP_next as an option, we can also use this process during initial states of PMA training to improve the system. Some vendors may also use thier own method to find an initial THP coefficient and adjust it adaptively durint the start up process.

If we do not have the process to enable this option, this fine adjustment is not necessary.

SuggestedRemedy

My preference is to eliminate this option. Otherwise, we should partially undone comment #155 in the previous meeting. We may not want to have fixed THP during initial phases of PMA training, vendors can choose their own setting.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.6.3** *P* **128** *L* **36** # 38

Powell, Scott

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

Link status should only be OK when in the PHY control is in PCS_data state. An independent link monitor makes possible the situation where the link_status does not follow the PCS_data state. For example, the conditions for entry and exit from the Link_up state in the link monitor do not match the conditions for entry and exit from the PCS_data state in PHY control.

SuggestedRemedy

Define link_status in the PHY control state machine and eliminating the need for an independent link monitor state machine. See PHY control state diagram proposed in Ungerboeck document.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.6.1** *P* **126** *L* **49** # 39

Powell, Scott

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

The two exit branches from PCS_test state can both be true at the same time. For example, PCS_status=OK and loc_rcvr_status=NOK will cause both branches to be true unless these two variables are mutually exclusive and, therefore, redundant.

SuggestedRemedy

See PHY control state diagram proposed in Ungerboeck document.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.6.1** *P* **126** *L* **46** # 40

Powell, Scott

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

Transition from THP-off to THP-on is not well defined. If THP starts from an arbitrary state (like zero), there will be a transient when transitioning into PCS_test. During this transient, the receiver may not correctly decode the transmitted data which could result in a loss of sync.

SuggestedRemedy

Specify that the THP feedback filter be turned on (but disconnected) during the transition count while in PMA_Fine_Adjust state. See Ungerboeck document.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.2.5.14** *P* **118** *L* **5** # 41

Powell, Scott

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

Permitting the slave to begin transmission at any arbitrary time places an unnecessary computation burden on the master and increases the probability of false detection.

SuggestedRemedy

Only permit the slave to begin transmission at well specified times - reducing the probability of false detection and simplifying the detection mechanism in the master. See proposal in Ungerboeck document.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3** *P* **87** *L* **29** # 42

Powell, Scott

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

The link_status variable does not appear to be used by the PCS RECEIVE or PCS TRANSMIT blocks.

SuggestedRemedy

Remove if unnecessary or insert text to explain use.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.6.1** *P* **126** *L* **28** # 43

Powell, Scott

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

The THP is trained at a different transmit power level than when the THP is in operation. This is not correct and non-optimal THP coefficients will result.

SuggestedRemedy

Train the THP at the final operating power level. See proposal in Ungerboeck document.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.2.5.14** *P* **117** *L* **55** # 44

Powell, Scott

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

Forcing the slave to wait for 20dB decision point SNR adds unnecessary additional time to the start-up process.

SuggestedRemedy

Permit slave transmission to begin at the first invitation period after reliable IF detection is achieved. Add 2nd PMA training state (PMA_Train2_M/S) where the master can request an increase in TX power from the slave. See proposal in Ungerboeck document.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.2.5** *P* **113** *L* **4** # 45

Powell, Scott

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

Significant changes to the Info Field contents have occurred over the last several drafts yet the IF size & format have not adapted to accommodate these changes. The Information Field has become very inefficient. Only 29 of the 80 available payload bits are used in ""transition counter format"". The ""coefficient exchange format"" was designed under the size constraints from old drafts which no longer need apply.

SuggestedRemedy

Compress the IF contents and re-organize the format based on current requirements. See proposal in Ungerboeck document.

Proposed Response *Response Status* **O**

Cl **55** *SC* **4.5.1** *P* **124** *L* **13** # 46

Ungerboeck, Gottfried

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

The text implies that dwell time in state PMA_Fine_adj for the MASTER and SLAVE is determined by the MASTER. The SLAVE has no option to choose a longer dwell time than the MASTER. The minimum dwell time is about 10 ms, which is short compared to envisaged startup times of at least several 100 ms. MASTER and SLAVE should both be able to determine the dwell time in state PMA_Fine_Adj independently. It is not acceptable that technology employed in one particular MASTER forces a SLAVE to complete operations just as rapidly as the MASTER.

SuggestedRemedy

Specify a start-up protocol with more symmetry for MASTER and SLAVE to choose times required to spend in certain states.

Proposed Response *Response Status* **O**

Cl **55** *SC* **4.6.3** *P* **128** *L* **43** # 47

Ungerboeck, Gottfried

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

Is maxwait_timer_done or min_wait_timer_done used for leaving state LINK_UP? Per resolution of Draft 2.2 comments #127 and #166 the condition for leaving state LINK_UP should include minwait_timer_done, not maxwait_timer_done. However, Draft 2.3 still shows maxwait_timer_done as in Draft 2.2. If minwait_timer is correct, then a failure in PHY Control state PCS_Data would cause in the Link Monitor state diagram a transition to state LINK_DOWN, which via Auto Negotiation would cause PHY Control to enter state DISABLE_10GBASE_T TRANSMITTER instead for beginning retraining. If maxwait_timer is correct, then what was the reason for Draft 2.2 comment #127? It seems that the scheme does not work either way.

SuggestedRemedy

The resolution of Draft 2.2 comments #127 and #166 should be rediscussed.

Proposed Response *Response Status* **O**

Cl **55** *SC* **4.5.3** *P* **125** *L* **3** # 48

Ungerboeck, Gottfried

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

The function names Decode_IF and Encode_IF do not occur elsewhere in Draft 2.3.

SuggestedRemedy

Use Decode_IF and Encode_IF elsewhere in the text, or omit

Proposed Response *Response Status* **O**

Cl **55** *SC* **4.6.1** *P* **126** *L* # 49

Ungerboeck, Gottfried

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

Strictly speaking, minwait_timer_done and maxwait_timer_done are undefined variables.

SuggestedRemedy

Define these variables in 55.4.5.1

Proposed Response *Response Status* **O**

Cl **28** *SC* **28.5.4.8** *P* **24** *L* **34** # 50

Bradshaw, Peter

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

PICS Item 11a, Value/comment, successful is miss-spelt as ""sucsessful"".
(This is, I think, a repeat of the ACCEPTED comment # 556 on D2.0, but the latest compare file still has it incorrect.)

SuggestedRemedy

Replace ""sucsessful"" by ""successful""

Proposed Response *Response Status* **O**

Cl **99** *SC* *P* **1** *L* **51** # 51

Grow, Robert

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

Though my D2.2 comment was accepted, the copyright notice on the cover page has not been updated to the current on specified on page 3 of the 2005 IEEE Style Manual.

SuggestedRemedy

Update the copyright notice.

Proposed Response *Response Status* **O**

Cl **30A** *SC* *P* **34** *L* **11** # 52

Grow, Robert

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

The information pointing out that these objects were not complete was deleted, but the editor's note does not explain why.

SuggestedRemedy

Add to the end of the editor's note: ""As is customary, ""REGISTERED AS"" management arcs will be assigned when the Sponsor ballot draft is prepared.""

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.5.9.2** *P* **68** *L* **32** # 53

Grow, Robert

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

The change instruction makes no sense. The is not 802.3ae-2005, nor has there ever been. With the publication of IEEE Std 802.3-2005, IEEE Std 802.3ae-2002 will be superceded. If this was intended to apply to line 26, then it has been done wrong.

SuggestedRemedy

When refering to an approved document, the indentification should be provided (e.g., IEEE Std 802.3-2005), When refering to itself, the P802.3an draft should use IEEE Std 802.3an-20xx. That becomes a search string for the publication editor to update to the proper publication year (hopefully, IEEE Std 802.3an-2006).

Proposed Response *Response Status* **O**

Cl **A** *SC* *P* **73** *L* **9** # 54

Grow, Robert

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

I still can't understand the editorial instruction.

SuggestedRemedy

Change to read:
Insert the following informative reference in alphabetic order, changing [Bxldpc] to be similar format, renumbering subsequent references.

Proposed Response *Response Status* **O**

Cl **55A** *SC* *P* **171** *L* **27** # 55

Grow, Robert

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

Somehow we will have to give the Sponsor ballot group access to the matrix tables. The URL given is private. This comment is an action item for TF and WG leadership which may or may not result in a change to the draft.

SuggestedRemedy

Consult with WG Chair, Vice Chair and IEEE Staff 802 liaison on how this should be done with myBallot. Options include putting the matrices in a public web area, including 802.3an private area access in the Sponsor ballot package, or get the matrices posted to the publication URL before Sponsor ballot.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.7** *P* **141** *L* **16** # 56

Mei, Richard

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

The reference of ISO TR24650 is missing

SuggestedRemedy

Add ISO/IEC TR24750 as the reference for the installed cabling.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.7.1** *P* **141** *L* **16** # 57

Mei, Richard

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

""...operation on other classes of cable may be....""

SuggestedRemedy

Change cable to cabling

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.7.3.1** *P* **148** *L* **20** # 58

Mei, Richard

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

".....that exceed 33.5 dB shall revert ....."

SuggestedRemedy

Change exceed to are less than

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.1** *P* **149** *L* **19** # 59

Mei, Richard

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

""....is increased by 2.5 dB to account for....""

SuggestedRemedy

Change 2.5 dB to 1.25 dB. The total ""averaging"" factor for PHY simulation was set to be 3.5 dB better than the peak spec line (1dB average over 4 pair + 2.5dB area under curve). Since we increase the PSANEXT_constant_average by 1.25 dB from the original value due to the way the average is calculated (average over 4 pairs at each frequency point vs average of margin), the remaining 1.25 dB (3.5 dB minus 2.25 dB) should be allocated to the effect of the area under curve.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.7.3.2.1** *P* **149** *L* **38** # 60

Mei, Richard

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

Equation 55-28 - incorrect math notation

SuggestedRemedy

change i = n to just n

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.7.3.2.1** *P* **149** *L* **44** # 61

Mei, Richard

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

""...is the 1, 2, or 3 (pair-to-pair combination).""

SuggestedRemedy

Change to ""...pair to pair combination (1 to n)""

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.7.3.3** *P* **152** *L* **45** # 62

Mei, Richard

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

Equation 55-35 - incorrect expression of the lower and upper limit of the integral.

SuggestedRemedy

change the lower and upper limit of the integral to f =10 and 400 respectively.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.7.3.3** *P* **153** *L* **52** # 63

Mei, Richard

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

equation 55-39

SuggestedRemedy

change the constant after AN_avg(f) from 2.5 to 1.25. The total ""averaging"" factor for PHY simulation was set to be 3.5 dB better than the peak spec line (1dB average over 4 pair + 2.5dB area under curve). Since we increase the PSANEXT_constant_average by 1.25 dB from the original value due to the way the average is calculated (average over 4 pairs at each frequency point vs average of margin), the remaining 1.25 dB (3.5 dB minus 2.25 dB) should be allocated to the effect of the area under curve.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.7.3.3** *P* **154** *L* **35** # 64

Mei, Richard

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

equation 55-43 - incorrect expression of the lower and upper limit of the integral.

SuggestedRemedy

change the lower and upper limit of the integral to f =10 and 400 respectively.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.12.2** *P* **162** *L* **49** # 65

McClellan, Brett

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

""*XGMII PHY associated with XGMII""
For consistency with Clause 47,48, and 49 this should be:
""XGE XGMII compatibility interface 46, 49.1.5
Compatibility interface is supported""

SuggestedRemedy

change to:
""XGE XGMII compatibility interface 46, 49.1.5
Compatibility interface is supported""

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.12.3.1** *P* **164** *L* **5** # 66

McClellan, Brett

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

""PCR5 Error counting in test pattern mode 55.3.3 M Yes [ ] see Figure 55û8""
There is no specified error counting for this test pattern mode and the PIC for supporting this test mode is covered by PME15.

This PIC should be eliminated.

SuggestedRemedy

Eliminate this PIC (PCR5).

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.12.4** *P* **164** *L* **48** # 67

McClellan, Brett

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

""PMF8 Transmit fault mapping 55.4.2.2 M Yes [ ]""
55.4.2.2 states that this function is optional

SuggestedRemedy

Change to:
""PMF8 Transmit fault mapping 55.4.2.2 O Yes [ ] contribute to the transmit fault bit as specified in 45.2.1.7.4.""

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.12.4** *P* **164** *L* **52** # 68

McClellan, Brett

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

typo: ""55.4.2.2"" should be ""55.4.2.4""

SuggestedRemedy

change: ""55.4.2.2"" to ""55.4.2.4""

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.12.4** *P* **165** *L* **14** # 69

McClellan, Brett

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

""PMF18 Receive signal mapping 55.4.3.2 M Yes [ ]""
There is no ""shall"" driving this PIC.

SuggestedRemedy

Eliminate this PIC (PMF18).

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.12.4** *P* **165** *L* **17** # 70

McClellan, Brett

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

Subclause 55.4.4 states:
""the receiver shall detect and correct for several configurations of pair swaps and crossovers and arbitrary polarity swaps.""
but there is no corresponding PIC.

SuggestedRemedy

add the following PIC
""PMFxx Pair/Polarity swap detection and correction 55.4.4 M Yes [ ] ""

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.12.6** *P* **167** *L* **35** # 71

McClellan, Brett

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

""report the error rate as specified in 55.3.3""
There is no requirement to measure or report the error rate.

SuggestedRemedy

delete ""report the error rate as specified in 55.3.3""

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.12.6** *P* **167** *L* **49** # 72

McClellan, Brett

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

typo: ""upported"" should be ""supported""

SuggestedRemedy

change: ""upported"" to ""supported""

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.12.6** *P* **167** *L* **48** # 73

McClellan, Brett

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

""PME22 Transmitter jitter as loop-timed SLAVE
55.5.3.3 O N/A [ ] Yes [ ]
applicable only if loop timing is upported""

This mandatory for a PHY supporting loop timing.
The PIC should be:
""PME22 Transmitter jitter as loop-timed SLAVE
55.5.3.3 LT:M Yes [ ]""

SuggestedRemedy

change to:
"""""PME22 Transmitter jitter as loop-timed SLAVE
55.5.3.3 LT:M Yes [ ]"""""

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.12.8** *P* **170** *L* **15** # 74

McClellan, Brett

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

typo ""MID"" should be ""MDI""

SuggestedRemedy

change ""MID"" to ""MDI""

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.2.2.8.2** *P* **86** *L* **34** # 75

McClellan, Brett

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

typo: ""basis on"" should be ""basis of""

SuggestedRemedy

change: ""basis on"" to ""basis of""

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.2.3.3** *P* **111** *L* **48** # 76

McClellan, Brett

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

""Local fault"" doesn't match the name of bit 1.1.7 in Clause 45, which is named ""Fault"".
This could cause confusion with the Local Fault ordered set.

SuggestedRemedy

change ""Local fault"" to ""fault"".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.12.3** *P* **163** *L* **40** # 77

McClellan, Brett

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

""PCT17 LFER monitor 55.3.5.4 ...""
The LFER monitor is a PCS receive function. This PIC should be a PCRx listed in 55.12.3.1.

SuggestedRemedy

Move ""PCT17 LFER monitor 55.3.5.4 ..."" to 55.12.3.1.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.6.2** *P* **127** *L* **27** # 78

McClellan, Brett

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

At the last meeting we made an on-the-fly change to the entry conditions to PMA_Coeff_Exch, ie. loc_rcvr_status=OK * rem_rcvr_status=OK.
According to Fig 55-25 the transition count for PCS_test will now be initiated while transitioning into PMA_Coeff_Exch.

I think it's a bad idea to use ""loc_rcvr_status=OK * rem_rcvr_status=OK"" as the entry condition to PMA_Coeff_Exch.
The startup text (page 118 line 57) describes how after entering PMA_Fine_Adjust loc_rcvr_status is used to signal the link partner that the local PHY is ready to transition to PCS_Test.
There is no text description for setting loc_rcvr_status=OK for the transition into PMA_Coeff_Exch, or that loc_rcvr_status should be set = NOT_OK on entry to PMA_Fine_Adjust.

I think the best solution is the following change:

change the MASTER entry condition to PMA_Coeff_Exch back to the D2.2 condition: ""slave_detect=1 * loc_rcvr_status=OK""

add ""start minwait_timer"" to the PMA_Training_Init_S state

change the SLAVE entry condition to PMA_Coeff_Exch to the condition: ""loc_rcvr_status=OK * minwait_timer_done""

With these changes, the MASTER and SLAVE will each enter PMA_Coeff_Exch after the slave has begun transmitting and each has converged it's equalizers to provide sufficient SNR margin to proceed to PMA_Coeff_Exch.

SuggestedRemedy

make changes as indicated above

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.2.1.1.1** *P* **80** *L* **47** # 79

McClellan, Brett

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

""SCAN_FOR_CARRIERUsed by the ...""
missing space between ""SCAN_FOR_CARRIER"" and ""Used""

SuggestedRemedy

change to:
""SCAN_FOR_CARRIER Used by the ...""

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.6.1.1** *P* **137** *L* **9** # 80

McClellan, Brett

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

""7.34 7.34.15:0 10GBASE-T AN control 2 register Defined in 45.2.7.12""
refers to a nonexistent register and subclause

SuggestedRemedy

delete this table entry

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.6.1.2** *P* **137** *L* **49** # 81

McClellan, Brett

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

""U20 LP PMA Training
(1 = local device expects remote device to reset PMA Training
PRBS every PMA Training frame;
0 = local device expects remote device to run PMA Training
PRBS continuously through every PMA Training frame)
Defined in 45.2.7.12.2""
This table entry does not have an up to date bit definition, and refers to a non-existent subclause.

SuggestedRemedy

change to:
""U20 LD PMA training reset request
1 = Local Device requests that Link Partner reset PMA Training
PRBS every frame
0 = Local Device requests that Link Partner run PMA Training
PRBS continuously
Defined in 45.2.7.10.5""

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.6.1.2** *P* **137** *L* **57** # 82

McClellan, Brett

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

""Defined in 45.2.7.12.4"" refers to a non-existent subclause.

SuggestedRemedy

change to:
""Defined in 45.2.7.10.6 ""

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.6.1.2** *P* **138** *L* **5** # 83

McClellan, Brett

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

""10GBASE-T full duplex ability"" does not match the bit name in Clause 45.

SuggestedRemedy

Change to:
""10GBASE-T ability""

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.6.1.2** *P* **138** *L* **21** # 84

McClellan, Brett

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

""Defined in 45.2.7.10.5""
There are no clause 45 bits for this entry.

SuggestedRemedy

Delete ""Defined in 45.2.7.10.5""

Proposed Response *Response Status* **O**

Cl **99** *SC* *P* **10** *L* **10** # 85

McClellan, Brett

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

Clause 28 Title is ""Physical Layer link signaling for Auto-Negotiation on twisted pair"" but appears in the TOC as :
""Physical Layer link signaling for 10 Mb/s, 100 Mb/s, and 1000 Mb/s Auto-Negotiation on twisted pair""

SuggestedRemedy

on line 10 change to:
""Physical Layer link signaling for Auto-Negotiation on twisted pair""

on line 16 change to:
""Protocol Implementation Conformance Statement (PICS) proforma for Clause 28, Physical Layer Link signaling for Auto-Negotiation on twisted pair""

Proposed Response *Response Status* **O**

Cl **99** *SC* *P* **1** *L* **44** # 86

McClellan, Brett

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

I think the keywords list should be revised.
For example, XAUI is listed as a keyword but appears only once in a footnote.

SuggestedRemedy

delete XAUI
add Auto-Negotiation, Class E, and Class F

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.7.3.3** *P* **154** *L* **52** # 87

Paul Kish Belden CDT

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

For asymmetrical link segments, where the disturbing cables are in close proximity for only a portion of the disturbed cable length, a backoff factor should be added to the ANEXT and AFEXT of each disturbing pair of a link segment.

SuggestedRemedy

See presentation: alien crosstalk computation with backoff

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.7.3.3** *P* **151** *L* # 88

Babanezhad, Joseph

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

This new section is very hard to follow.

SuggestedRemedy

Include numerical example accompanying each step to help the reader to understand the text.

Proposed Response *Response Status* **O**

Cl **55** *SC* **4.3.1** *P* **120** *L* **25** # 89

Cohen, Larry

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

Estimate of received signal power is stored in registers 1.141 to 1.144 as described in 45.2.1, not registers 1.141 to 1.145

SuggestedRemedy

Change 1.145 to 1.144

Proposed Response *Response Status* **O**

Cl **55** *SC* **Table 55-6** *P* **120** *L* **31** # 90

Cohen, Larry

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

Link insertion loss values corresponding to received signal power for each power backoff level are necessary for defining a link qualification test (alien crosstalk margin).

SuggestedRemedy

Add an additional column to Table 55-6 defining the corresponding link insertion loss at 250 MHz for each power backoff setting.

Proposed Response *Response Status* **O**

Cl **55** *SC* **4.3.1** *P* **120** *L* **21** # 91

Cohen, Larry

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

Standard does not define how the power backoff factor is computed using the estimate of the received signal power from each of the four pairs of the link segment.

SuggestedRemedy

OLD TEXT: ""The received signal power (dBm) at the MDI in Table 55-6, should be the estimate of received power from the remote transmitter""

NEW TEXT: ""The received signal power (dBm) at the MDI in Table 55-6, should be the estimate of the average received power across all four pairs of the from the remote transmitter""

Proposed Response *Response Status* **O**

Cl **55** *SC* **5.4.4** *P* **135** *L* **19** # 92

Cohen, Larry

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

Variations in the test loop insertion loss, noise coupler insertion loss, injected noise level, and noise source/coupler frequency response may cause a wide range of variability in test results.

SuggestedRemedy

Add calibration procedure to a normative annex.

Example calibration procedure:

1. Compute reference SNR over 1 to 400 MHz (Saltz DFE formula with no SNR folding) using a transmit PSD template (e.g. upper PSD mask scaled to 4.5 dBm) and link insertion loss limit to create a receive PSD, and nominal injected noise PSD (-141.9 dBm/Hz).

2. Measure link segment pair insertion loss with 100 Ohm terminations.

3. Measure injected noise PSD across near-end 100 Ohm termination.

4. Compute receive signal PSD by applying pair measured insertion loss to a PSD transmit template

5. Compute receiver SNR over 1 to 400 MHz (Saltz DFE formula with no SNR folding) with the receive PSD and injected noise PSD.

6. Compare computed SNR to reference SNR. Apply flat attenuation (gain) to noise source equal to SNR difference (in dB).

7. Repeat until computed SNR for each pair is within 0.25 dB of reference SNR.

Proposed Response *Response Status* **O**

Cl **55** *SC* **7.3.1.2** *P* **148** *L* **20** # 93

Cohen, Larry

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

A limit cap of 33.5 dB to the PSANEXT constant is too low and can cause unintended complications to link qualification, specifically to unequal length coupled links (i.e. asymmetric links).

SuggestedRemedy

Set PSANEXT constant limit cap to no greater than 45 dB.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.7** *P* **57** *L* # 94

Vandoorn, Schelto Intel

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

802.3ap uses 3 registers for ôAN advertisementö and ôAN LP base page abilityö. Would be nice if 802.3an supports this to minimize changes required to Clause 45 by 802.3ap.

SuggestedRemedy

Change 802.3an to show all 3 registers, but only use 1. 802.3ap will use all 3.

See supporting text in vandoorn_1_1005.pdf.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.7** *P* **57** *L* # 95

Vandoorn, Schelto Intel

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

Rename ôXNPö to the more generic name ôNPö in ôAN XNP transmitö and ôAN LP XNP abilityö register. 802.3an uses these registers for extended next pages whereas 802.3ap will use these registers for next pages.

SuggestedRemedy

See supporting text in vandoorn_1_1005.pdf.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.7.2** *P* **201** *L* **28** # 20243

Muth, Jim Broadcom

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

At least 55m to 100m of Class E is too ambiguous for a specification. Additionally, other parts of section 55.7 imply cable class and length are not sufficient parameters to guarantee 10G operation.

SuggestedRemedy

Replace first sentence of 55.7.2 with "A 10GBASE-T link segment consisting of at least 55m of Class E or at least 100m of Class F which also meets the additional transmission parameters of this subclause will provide a reliable medium.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See Comment resolution to #251

Cl **55** *SC* **55.1.1** *P* **137** *L* **35** # 20250

Brown, Kevin Broadcom

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

Subclause 55.1.1 Objective f) is imprecisely specified. Specifying "at least 55 m to 100 m" does not make sense.

The minimum specified distance should be essentially zero distance. If a PHY that works over "at least 55 m" is compliant, then any distance specification is redundant. "at least 55 m to 100 m" has no meaningful difference from "at least 55 m to 90 m" or "at least 55 m to 110 m", if 55 m is the minimum requirement

SuggestedRemedy

f) Define a single 10Gb/s PHY that would support links of 0.1 m to 55 m on four pair balanced copper cabling.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment 503

Cl **55** *SC* **55.7.3** *P* **205** *L* **31** # 20278

Dove, Daniel HP ProCurve Networki

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

Coupling Parameters between link segments...

I have a hard time with the whole concept of defining this because it is not something that customers can readily measure, control, or predict.

I believe it is essential to define a standard that *works* in the general sense with the cable systems that are measureable and controllable.

As I understand it, if a customer has cable installed and measures AFEXT, MDAFEXT, ANEXT or MDANEXT and concludes that their cable does not meet specifications, there is not readily available method for resolving the problem. They would be instructed to re-configure their cable plant, cross their fingers, and hope it passed the test when re-tested.

SuggestedRemedy

Define the solution in a way that allows customers to define their cable solution, have it installed, measured, and certified to work with 10GBASE-T such that when they purchase and install equipment, it works.

For example, there is no need to specify ANEXT for Category 7 cables. (Class F)

If this means reducing the length of UTP supported, to a point that 9x% (pick a number) of the cable guarantees operation, fine. If it means removing UTP from the list of supported cables and mandating a foil/shield on the cable to ensure ANEXT is below tolerable limits, please do this.

It is just not fair to a customer to put them into a wild-goose expedition to get their cabling to support a new technology.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See responses to comment 251 and 442

Field testing of cabling is being specified in TIA TSB-155 and in ISO/IEC TR-24750

Cl **55** *SC* **55.1.3.2** *P* **141** *L* **52** # 20356

Ali, Ghiasi Broadcom

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

It is unclear what the length objective for 10GBAS-T 55 m, 100 m, or take your pick 55-100 m.

SuggestedRemedy

Ethernet in the premises wiring is the most entrenched standard. Reducing the length from 100 m to something like take a number will cause significant damage to the Ethernet as a standard. Ethernet in the premises wiring means 100m and 10GBASE-T group should not reduce the reach.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to 503

Cl **55** *SC* **55.4.3.1** *P* **179** *L* **1** # 20357

Ali, Ghiasi Broadcom

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

Power backoff scheme is unclear. It appears that the power of the remote TX can vary depending on it's own received power which is the function of the local TX. However the power of the local TX can vary depending on it's own RX power which is a function of the remote TX

SuggestedRemedy

It is not clear how one uses the received power can used to deterministically set power backoff levels

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Add text that states that the received signal power at MDI should be the estimate of received power from remote TX (after accounting for local TX power).

Cl **55** *SC* **All** *P* **All** *L* **All** # 20383

Sailesh Rao — Phyten Technologies, I

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

It is not feasible to implement a robust receiver for 100m Cat-6E (Model 3) line length operation using the 128 Double Square line coding scheme documented in Draft 2.0, for two main reasons:
1. Even assuming all noise sources are perfectly Gaussian, the input-referred rms noise budget for the receiver is 650 microvolts, using an optimum MMSE implementation (ref. vareljian_1_1104.pdf). This is the noise budget that must be allocated to overcome
a) residual Echo
b) residual NEXT
c) residual FEXT
d) A/D quantization noise
e) sampling jitter noise
f) circuit thermal noise
g) finite precision implementation noise, etc.
This total noise budget is inadequate and it is, in fact, 7.0dB lower than just the thermal noise budget used in the 802.3ap task force models (altmann_01_1104.pdf, slide 5).
2. Three out of seven bits in the 128DSQ line code are not protected by the LDPC code. These unprotected bits are vulnerable to isolated noise events on the order of a few millivolts (ref. rao_1_1104.pdf, slide 23).

SuggestedRemedy

At least two line code alternatives were presented in rao_2_1104.pdf to address the fundamental inadequacies of the 128-DSQ line code used in D2.0. Either PAM16-P or PAM8-P would be an useable choice for 10GBASE-T.

Proposed Response *Response Status* **U**

REJECT.

All in favor of accepting comment:
Yes: 4
No: 25

Motion to accept fails.

Motion to reject. See response to 387

Yes: 25
No: 4
Motion passes

Cl **55** *SC* **55.3.9** *P* **161** *L* # 20387

Juan M. Jover — Phyten Technologies, I

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

I disagree with the appropriatness of the 128 DSQ line code for this problem.

Issues:

a) Total noise budget is too low.

b) Unprotected bits by the LDPC code present problems with noise events as described in Rao_1_1104.pdf, slide 23.

SuggestedRemedy

Change line code.

Proposed Response *Response Status* **U**

REJECT.

This has previously been discussed multiple times and the task force continues to support the DSQ128 line code.

Passes by voice vote.

Cl **55** *SC* **55.7.4** *P* **209** *L* **41** # 20520

Baumer, Howard — Broadcom

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

This section does not appear to add to the specification as it is purely informative to help a potential vendor implement a transceiver.

SuggestedRemedy

This is more suited to be included as an Informative Annex.

Proposed Response *Response Status* **U**

REJECT.

The subclause characterizes the total noise environment. Follows subclause headings structure from 1000BASE-T.

Cl **55** SC **55.7** P L # 20521

Baumer, Howard Broadcom

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

There appears to be a desire for a length dependent or a variable set of link segment sharacteristics. This dependency is very confusing and unclear as to its intent and specification. Several possible intents for the link segment specifications could be:

1) one set of link segment specifications that any and all compliant link segments must meet?
2) Two sets of link segment specifications that a link segment gets to choose from to meet, one equivalent to 55m length and the other to 100m
3) an infinit set of link segment specifications that a link segment can choose from to meet where one end is equivalent to 55m and the other to 100m and anything inbetween.
4) one set of link segment specifications that any and all compliant link segments must meet where the NEXT, ELFEXT, ANEXT, AELFEXT specifications are dependet upon the measured insertion loss of the link segment.

It is also unclear as to whether the link segment specifications are tied to a measured length or not. If they are tied to a measured length how is that length measured?

SuggestedRemedy

Clearly state what the intent of the link segment specification is. One possible clearification of intent is:

Any compliant link segment shall meet the specified insertion loss of Eq 55-10.
A give link segment's NEXT, ELFEXT, ANEXT AELFEXT limits are set by its measured insertion loss. Put in a sub-clasue that describes how that insertion loss is to be measured and how each dependent specification is calculated from that measured insertion loss.

This is a hugh rewrite of 54.7 and as such the whole sub-clause should then be left open for comments on the next recirculation ballot.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment 251.

Additionally:

Agree in principle that the subclause 55.7.3 "Coupling parameters between link segments" alien cross talk specifications (PSAELFEXT and PSANEXT) need to be clearer in regard to the 10GBASE-T cabling types and distances and the usage of insertion loss scaling. Recommended remedy: (1). In 55.7.3 (or where appropriate), provide a table of supported cabling types and distances with references to applicable cabling standards. This table will not include the calculated 10GBASE-T PSAELFEXT or PSANEXT which has resulted in much of the confusion between the minimum requirements for 10GBASE-T operation over the referenced cabling type and distance and the performance limits of the cabling.

Cl **55** SC **55.5.3.2** P **190** L # 20579

Babanezhad, Joseph Plato Networks

Comment Type **TR** *Comment Status* **R** *pmaelec-linearity*

In section 55.5.3.2 (page 190) Eq. (55-7) currently would require lower linearity with increasing frequency. With two tone test and because of nonlinearity we can have intermodulation terms that fall in lower frequencies.

SuggestedRemedy

For those cases the linearity requirement should be specified not based on the two tone frequency but the frequency of the resulting intermodulation term.

Proposed Response *Response Status* **U**

REJECT.

See response to comment #119

Need to develop consensus on clear definition.

In favor of proposed response as per text below:
Yes: 9
Opposed: 5
Motion fails

Replace line 8 and 9 on page 190 with text below:

where SFDR is in dB and f is the frequency of the two tones or all the resulting spurs, in MHz in the range of 1 to 400MHz.

Relevant comments: 495, 579

Accept in principle the following remedy:
In favor: 8
opposed: 11

Replace SFDR for two tone on page 190 with text below:
The intermodulation products (IMD) of the transmitter, for dual tone inputs, producing output with peak to peak transmit amplitude, shall meet the requirement that:
Signal level - IMD >= (2.5+ min(52, 58-20xlog10(f/25) (55-7)
where f is the frequency of the IMD product in MHz in the frequency range of 1 to 400MHz and the signal level and IMD are in dB.

Reject the comment:
In favor of rejecting: 23
Opposed: 0

Cl **55** *SC* **55.7.2** *P* **201** *L* **37** # 20584

Thompson, Geoff Nortel

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

The text:
"The link segment transmission parameters of insertion loss and ELFEXT loss specified are ISO/IEC 11801 Class E specifications extended by extrapolating the formulas to a frequency up to 500 MHz with appropriate adjustments for length when applicable."
...is not acceptable. We are not a cabling standards group and not an appropriate forum for whether such extrapolations are appropriate or justified.

SuggestedRemedy

Change text to stay within the boundaries of performance laid out by established standards appropriate for reference by an international standard. Delay approval until such approved reference is available.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Change text to: The link segment transmission parameters of insertion loss and ELFEXT loss specified are ISO/IEC 11801 Class E specifications extended by extrapolating the formulas to a frequency up to 500 MHz with appropriate adjustments for length when applicable as specified in ISO/IEC TR-24750 and TIA/EIA TSB-155.

There is no international standard available nor is there a guarantee that there will be one. Reference to guides has been done in the past and ultimately an international standard did result from the guide that we referenced.

We have published standards in the past with references to drafts.

In favor of response: 20
Opposed to response: 3

Cl **55** *SC* **55.7.3.1.2 Table 55-8** *P* **207** *L* **29** # 20587

Thompson, Geoff Nortel

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

Invalid references
same basic comment as my #2 (comment 584)

SuggestedRemedy

See my #2

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment 584

In favor of proposed response: 20
Opposed : 3

Cl **55** *SC* **55.8.2** *P* **211** *L* **57** # 20590

Thompson, Geoff Nortel

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

I don't understand this clause and especially the note. Is the intent to require automatic implementation of the cross-over function without regard to whether or a straight or cross-over cable is used? Ifso the wording does not indicate this. If not, then I don't understand the intent.
The absolute requirement (for that is how it is stated) for the jack to be marked with an "X" means that the same jack can not be used in multiple speed implementations.

SuggestedRemedy

I'm not sure. Once I know the intent perhaps I can help work out the wording.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Remove 55.8.2 and the editors note. The subclause does not add additional requirements to the 10GBASE-T PHY other than marking of an X for having the automatic crossover, which will be mandatory on all 10GBASE-T PHY's, so this will not be needed. For multiple speed implementations the requirements for those PHY's will be followed.

Cl **55** *SC* **55.5.3.4** *P* **191** *L* **1** # 20691

Powell, Scott Broadcom

Comment Type **TR** *Comment Status* **R** *psd ripple*

Transmitter PSD mask permits a 6dB ripple up to 50MHz an ~8dB ripple up to 200MHz, and > 8dB ripple from 200 to 400MHz. Equalization and precoding requirements differ for a smooth spectrum vs a spectrum with ripples.

SuggestedRemedy

Add a TBD ripple specification to the PSD mask.

Proposed Response *Response Status* **U**

REJECT.

Request commenter to provide specific remedy.

Cl **55** *SC* **55.5.4.3** *P* **192** *L* **14** # 20693

Powell, Scott Broadcom

Comment Type **TR** *Comment Status* **R** *pmaelec-impulse*

Data has been presented to the task force indicating the presence of impulsive noise in actual installations (see reflector post from Dan Dove 7/22/04). There is no test to cover impulsive noise or required performance in the presence of impulsive noise specified.

SuggestedRemedy

Specify tolerable impulsive noise levels, and operational requirements in the presence of impulsive noise. Include validation test.

Proposed Response *Response Status* **U**

REJECT.

There are two tests included for external noise. Sub-clause 55.8.3.4 covers impulse noise and sub-clause 55.5.4.3 covers RF noise. Each defines a validation test and the operational requirements for the test.

Cl **55** *SC* **55.5.3.4** *P* **190** *L* **46** # 20696

Powell, Scott Broadcom

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

(Resubmission of comment 37 from last meeting deferred by task force.) The transmit PSD mask is defined too loosely. Accepted resolution: "The zero excess bandwidth concept should be discussed by the task force.

SuggestedRemedy

Transmit PSD mask should specify a zero at 400MHz. See presentation ungerboeck_1_0505.pdf to lead discussion.

Proposed Response *Response Status* **U**

REJECT.

The task force discussed this issue and decided not to specify the zero at 400MHz.

The null is not necessary for interoperability and will overly constrain implementation.

Relevant comments: 272, 592, 672, 692, 696, 708

Cl **55** *SC* **55.4.3.1** *P* **178** *L* **20** # 20701

Powell, Scott Broadcom

Comment Type **TR** *Comment Status* **A** *thp programmable*

Loosely constrained transmit PSD mask makes predetermined fixed set of precoding functions impractical.

SuggestedRemedy

Add requirement for transmitters to support programmable precoder with FIR precoding polynomial. See ungerboeck_1_0505.pdf for details.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See comment #473

Cl **55** *SC* **55.7.3** *P* **131** *L* **38** # 21103

Cobb, Terry

Comment Type **TR** *Comment Status* **R** *cabling-floor*

Several comments from the last ballot were resolved where a noise floor was to be added for ANEXT and AFEXT. This was not implemented in this draft.

SuggestedRemedy

Implement resolution, see comment 687 on draft 2.0.

Proposed Response *Response Status* **U**

REJECT.

By voice vote

The proposed response to comment (687 - D2.0) was to provide the following guidance to ISO/IEC and TR 42 relative to the measurement noise floor issue which was initiated through the liaison process. We are waiting for their response: Guidance: A cap of 67 dB(TBD) PS AFEXT is imposed. At frequencies where 67 dB(TBD) or greater measured values occurs the PS AFEXT measurements are extended by extrapolating utilizing a 20 Log relationship for PS AELFEXT calculations. Same thing will apply to PS ANEXT using a different slope.

Cl **55** *SC* **55.7.3.1.2** *P* **133** *L* **29** # 21104

Cobb, Terry

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

There was no comment or comment resolution that required a change to Table 55-11.

SuggestedRemedy

Change table to the table that was in draft 2.0

Proposed Response *Response Status* **U**

REJECT.

Motion to accept the response to reject the comment:
In favor: 14
opposed: 2
Motion passes, comment is rejected.

Recommended remedy to comment 521 and 251: (1). In 55.7.3 (or where appropriate), provide a table of supported cabling types and distances with references to applicable cabling standards. This table will not include the calculated 10GBASE-T PSAELFEXT or PSANEXT which has resulted in much of the confusion between the minimum requirements for 10GBASE-T operation over the referenced cabling type and distance and the performance limits of the cabling.

Cl **55** *SC* **55.7.3.1.1** *P* **132** *L* **56** # 21117

Mei, Richard

Comment Type **TR** *Comment Status* **R** *cabling-floor*

The 67dB noise floor cap for PSANEXT was not included per the comment resolution from the last interim meeting.

SuggestedRemedy

Calculations that result in PSANEXT loss values greater than 67 dB shall revert to a requirement of 67 dB minimum

Proposed Response *Response Status* **U**

REJECT.

See response to comment 103

The proposed response to comment (687) was to provide the following guidance to ISO/IEC and TR 42 relative to the measurement noise floor issue which was initiated through the liaison process. We are waiting for their response: Guidance: A cap of 67 dB(TBD) PS AFEXT is imposed. At frequencies where 67 dB(TBD) or greater measured values occurs the PS AFEXT measurements are extended by extrapolating utilizing a 20 Log relationship for PS AELFEXT calculations. Same thing will apply to PS ANEXT using a different slope.

Cl **55** *SC* **55.7.3.2.1** *P* **134** *L* **51** # 21118

Mei, Richard

Comment Type **TR** *Comment Status* **R** *cabling-floor*

The 67dB noise floor cap for PSAFEXT was not included per the comment resolution from the last interim meeting.

SuggestedRemedy

PSAELFEXT limit does not apply when the calculations of PSAFEXT loss values greater than 67 dB.

Proposed Response *Response Status* **U**

REJECT.

See response to comment 103

The proposed response to comment (687) was to provide the following guidance to ISO/IEC and TR 42 relative to the measurement noise floor issue which was initiated through the liaison process. We are waiting for their response: Guidance: A cap of 67 dB(TBD) PS AFEXT is imposed. At frequencies where 67 dB(TBD) or greater measured values occurs the PS AFEXT measurements are extended by extrapolating utilizing a 20 Log relationship for PS AELFEXT calculations. Same thing will apply to PS ANEXT using a different slope.

Cl **55** *SC* **55.1** *P* **143** *L* **6** # 21175

Geoff Thompson Nortel

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

The maximum delay allowed for signal transit through two PHYs is unreasonably long. The result is that one of the prime application spaces for 10GBASE-T, computer room server farms will have no better network latency performance than a fiber network that is two kilometers in diameter. I believe that the Broad Market Potential needs to be re-evaluated in 802.3 because of this mediocre level of performance that is far below what was expected of the Task Force.

SuggestedRemedy

(1) Significantly reduce the transceiver latency
(2) Re-evaluate the Broad Market Potential given this poor performance which will limit the applicability of this PHY for use in low-latency networks.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment #85

Related comments 11, 46, 85, 123, 175, 192, 20236, 20242, 20369, 20370
See proposed text in editors report kasturia_1_07_05.pdf

Cl **00** *SC* *P* *L* # 21176

Geoff Thompson Nortel

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

Comment 584 from D2.0
The resolution of comment text:
"The link segment transmission parameters of insertion loss and ELFEXT loss specified are ISO/IEC 11801 Class E specifications extended by extrapolating the formulas to a frequency up to 500 MHz with appropriate adjustments for length when applicable as specified in ISO/IEC TR-24750 and TIA/EIA TSB-155.

There is no international standard available nor is there a guarantee that there will be one." Supports my original point that we are wildly outside the bounds of performance of cabling specified by international cabling standards and thus outside the scope of the project.

SuggestedRemedy

Select copper media from ISO/IEC 11801:2002, with any appropriate augmentation to be developed through work of 802.3 in conjunction with SC25/WG3

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

802.3an will continue to work in conjunction with SC25/WG3 through the liaison process. This active coordination has yielded a Working Draft for ISO/IEC TR 24750: Guidelines for the support of 10GBASE-T over Copper Balanced Pairs of Class E and Class F as per ISO/IEC 11801(ED.2.0): 2002 and IEEE 802.3an and a Working Draft for an amendment to ISO/IEC 11801:2002, Generic cabling for customer premises.

Cl **00** *SC* *P* *L* # 21177

Geoff Thompson Nortel

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

Comment 587 from D2.0
Response from D2.0 resolution of comments is rejected as non-responsive and inadequate.

SuggestedRemedy

See comment 584 on D2.0

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment #176

Cl **55** *SC* **55.7.1** *P* **141** *L* **16** # 22004

Shimon Muller Sun Microsystems, Inc

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

I don't think that by "other classes" we mean Cat-3/4, nor do we want anyone to even try to use these types of cables.

SuggestedRemedy

Replace "on other classes" with "over Class D/Category 5e" to read as follows:
"Operation over Class D/Category 5e cables may be supported if the link segment meets the requirements of 55.7."

Proposed Response *Response Status* **U**

REJECT.

If a Cat5e cable met the 55.7 requirements it would also meet Class E requirements. This change in text is not necessary.

Passes by voice vote.

Cl **55** *SC* **55.4.6.1** *P* **126** *L* **33** # 22024

Agarwal, Puneet

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

The text implies final power backoff (PBO) value is determined in PMA_coeff_exch state. This is not clear from the PHY control state diagram.

SuggestedRemedy

Add the process ""determine_final_PBO"" inside the currently empty PMA_coeff_exch state.

Proposed Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Determine and exchange final PBO in both directions.

Cl **55** *SC* **55.7.2** *P* **141** *L* **52** # 22026

Cobb, Terry

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

This implies that the ISO and TIA references are normative documents and existing installed links meet these requirements.

SuggestedRemedy

Add note:

Class E/Category 6 specifications do not cover channel performance requirements from 250 to 500 MHz and do not include Alien Crosstalk requirements. ISO/IEC TR 2470 and TIA TSB-155 are informative documents for the characterization of installations to verify these additional parameters. These documents include mitigation steps ranging from cable/cord unbundling to component replacement. These mitigation steps may be required to support the distances stated above.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

resolved by comment #202:

Cl **30** *SC* **30.12.1.1.1** *P* **35** *L* **31** # 22067

Dawe, Piers

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

Clause 30 doesn't use C number notation and should not start now. Precedent in e.g. 30.8.1.1.8. Reason for objecting to this notation: the reader is not warned that the document jumps from the usual English/simple engineering language to a different language for just one word and then jumps back again. I would read e.g. 0x00 as zero, don't care, zero, zero, so it's ambiguous. And it's unnecessary - does not make the document significantly shorter, clearer or more accessible.

SuggestedRemedy

Change '0x8000' style notation to 'hexadecimal value 8000' style throughout clause 30. I believe you should do similarly thropughout clause 45 also, which is not 802.3an's private property but is shared. Precedent in e.g. 45.2.2.12.

Proposed Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Remove reference to hex representation in clause 30 and point to appropriate place in clause 45 and clear ambiguity if any in clause 45.

Also take out sentence starting on line 30.

Cl **45** *SC* **45.2.1.6** *P* **45** *L* **21** # 22070

Dawe, Piers

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

In table 45-7 in this draft, 1000 is shown as 10GBASE-KR PMA/PMD type. In P802.3aq D2.2 and P802.3ap D2.0, it is shown as 10GBASE-LRM PMA/PMD type, and 10GBASE-KR is 1011. It would be very bad to have amendments contradicting each other!

SuggestedRemedy

Change '10GBASE-KR PMA/PMD type' to 'Reserved', 'Reserved for 10GBASE-LRM PMA/PMD type' or '10GBASE-LRM PMA/PMD type'

Proposed Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Change to be consistent with .3aq and .3ap

See response to comment 210

Cl **55** *SC* **55.1.3.2** *P* **78** *L* **59** # 22095

Dawe, Piers

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

Arcane and unnecessary notation that looks like a misprint. I think you've changed (-16,16] to [-16, 16). That's not going to help many (most) readers! It would help to understand this and write a comment if I could find a subclause called THP precoding or similar.

SuggestedRemedy

If you mean from -15 to 16, or from -16 to 15, say so in words: 'from 16 to 15'. If you mean from -15 to 15, or the odd numbers from -15 to 15, say so words. If the 'quasi-continuous discrete time value' (is that continuous or discrete??) can take any fractional value, we can't really tell or care if one end point is included or not, at least in the overview - just say 'from -16 to 16'. Get rid of this notation from the whole document.

Proposed Response *Response Status* **W**

ACCEPT.

Cl **55** *SC* **55.3.2.2.18** *P* **98** *L* **40** # 22096

Dawe, Piers

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

Arcane and unnecessary notation 'interval [0, 16)' that looks like a misprint, not explained, not acceptable in a normative algorithm, and there's no excuse for such a performance if the variables here are integers. Is your 'intmod' not the common modulo function anyway?

SuggestedRemedy

If you mean from 0 to 15, say so in words: 'range from 0 to 15' or 'range from 0 to 15 inclusive'. Get rid of this notation from the whole document.

Proposed Response *Response Status* **W**

ACCEPT.

Cl **55** SC **55.5.4.3** P **192** L **14** # 22110

Baumer, Howard

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

This is a pile on of comment #20693

SuggestedRemedy

Proposed Response *Response Status* **U**

REJECT.

Task force stands by original response to #20693
Also comment was not open since it was a comment on D2.0 and received no pile on in prior recirculations

Cl **55** SC **55.5.3.4** P **190** L **46** # 22111

Baumer, Howard

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

This is a pile on of comment 20696

SuggestedRemedy

Proposed Response *Response Status* **U**

REJECT.

The task force has previously decided to reject requiring a zero at 400MHz.

In the recirculation of D2.1 there was no pile on to keep this comment alive.

It is maintained in this database for reference only.

See response to 20696

Cl **55** SC **55.4.2.5** P **113** L **26** # 22137

Thaler, Pat

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

In Figure 55-25, the message field dependent part of the infoField should just be marked Message dependent and not filled in. This would be the transition counter or coeff exch field and the reserv/vendor spcf or Coeff Field.

Also, there are messages sent that are not transition counter and not coefficient update - need to show the field format for that case - which bits are reserved and which are vendor specfic.

SuggestedRemedy

See comment. For messages that are not transition counter and not coefficient update, perhaps the same bits that are vendor specific for transition counter should be vendor specific and the rest of the bits should be reserved.

Proposed Response *Response Status* **W**

ACCEPT.

Cl **55** SC **55.4.2.5.3** P **114** L **33** # 22138

Thaler, Pat

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

This subclause and the next subclause also need to reference figure 55-21 for their layout.

Also need to specify what the THP bits do when during Coefficient Exchange.

The field is present in all states, but the text only covers what it does in two states for the next and requested fields and three states for current. When the slave is in PMA_Training_Init_S, what value does it send in the next and requested fields? Same as current or all zeros (reserved) or flip the valid bit and don't care about the rest of the field? Same question applies to master and slave in fine adjust.

SuggestedRemedy

Add the reference.

In all three clauses state that the THP bits are reserved (send as zero, ignore on receipt) when the field is valid but the PMA is not in PMA_Training_Init_M. This is my preferred resolution though it would also be acceptable to say that their value was undefined in the other states

Specifiy what the fields do for the states where they are currently unspecified. The simplest alternative would be to make valid false and say the rest of the content is don't care.

Proposed Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

In all three clauses state that the THP bits are reserved (send as zero, ignore on receipt) when the field is valid but the PMA is not in PMA_Training_Init_M.

Cl **55** *SC* **55.4.2.5.5** *P* **114** *L* **49** # 22139

Thaler, Pat

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

Specification is too loose. Behavior of this field should be a requirement.

SuggestedRemedy

""should not"" should be ""shall not""

Also need ""shall be"" before ""ignored at the receiver.

Proposed Response *Response Status* **W**

ACCEPT.

Cl **55** *SC* **55.4.2.5.6** *P* **115** *L* **25** # 22140

Thaler, Pat

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

What is to be sent as SNR margin when one doesn't know the current value? This will be the case for the transmitter when the slave has not yet been enabled. There may also be a period after transition when the value has not yet been determined.

SuggestedRemedy

Use one value (probably all 0's removing the -2.5 margin) to indicate that the SNR is unknown. Also, indicate that the lowest and highest values are used when the margin is better than the 5 dB or worse than -2.0 dB.

Proposed Response *Response Status* **W**

ACCEPT.

Will use specific suggested remedy.

Cl **55** *SC* **55.4.2.5.5** *P* **115** *L* **8** # 22141

Thaler, Pat

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

What does slave send in en_slave_tx? Does it always send 1 because if it wasn't enabled it wouldn't be sending or should the bit be reserved in the slave since the master doesn't need it.

The text says that loc_rcvr_status is reflects the value of loc_rcvr status, but the table contradicts that by making the state of loc_rcvr_status field tied to the other message bits. It is possible for instance that one could be in fine adjust and find that the receiver became not okay but the table says the bit has to be sent as one there. One could also be in a state where the other bits are all being sent as zero and the local receiver status is okay (e.g. one has transition to fine adjust and isn't ready to start sending transition to PCS test).

SuggestedRemedy

Current table implies slave sends en_slave_tx as 1 but please clarify in the text.

In the table loc_rcvr_status should be an X indicating that it can be sent as either 0 or 1 depending only on the local receiver status.

Proposed Response *Response Status* **W**

ACCEPT.

Cl **55** *SC* **55.4.2.5.7** *P* **115** *L* **31** # 22142

Thaler, Pat

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

Also applies to 55.4.2.5.8 - Don't describe two fields in one subclause. Each field should have its own separate description - even if they occupy the same bits in the infoField for different message formats.

This was requested last time in a comment that was accepted.

Also, the behavior of the coefficient exchange handshake bits is unspecified.

SuggestedRemedy

Break each field description into its own subclause. Finish the definition of the coefficient exchange handshake field or at least provide a reference to where its behavior is described.

Proposed Response *Response Status* **W**

ACCEPT.

Cl **55** *SC* **55.4.2.5.7** *P* **115** *L* **37** # 22143

Thaler, Pat

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

The use of the two ""reserved"" bits as validty bits is unnecessary and contradictory. The field format picture shows them as reserved so they shouldn't be used for a function. Validity bits are also unnecessary since the transition counter must always be valid if the message field bits indicate a transition.

SuggestedRemedy

Make the bits reserved and remove discussion of them as validity bits.

Proposed Response *Response Status* **W**

ACCEPT.

Cl **55** *SC* **55.4.2.5.10** *P* **116** *L* **40** # 22144

Thaler, Pat

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

I don't know of any action items assigned by the group to do the study indicated by the editor's note. Since this has not been acted on, the draft is not ready to go to sponsor ballot.

Also, the editor's note does not follow normal IEEE 802.3 editorial practice. It should be in a box using the editor's note format, not buried in a sentence. I pointed this out on the last ballot but it has not been corrected.

SuggestedRemedy

If the study has been completed remove the note.

If the study is still underway, please respond with a statement about the task force's plan for completing the work including the correlation between that plan and the draft schedule. If the note is retained, put it in proper format.

Proposed Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Remove the note

Approved by voice vote

Cl **55** *SC* **55.4.5** *P* **121** *L* **38** # 22145

Thaler, Pat

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

There still seem to be issues with the PMA State Machines and training description. It isn't clear to what extent a transition is revokable.

SuggestedRemedy

Proposal will be brought to the interim meeting.

Proposed Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See response to comments 161, 167 and additional comments on state machine.

Promised proposal was not available at the meeting.

Based on subsquent input from Pat Thaler, some changes to refine this were introduced via a motion and are captured in the text of the motion.

Cl **55** *SC* **55.4.5.2** *P* **124** *L* **55** # 22152

Ungerboeck, Gottfried

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

maxwait_timer duplicates the function of link_fail_inhibit_timer employed in Clause 28 (Auto Negotiation). Both timers are used to limit the time allowed for 10GBASE-T PHY Control to reach state PCS_Data, or equivalently link_status = OK.

SuggestedRemedy

Eliminate max_wait_timer. If Auto Negotiation still observes link_status = FAIL when link_fail_inhibit_timer expires, it disables 10GBASE-T PHY Control. In order to permit 10GBASE-T retraining after failure in state PCS_Data, in Auto Negotiation the link_fail_inhibit_timer must be restarted when Auto Negotiation observes a transition of link_status from OK to FAIL. --- The solution will be described in slides offered for presentation to the 10GBASE-T Task Force.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Eliminating maxwait_timer at this time might have negative effects and has no significant implementation advantage

Yes: 13
No: 6

Move to approve the suggested remedy: Shimon Muller
Seconded: G. Ungerboeck
Yes: 4
No: 18.

Cl **55** SC **55.4.2.5** P **118** L **31** # 22156

Ghiasi, Ali

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

The text ""simultaneously"" is inconsistent with the text on page 124 line 14 which permits a 1 frame offset between transitions.

SuggestedRemedy

Needs to be clear for interoperability

Proposed Response *Response Status* **W**

ACCEPT.

Eliminate 'simultaneously'

Cl **55** SC **55.4.6.1** P **126** L **32** # 22157

Ghiasi, Ali

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

The current PHY control state diagram permits the slave to transition from PMA_training_init_S to PMA_coeff_exch even if the master is not able to decode info fields (ie: insufficient power from the slave).

SuggestedRemedy

Change the condition for exit to loc_SNR_margin * rem_rcvr_status=OK and permit the master to request a higher power level if needed.

Proposed Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See response to comment #161 and # 167

Cl **55** SC **55.4.2.4** P **112** L **44** # 22172

Yong Kim Broadcom

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

It's not clear whether each receiver needs the capability to correct for 50 nS, or +/- 25 nS, or correct for 100 nS, or +/- 50 nS. I could interpret this either way.

SuggestedRemedy

Please clarify the specification so that the text is clear.

Proposed Response *Response Status* **W**

REJECT.

The 50 ns specifies the delay difference between the minimum delay and the maximum delay of the four pairs.

Cl **55** SC **55.4.2.5.11** P **117** L **37** # 22173

Yong Kim Broadcom

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

In PMA training, the draft currently specifies that the slave determine the PBO necessary for the slave's proper operation and then reply back to the master with this same PBO setting. What if the sufficient PBO at the slave end is not sufficient PBO at the master end. Or, what if the slave is a much better receiver implementation that the master. The master will not be able to recover IF's and will remain stuck in PMA training with no opportunity to request for a power increase.

SuggestedRemedy

Permit the master to request a power increase from the slave during PMA training.

Proposed Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

See related comment #161 which calls out margin in the slave.

Cl **55** SC **55.3, 55.4** P **86-128** L **All** # 22203

Rao, Sailesh Phyten Technologies, I

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

These two sections of the draft have undergone such substantial changes and added complications (see PHY control and transition counter state machines, for instance) that I'm not confident that interoperability at any line length between different vendors is assured.

SuggestedRemedy

Distribute an executable software C source code modeling the PCS and PMA sections along with future drafts..

Proposed Response *Response Status* **U**

REJECT.

There is nothing within the suggested remedy that the editor can include in the next revision of the draft

Yes: 16
N: 3

Cl **55** *SC* **55.5.3.4** *P* **133** *L* # 22214

Babanezhad, Joseph Plato Networks

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

The transmit PSD upper mask is not continuous.

SuggestedRemedy

Reduce the frequency break-point before the last to 1790MHz (as opposed to currently 1810MHz).

Proposed Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Change from 1810 to 1790MHz in equation 55-9

Cl **55** *SC* **55.5.3.2** *P* **132** *L* # 22216

Babanezhad, Joseph Plato Networks

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

What does ""producing output with peak to peak transmit output"" mean? It does not provide any information.

SuggestedRemedy

Either remove this statement or specify the peak to peak output voltage.

Proposed Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Remove the statement. Replace with text pointing to Test mode 4 - (e.g. While operating in test mode 4).

Cl **55** *SC* **55.5.3** *P* **132** *L* **30** # 22218

Babanezhad, Joseph Plato Networks

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

The AC coupling to MDI needs to be specified in terms of its lower -3dB frequency.

SuggestedRemedy

I suggest using 200kHz as the lower -3dB frequency for this AC coupling. This is transformer's lower -3dB frequency provided by Pulse.

Proposed Response *Response Status* **W**

REJECT.

This is covered by the droop test