Cl **55** *SC* **55.7.2** *P* **139** *L* **50** # 1

Alan Flatman LAN Technologies

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

Table 55-12 reference to "new Class E" was a temporary name for the ISO/IEC enhanced Class E cabling channel.

SuggestedRemedy

Change "new Class E" to "Class EA" as printed in ISO/IEC 25N1096 11801 Ed2.1 Ed1.1 FPDAM (posted), with "A" as subscript.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.7.3.1.2** *P* **147** *L* **11** # 2

Alan Flatman LAN Technologies

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

Table 55-14 reference to "new Class E" was a temporary name for the ISO/IEC enhanced Class E cabling channel.

SuggestedRemedy

Change "new Class E" to "Class EA" as printed in ISO/IEC 25N1096 11801 Ed2.1 Ed1.1 FPDAM (posted), with "A" as subscript.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.7.3.2.2** *P* **149** *L* **48** # 3

Alan Flatman LAN Technologies

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

Table 55-16 reference to "new Class E" was a temporary name for the ISO/IEC enhanced Class E cabling channel.

SuggestedRemedy

Change "new Class E" to "Class EA" as printed in ISO/IEC 25N1096 11801 Ed2.1 Ed1.1 FPDAM (posted), with "A" as subscript.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55B.1.3** *P* **172** *L* **47** # 4

Alan Flatman LAN Technologies

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

Reference to "new Class E" was a temporary name for the ISO/IEC enhanced Class E cabling channel.

SuggestedRemedy

Change "new Class E" to "Class EA" as printed in ISO/IEC 25N1096 11801 Ed2.1 Ed1.1 FPDAM (posted), with "A" as subscript.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.6.1** *P* **124** *L* **22** # 5

Powell, Scott

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

I could not find the comment resolution which led to the removal of ""start minwait_timer"" from the SILENT state

SuggestedRemedy

Since ""minwait_timer_done"" is an exit condition from the SILENT state, I assume the timer must be started somewhere - please clarify where this timer is started

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.6.1** *P* **124** *L* **20** # 6

Powell, Scott

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

The SILENT state can be entered by either the master or the slave. It doesn't make sense to have the slave set ""master_init_step<=0"".

SuggestedRemedy

Modify diagram such that only the master sets ""master_init_step<=0"".

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.6.1** *P* **124** *L* **27** # 7

Powell, Scott

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

The minwait_timer in PMA_Training_Init_S appears to be unnecessary. The signal seen by the Master is the same regardless of whether the slave dwells in PMA_Training_Init_S or transitions immediately into PMA_Coeff_Exch. The dwell time in PMA_Training_Init_S is implementation specific and need not be standardized.

SuggestedRemedy

Remove minwait_timer from PMA_Training _Init_S

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.3.6.2** *P* **106** *L* **33** # 8

Powell, Scott

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

The handling of error characters is inconsistent. Within a single 64B block, if an /E/ occurs prior to the start of packet (/S/), the packet is sent normally. However, if an /E/ occurs in the *previous* 64B block to a block containing an /S/, the packet is dropped. This means that packets occurring 1 byte away from an error are processed normally but packets 12 bytes away from an error are dropped.

Example:
Case 1) /E/ and /S/ in same block: /I/ /I/ /I/ /E/ /S/ /D/ /D/ /D/
In this case, T_TYPE = S, we transition to state TX_D and transmit the packet.

Case 2) /E/ and /S/ in different blocks: /E/ /I/ /I/ /I/ /I/ /I/ /I/ /I/ followed by /I/ /I/ /I/ /I/ /S/ /D/ /D/ /D/
For the first block, T_TYPE = E, we transition to state TX_E. For the second block, T_TYPE = S and we replace the start of packet with an EBLOCK_T.

In other words, the packet in Case 2 is dropped but the packet in Case 1 is transmitted.

SuggestedRemedy

Include /E/ as a valid control character for a T_BLOCK_TYPE=C or R_BLOCK_TYPE=C. This way, the /E/ /I/ /I/ /I/ /I/ /I/ /I/ /I/ is seen as a type C and this pattern does not cause a transition to state TX_E resulting in a dropped packet.

Proposed Response *Response Status* **O**

Cl **55** *SC* *P* *L* # 9

Tellado, Jose

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

Eliminate any remaining unused variables that may be left over from previous drafts

SuggestedRemedy

Search document for each variable and eliminate any that are unused.

Proposed Response *Response Status* **O**

Cl **00** *SC* *P* *L* # 10

Tellado, Jose

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

Several comments on prior drafts have discovered inconsistencies in notation (e.g. logical one = 1 = OK)

SuggestedRemedy

Search full document for any notation/description inconsistencies and correct.

Proposed Response *Response Status* **O**

Cl **00** *SC* *P* *L* # 11

kasturia, sanjay

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

The change instructions on existing clauses (all clauses other than Clause 55) are written up against drafts of RevAM. As 802.3-2005 is released, the change instructions may need to be corrected to reflect changes to 802.3-2005

SuggestedRemedy

Review the change instructions on clauses 1, 28, 30, 44 and 45 and see if they need any corrections as a result of changes in going from the drafts of rev AM to 802.3-2005

Proposed Response *Response Status* **O**

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

kasturia, sanjay

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

For submission to sponsor ballot, figures may be required in formats that are different from the ones used in the draft

SuggestedRemedy

Generate the figures in the format acceptable for sponsor ballot submission. Regenerating the figures in the acceptable format may change visual characteristics or fonts - adjust objects/fonts to maintain visual appeal as close as possible recognizing that an exact copy may not be obtainable.

Proposed Response *Response Status* **O**

Cl **55** *SC* **55.4.6.1** *P* **124** *L* **17** # 13

Tellado, Jose

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

Editor has made a 'cut and paste' versus 'copy and paste' error when adding the condition 'start minwait_timer' to state 'PMA_Training_Init_S' and has mistakenly errased the 'start minwait_timer' from state 'SILENT'. Thus the editor has introduced an new error in D2.4 that was correct in D2.3.

SuggestedRemedy

Reinsert 'start minwait_timer' in state 'SILENT' to revert to the correct settings in prior draft D2.3

Proposed Response *Response Status* **O**

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* **00** *P* **All** *L* **All** # 20383

Rao, Sailesh — 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

Jover, Juan M. — 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* **55.7.2** *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* **55.7.3.1.1** *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

Thompson, Geoff 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* **00** *P* **1** *L* **1** # 21176

Thompson, Geoff 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* **00** *P* **1** *L* **1** # 21177

Thompson, Geoff 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* **55.4.2.4** *P* **112** *L* **44** # 22172

Kim, Yong 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* **U**

REJECT.

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

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** *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* **U**

REJECT.

This is covered by the droop test